Initial public offerings and board governance:

An Australian study

Michelle Ching-Yi Lin

BCom (University of Auckland), MCom (Hons) (University of Sydney)

This thesis is presented for the degree of Doctor of Philosophy

of The University of Western Australia

School of Economics and Commerce

2005

Abstract

In March 2003, the Australian Stock Exchange (ASX) released new corporate governance guidelines, which included debatable "best practice" recommendations such as the adoption of an independent board and separation of the roles of chairperson and CEO. Given the premise that strong corporate governance enhances shareholder value and, by extension, increases initial public offering (IPO) issuers' appeal to investors, this thesis assesses the level of conformity by a sample of Australian firms, which made an IPO between 1994 and 1999, with the best practice recommendations. We also examine the relationship between firm outcomes (including IPO underpricing, post-IPO long-run performance, and the likelihood of a SEO) and board governance quality, captured by board composition, board leadership, board size and share ownership of directors. These outcomes are addressed as they are important dimensions of firm performance that may be reasonably assumed to be associated with the quality of corporate governance, and these tests can provide an insight into the preference of investors who arguably are best placed to assess the appropriateness of the recommendations promoted by the ASX. Further, we analyse changes in IPO firms' board structures from the time of listing to five years later to determine if IPO firms adopt governance structures that are more in line with the best practice recommendations after listing and if the changes are related to IPO firms' long-run performance.

Overall, we find that IPO firms that arguably have the strongest incentive to adopt the "optimal" board structures diverge substantially from ASX's recommendations both at the time of IPO and five years later. IPO firms' board structures are found to be unrelated with the level of IPO underpricing and board size, after controlling for the size of the firm, is significant in explaining both long-run aftermarket performance and the probability of a SEO. IPO firms with larger boards and those that increase the

board size after listing are found to perform better in the long-run. However, contrary to expectation, smaller boards are associated with a higher likelihood of equity reissuance. Overall, the results lead us to question the role played by the board of directors in signalling firm quality. Our findings also suggest that ASX's best practice recommendations are likely to distort the market-driven practices already in place.

Table of Contents

List of Tables

List of Figures

Acknowledgements

This thesis would have not been possible without the guidance, help and support of many great people. First, I would like to give thanks to Buddha for blessing me with the patience, determination, and the ability to complete this thesis. I would like to pay a special tribute to Master Yuan Lai for his Dharma teaching and the encouragement that has kept me going throughout the doctoral study.

I would also like to thank my supervisors, Professor H. Y. Izan and Associate Professor Ray da Silva Rosa, for their support and guidance throughout this research. I greatly appreciate for their countless hours of supervising and reading through drafts of my thesis. Without their invaluable guidance, this thesis would have never been completed.

In addition, I highly appreciate the scholarship, research support and teaching internship scheme provided by The University of Western Australia during my study. The teaching internship gave me valuable experience and enriched my PhD study. I also thank Ms Jennifer Cross for her computer assistance in obtaining the needed data.

Most of all, I thank for the constant support, love and encouragement from my parents. If not for them, I would not have reached this far in my study. I am also grateful to my sister, Suzanne, for her company, taking care of me, and sharing ideas with me when I was stuck during the research process.

Statement of Candidate Contribution

A paper based on a smaller sample set of the data used in this thesis was co-published with Professor H. Y. Izan and Associate Professor Ray da Silva Rosa. All co-authors have given the permission for the work to be included in this thesis. All other work is my own composition unless due reference has been made.

_____ _____

Professor H. Y. Izan date

_____ _____

Associate Professor Ray da Silva Rosa date

_____ _____

Michelle Ching-Yi Lin date

Chapter 1

Introduction and Motivation

1.1 Aim

What constitutes an appropriate corporate governance structure of publicly listed companies has been the subject of much debate. The issue is a matter of significant economic and public interest because regulatory authorities often identify and promote what they deem to be value-adding structures. A prominent example of such regulatory activism is the release of the policy document, *Principles of Good Corporate Governance and Best Practice Recommendations*, by the Australian Stock Exchange (ASX) in March 2003, which ASX listed companies are obliged to follow or else explain their reason(s) for non-compliance. The new guidelines made several recommendations relating to companies' board structures, including, for example, board independence, separation of the roles of chairperson and CEO, and independence of the chair.

In this thesis, we test the proposition that the ASX's principles and recommendations are "best practice" by analysing whether investors exhibit a preference for governance structures that conform to the recommendations in an initial public offering (IPO) context. We choose this setting because we believe this is the time when companies' choices are likely to be most influential and their incentives to select the best structure are particularly strong. The IPO market is characterised by heightened agency and information asymmetry problems between issuing firms and potential investors due to the lack of firm trading history and the prospective dramatic changes in ownership. These problems mean that establishing effective corporate governance that protects the interests of shareholders is essential at the time of the issue. The corporate governance

choices that IPO firms make and their subsequent performance thus provide a robust "market tested" basis for an evaluation on the relative efficacy of different corporate governance mechanisms.

This thesis' research design has three principal parts. In the ***first*** part (in Chapter 5), IPO firms' governance structures, which arguably are developed in a relatively unregulated environment, are compared against ASX's best practice recommendations. This comparison shows the relative importance placed by investors on the governance structures promoted by the recommendations. Investors may normally be assumed to be best placed to assess how to protect their own interests; however, it is possible that they can be mistaken. Thus, in the ***second*** part of the research (in Chapter 6), IPO firms' corporate governance is assessed against outcomes, including IPO underpricing, long-term sharemarket performance and the likelihood of a subsequent equity offering (SEO). These assessments are undertaken to test whether firms that conform more closely to the ASX recommendations achieve better outcomes on these scores, that is, having lower underpricing, better long-run performance and higher likelihood of returning to the equity market after listing. The ***third*** part the research (in Chapter 7) examines how IPO firms' governance structures change over time. We compare the structures at the time of listing and five years later to determine if market forces lead firms to move towards the "best practice" presumably of good governance. We also test if firms that later adopt structures that are more in line with the ASX recommendations have better long-run performance. The aim is to provide evidence on whether the so-called "best practice" recommended by the ASX is indeed value-adding and is similarly perceived by market wide investors.

1.2 Motivation

Three considerations motivate this thesis:

(1) As indicated, the economic efficiency impact of regulatory intervention in corporate governance in general, and ASX's best practice recommendations in particular, are subject to dispute. For instance, Michael Chaney, the chief executive officer of Wesfarmers, has observed that "it is just impractical for small companies with a limited number of directors to be engaged in some of the structural things that are in those guidelines" (Pheasant & Buffini, 2003). On the other hand, an investor opinion survey conducted by McKinsey & Company (2002) indicated that a large majority of respondents are willing to pay a premium for companies with "good" governance practices[1]. Pertinently, the good governance attributes identified in the McKinsey survey are very similar to those promoted in ASX's recommendations. However, investors are arguably just as much influenced by prevailing fashions in ideas of good corporate governance as regulators when voicing their opinions. A more reliable measure of investors' attitudes is the choices they actually make. This thesis' research design addresses this issue directly and examines the sharemarket performance and reissuing decisions of IPO firms. Further, the focus on investor choice is appropriate because a key assumption of and motivation for the ASX best practice recommendations is that their implementation will foster increased investor confidence (ASX, 2003).

(2) Since the last decade of the 20th century, several countries around the world have established the codes of best practice on different aspects of corporate governance. In Australia, there is the ASX best practice recommendations in 2003 as mentioned above.

[1] McKinsey & Company (2002, Exhibit 11) suggests that good governance includes the following characteristics: (i) a majority of outside directors on the board; (ii) truly independent outside directors with no ties with the management; (iii) significant shareholdings by directors; (iv) material proportion of directors' pay being stock-related; (v) formal director evaluation in place; and (vi) high responsiveness to investor requests for information on governance issues.

Prior to that, the Australian Investment Managers' Association issued a document in mid-1995 containing a set of recommended governance practices, such as board leadership, independence of directors and the structure of board committees, for companies to follow (Stapledon, 1996). In 2002, the Horwath report (2002) that contained corporate governance ratings for the top 250 Australian companies was first published. In the international arena, similar trends in the production of codes of best practice, including the Sarbanes-Oxley Act of 2002 in the US, and the Higgs Review (2003) and the Combined Code in the UK, are observed. In Continental Europe, there are examples of the Preda Report (1999) in Italy and the Olivencia Code (1998) in Spain. The international organization, OECD, also published the OECD Principles of Corporate Governance (OECD, 1999). All these developments present best practice guidelines for good governance. However, whether firms that follow the best practice recommendations will indeed perform better is an empirical question. Thus, this thesis is motivated to find out this answer and provides evidence on the appropriateness of these recommendations.

(3) The IPO market is economically significant. Ritter and Welch (2002) report that the number of companies going public in the US exceeded one per business day during 1980-2001. The Australian Bureau of Statistics also documents that over the ten-year period between 1990 and 2000, IPOs have shown the largest growth among different types of equity capital raisings[2] (ASX, 2002). In terms of total dollar raisings, IPOs have increased from less than 2% in 1990-1991 to 17% in 1999-2000. These findings indicate that the characteristics of the IPO market are non-trivial and worthy of investigation.

[2] The types of equity capital raisings reported include rights issues, placements, reinvested dividends, options, calls, staff plans and initial public offerings.

1.3 Research questions

This thesis uses a sample of Australian IPO firms between 1994 and 1999 to examine the following research questions:

1. Do initial board structures of IPO firms conform to ASX best practice recommendations?
2. Do firms that conform to the best practice recommendations have better firm outcomes? Specifically, the following relationships are examined:
   (i) What is the relationship between IPO underpricing and initial board structures?
   (ii) What is the relationship between post-IPO long-run performance and initial board structures?
   (iii) What is the relationship between the likelihood of subsequent equity offerings (SEOs) and the initial board structures of IPO firms?
3. Do the board structures of IPO firms become more in line with ASX best practice recommendations five years after listing?
4. Are the changes in board structures five years after listing related to post-IPO long-run performance?

1.4 Significance and innovation

This study contributes to the empirical literature on the governance role of boards of directors and the literature on initial public offerings in several respects. ***Firstly***, in light of the debates on the appropriate board structures, this thesis assesses the conformity of IPO firms' boards to ASX's best practice recommendations. We argue that board characteristics during an IPO are likely to be used as a signal of firm quality and this signal assumes greater than usual importance given that less public information is available about the issuing firms. In these circumstances, boards can be expected to take on characteristics that are optimally balanced between "insider" and

"outsider" interests, where insider refers to shareholders with close links to management and outsiders are the rest. Since investors are usually best placed to estimate the costs and benefits and have market-driven incentives to ensure the optimal practices are in place, comparison of actual board structures at IPO with the ASX best practice recommendations on company boards allows an assessment of whether and, if so, how far the "best practice" recommendations could distort the market outcome.

Additionally, this thesis reviews changes in board structures over time to determine how IPO firms' corporate governance structures evolve. This is an important contribution as there have only been a few studies on the evolution of IPO boards [e.g. Jain and Kini (1994), Mikkelson et al. (1997) and Balatbat et al. (2004)] despite the large amount of research on company boards, which are mainly "static in nature" (Denis & Sarin, 1999). This examination also allows us to determine if market forces lead IPO firms to adopt board structures that are more in line with ASX's best practice recommendations. Given that asymmetric information can lead to large underpricing that reduces vendors' wealth, IPO firms may aim to adopt a board structure that reduces the information asymmetry problem for vendors at the time of listing but that may not be optimal later on. Thus, this study provides evidence on this issue by comparing the board structures at the time of IPO and five years after listing, and tests if the changes in board structures are related to long-run aftermarket performance.

Secondly, this thesis provides incremental contributions to previous IPO studies in Australia, including Lee et al. (1996a) and Balatbat et al. (2004). Lee et al. (1996a) examine the initial underpricing and long-run post-listing returns to Australian IPOs between 1976-1989. The only measure of long-run returns used in their study is the market adjusted buy-and-hold return, which is likely to be insufficient given the widely documented firm size effect that has been found to be associated with share returns.

Thus, in addition to market adjusted returns, this study also estimates decile adjusted buy-and-hold returns to control for firm size. Further, in Lee et al.'s (1996a) study, they only incorporate variables, such as, issue size, time to listing, retained ownership, underpricing and underpricing squared, in the cross-sectional analysis of sharemarket returns to IPO firms. They do not examine the relationship between board structures of IPO firms and the aftermarket performance. Given that well structured boards are likely to be value-adding as argued by shareholder activists and corporate governance reformers, board structures are likely to have an impact on returns to IPO firms

This thesis also provides an extension to Balatbat et al.'s (2004) study that investigates the board of directors and the operating performance of Australian IPOs over the period 1976-1993. The incremental contributions made by this study include that, first, this thesis studies board structures of Australian IPO firms *at the time of listing* based on the information provided in prospectuses while Balatbat et al. (2004) examine similar board characteristics (including board size, leadership structure, and number of outside directors on the board) *at the first financial year* after initial listing. Though there may not be substantial changes in board structures from the time of listing to the first financial report, this study arguably provides a better measure of the signalling effect by boards of directors at the time of listing. In addition, this study examines the sharemarket performance of IPO firms both in the short-run and in the long-run while Balatbat et al. (2004) focus on IPO firms' operating performance.

Further, Balatbat et al. (2004) examine IPOs between 1976 and 1993 while this study tests IPOs over a more recent time period (1994-1999) where there are more IPO activities and the issue of corporate governance is more prominent (see next paragraph). In Australia, the number of IPOs was less than ten a year between 1976 and 1983 (Lee, 2003) while the average number of IPOs between 1994 and 1999 is much higher, at 53

a year. Although there was a rise in the volume of IPO activity between 1984 and 1987, it decreased sharply afterwards. The total new floats were at a peak high of $5 billion in 1987, which then decreased sharply to about $1 billion in 1988 and 1989, and halved in 1990 ($0.5 billion), possibly due to effect from the sharemarket crash in 1987 (ASX, 1997). From 1991, the volume of IPO activity recovered. The total new floats were $2 billion in 1991, which doubled to $4 billion per year[3] between 1992 and 1997, and doubled again to $9 billion in 1998, but fell back to $5 billion in 1999 (ASX, 2002). The statistics show that the sample period covered by this study (1994-1999) has more IPO activities than Balatbat et al.'s (2004) sample period.

In addition, between 1994 and 1999, corporate governance, especially corporate board composition and leadership, had been subject to much attention. In Australia, shareholder revolts at Goodman Fielder and Coles Myer in 1996 (Westfield, 1996), and the near collapse of Burns Philip in 1997 (Macleay, 1999) put companies' governance practices under the spotlight. Shareholder activists demanded governance reforms to make managers more accountable to shareholders and to rebuild trust.[4] The increased focus of shareholder activists, among others, on the board of directors suggests that over time investors would be more likely to factor in the quality of the board in their decisions to participate in an IPO. These events indicate the importance of corporate governance issues over the sample period (1994-1999) that this study examines.

Thirdly, this thesis adds to the current research by investigating the link between board characteristics (both at and after IPOs) and firm performance using a variety of performance criteria, including IPO underpricing, long-run aftermarket performance, and the likelihood of seasoned equity offerings. Despite the fact that the governance

[3] The privatisation of $8.6 billion by Telstra in 1997 is excluded.
[4] In recent years, the collapses of Enron and WorldCom etc in the US have also heightened public concern of corporate governance issues [Burton, Helliar, and Power (2004); Lucier et al. (2004)].

role of the board of directors has been extensively researched by diverse disciplines including management, sociology, economics and finance over the past five decades, the board's role and function in smaller, growing firms has received relatively little attention (Finkle, 1998). The board is likely to be a more critical governance variable in smaller, newly established firms than in mature firms because little public information is available about these IPO firms at the time of the issue. By moving away from mature, well-established firms and concentrating on IPO firms, this study complements the traditional focus on large firms.

One advantage of using IPO firms to examine the relationship between boards of directors and firm performance is that such relationship is likely to be strongest at the time of IPO, if it exists. This is because IPO firms are typically younger and smaller in size than more established firms. Due to the greater organisational complexity in larger firms, officers and boards of directors in large firms are more likely to be "influencers of events rather than controllers of certain outcomes" (Bourgeois, 1987, p. 347). Thus, tests based on IPO firms can provide a better picture of the relationship between board governance and firm performance (Daily & Dalton, 1993).

Moreover, given that the structure of the board is one of the important decisions that a firm considering going public must make, IPOs provide a stronger test for examining the relationship between board membership and firm performance compared with tests based on listed companies. For many issuing firms, the IPO is the first time they are required to establish a formal board of directors as part of the listing requirements (Certo *et al.*, 2001b) and they are most likely to adopt an "optimal" board structure given their incentives to maximise appeal to investors.

Furthermore, although the relationship between boards of directors and performance of IPO firms has been investigated by some scholars and practitioners in entrepreneurship [e.g. Finkle (1998); Mikkelson, Partch and Shah (1997)], previous studies have not examined the association between initial board structures and the likelihood of a SEO. This study expects that the board of directors may not only play a certification role at the time of IPO but the signalling effect may well extend to the time of seasoned equity offering. This is because higher quality IPO firms, presumably those that conform to ASX's best practice recommendations, are more likely to attract new investors and/or persuade old shareholders to increase their investments in the firms. Also, compared with low quality IPO firms, high quality IPO firms have greater chances of recouping the costs of IPO underpricing through equity reissuance. Thus, this study tests whether IPO firms that conform to the best practice recommendations are more likely to reissue equity after listing.

Fourthly, unlike most studies that focus on the US IPO market, this thesis uses an Australian data set. One reason that the Australian market is worth testing is that it is much smaller than the US market. A smaller investor base and local reputation effects may be more effective in fostering investor confidence than director independence. This institutional difference thus warrants an examination of the governance role of boards of directors in the Australian IPO market.

Finally, findings from this thesis will be of particular interest to investment bankers and entrepreneurs because it provides evidence on how board structures affect firm performance when going public and in the long-run. The findings will benefit practitioners in the formation of boards and help issuing firms increase their chances of success at IPOs.

1.5 Outline of the thesis

The remaining chapters of the thesis are organized as follows. Chapter 2 reviews the literature on corporate governance and, in particular, the board of directors, including board composition, board leadership, board size, and director ownership. The literature on IPO underpricing, seasoned equity offerings and long-run underperformance, and their relations with corporate governance are also reviewed. Chapter 3 discusses the hypotheses tested in this study. Chapter 4 describes the data used in this study, defines the variables and presents the descriptive statistics of the sample. Chapter 5 analyses the board structures and director characteristics of IPO firms at the time of listing and discusses whether they conform to ASX best practice recommendations. Chapter 6 presents the analyses and results of the tests on IPO performance and board structures at IPO, and the tests on the likelihood of a SEO and initial board structures. Chapter 7 analyses the changes in board structures after listing and how the changes are related to post-IPO long-run performance. Lastly, Chapter 8 contains a summary of results and conclusions.

Chapter 2

Literature Review

2.1 Introduction

This chapter provides a review of the literature on corporate governance issues, IPOs, and the reissuing decisions (i.e., the seasoned equity offerings). In Section 2.2, we review the ASX's new corporate governance guidelines on board structures and discuss the issues that were raised relating the recommended practices. Section 2.3 discusses the process of going public and how the role of corporate governance comes into play. Section 2.4 provides a review of the theories and empirical evidence on several board and director attributes, including board composition, board leadership, board size and the share ownership of directors, that have been considered in previous studies as relating to firm performance.

Two pricing anomalies related to IPOs are (1) abnormally high initial returns (or short-run underpricing) and (2) long-run underperformance. IPO underpricing reduces initial vendors' wealth and long-run underperformance results in a wealth loss to all shareholders. Thus, in Section 2.5, we review the empirical evidence on IPO underpricing and the information asymmetry theory of underpricing. Section 2.6 then reviews the literature on the relationship between initial public offerings and seasoned equity offerings and discusses how board governance at the IPO may affect the reissuing decision. Section 2.7 discusses the empirical evidence on post-IPO long-run underperformance and the theories that have been proposed to explain it. Section 2.8 contains a summary of how the literature reviewed relates to this study.

2.2 ASX best practice recommendations on board structures

Principle Two of the ASX's new corporate governance guidelines deals directly with the board structure, and states that a company should structure the board to add value. In this regard, Recommendations 2.1 and 2.2 are that a majority of the board should comprise independent directors, and the chairperson should be an independent director, respectively. Consistent with this last point, Recommendation 2.3 is that the roles of chairperson and chief executive officer be performed by different individuals.

An independent director, as defined in the new guidelines, is a non-executive director who is not a substantial shareholder of the company or associated with a substantial shareholder of the company. They should have not been employed in an executive capacity by the company within the last three years, nor been a principal of an adviser, consultant to the company, a material supplier or customer of the company, or have a material contractual relationship with the company. In addition, they cannot have served on the board for a period, which could materially interfere with the director's ability to act in the best interests of the company. They should also be free from any interest that could materially interfere with the director's ability to act in the best interests of the company (ASX, 2003). Directors who are either a former employee of the firm or affiliated with managers through current or potential future business or family ties are classified as "grey" directors. Grey directors are not considered independent. The new guidelines also encourage disclosure to the board of family ties and cross-directorships that may compromise independence of directors even though they do not form part of the new guidelines' definition of "independence".

Greater independence in nomination, audit and remuneration committees is promoted by the new guidelines as well. For example, Recommendations 2.4, 4.3, and 9.2 state that these committees should comprise a majority of independent directors and should

have an independent chairperson. Each committee should have *at least* three members.

Interestingly, apart from a statement that "the board be of a size and composition that is conducive to making decisions expediently, with the benefit of a variety of perspective and skills" and that the "size of the board should be limited so as to encourage efficient decision-making" (ASX, 2003, p. 22), there are no specific recommendations on how large or small a company board should be in total. However, the specific recommendations on the size of the nomination, audit and remuneration committees and the major recommendations from Principle 2 implicitly impose a minimum board size requirement. The relevant recommendations that have a bearing on board size include:

- there should be at least three members in each committee, and that the majority should be independent directors (Recommendations 2.4, 4.3, and 9.2);
- the three members of the audit committee must all be non-executive directors (Recommendation 4.3);
- the audit committee should have an independent chairperson who is not chairperson of the board (Recommendation 4.3);
- the majority of board members should be independent (Recommendation 2.1); and
- the chairman of the board must be an independent director (Recommendation 2.2).

Read together, it is reasonable to infer that if a company wishes to have at least two executive or grey directors on its board to provide firm-specific knowledge that can only be obtained by close association with the company, the best practice recommendations require that there be at least five board members, with three of them being independent directors and, *by inference*, one of the three would be the

chairperson. However, a board with just five members would entail substantial overlap among the membership of the three recommended subcommittees. Indeed, the overlap would be so substantial that the independence of the subcommittees could reasonably be called into question. For instance, a board with five members that included two non-independent directors would need to have all three independent directors serve on the audit committee. However, the purpose of Recommendation 4.3, that the chairperson of the audit committee not be the chairperson of the board, would be subverted if the board's chairperson were also a member of the audit committee. Consequently, each company needs four independent directors, bringing to six, the total number of board members that are required for compliance with the spirit of the recommendations.

Since the release of new guidelines, several issues have been raised. One relates to the prescriptive nature of the guidelines that particularly lower the practicality for smaller companies. The other major issue relates to the recommendation that boards comprise a majority of independent directors.

The Business Council of Australia has indicated that it has "concerns that some of the provisions may be overly onerous on small business" (Buffini, 2003a). There is an enormous divide in size between the top 100 companies listed on ASX and the rest. The top 100 industrial companies comprise about 86% of the market capitalisation of the total of 1,112 listed industrial companies (source: ASX data compiled at close of trading on 24 October 2003). The costs of having a majority of independent directors on the board may not be a significant cost for companies within, say, the top 100, but may well be for those in the bottom.

Even though all companies have the choice of “explaining” rather than “complying”, smaller companies may be perceived as unacceptably risky by not complying. The managing director of Beerworth & Partners, Bill Beerworth, has observed that “’if not, why not’ is fine for the majors, but fund managers may say ‘if not, goodbye’ to the mid-caps” (Buffini, 2003b).

To protect smaller companies, Michael Chaney, and the former Australian Securities and Investments Commission chairman, Alan Cameron, have called for a two-tier system that is currently adopted by the UK (Pheasant & Buffini, 2003). In the UK, companies outside the top 350 are exempted from the requirement of having at least half the board being independent. There has been comment that failure to exempt small companies in Australia will lead many to reconsider their listing status as “the benefits of listed are fast being outweighed by expensive listing requirements and red tape” (Nicholas, 2003).

The move by the ASX to push for a majority of independent directors on the board has also been criticized on the grounds that the definition of independence is too narrow (Cameron, 2003). It has been argued that the new guidelines may exclude very able people or people such as accountants and lawyers who have some connections with the company and so have a better understanding of the business (Lawson, 2003). The real issue should be whether directors are competent in monitoring companies rather than their independence. The HIH royal commissioner, Justice Neville Owen, suggested that “the critical question is not so much whether on objective criteria the individual is ‘independent’ but rather whether he or she is subjectively capable of exercising independent judgement” (Cameron, 2003).

2.3 Initial public offerings and corporate governance

Going public is an important stage in the life cycle of a company. For most firms, the primary reasons for going public are to raise the capital required through an equity issue and to develop a market in which founders and other shareholders can later sell their shares and to realise some proportion of the firm's wealth (Ritter & Welch, 2002). However, there are also costs associated with the IPO process. There are substantial one-time costs such as legal, auditing and underwriting fees, and the dilution of equity wealth associated with IPO underpricing (Ritter, 1998). In short, an IPO is not only a key stage in organizational growth but also a step towards a greater separation of ownership and control that potentially intensifies the agency problem (Filatotchev, 2002).

As part of the IPO process, issuing firms need to prepare themselves for the scrutiny of the regulator and investment community. Baker and Gompers (2003, p. 569) note that "establishing effective corporate governance that protects minority shareholders is arguably most important at the time of an initial public offering, because the IPO represents the first time that most firms raise equity from dispersed investors". Jenkinson and Ljungqvist (1996) also suggest that agency problems are particularly pertinent to small firms considering going public, as opposed to more established firms making rights issues, because of the resulting higher agency costs after a firm is taken public. The choice of governance structure thus represents one of the most crucial decisions that issuing firms need to make at the time of IPO.

Corporate governance, as defined by John and Senbet (1998, p. 372), "deals with mechanisms by which stakeholders of a corporation exercise control over corporate insiders and management such that their interests are protected". The separation of management control and share ownership provides managers with the incentives to

entrench their control benefits at the expense of shareholders, giving rise to the need for corporate governance. Because agency costs are ultimately borne by companies' owners, the high uncertainty inherent in the IPO process can discourage investors from participating in IPO issues unless effective governance is in place to safeguard their investment. By enhancing investor confidence, issuers can benefit from having greater access to funds and being disassociated from the potential risk of fraud that many investors fear (Burton et al., 2004).

One mechanism for overseeing the firm is through the monitoring by boards of directors. As pointed out by Filatotchev and Bishop (2002, p. 942), "When it comes to approaching investment banks and considering flotation, the directors may find that the composition and competence of the board is crucial for a successful flotation". Viewing the board as an effective element of corporate governance, agency theorists argue that the board provides important internal control that helps mitigate agency conflicts and align the interests of shareholders and managers. Kesner and Dalton (1986, p. 18) also note that "the ultimate responsibility for corporate performance … rests 'squarely on the shoulders of the board of directors: final responsibility cannot be delegated'" (Vance, 1983, p. 13). Further, Fama and Jensen (1983) suggest that the board's effectiveness in disciplining management's opportunistic inclinations is critical to the survival of all corporations characterised by the separation of ownership and control.

The main responsibility of the board is to monitor and control top management. More specifically, board members are responsible for selecting the CEO, assuring managerial competency, evaluating the performance of management, maintaining managerial integrity through continuous auditing, and dismissing incumbent CEOs (Kesner & Dalton, 1986). Accordingly, reviewing the structure of the board at the time of an IPO

is particularly important and can help evaluate the appropriateness of ASX's best practice recommendations.

2.4 Board governance

As initial vendors of shares in IPO firms have better information about their firms' value and risk than outside investors, IPOs are associated with great information asymmetry. Certo (2001b) posits that the board may act as a signal of quality at the time of IPO to reduce the information asymmetry problem and mitigate initial underpricing and long-run underperformance. Whincop (2001, p. 10) argues that "the board is a vital part of information conduits to IPO markets" because the board as part of the issuing firms' governance structures is evaluated by underwriters when making firm valuations. According to Chemmanur and Paeglis (2005), outside directors can influence firm quality in two ways: not only can outside directors bring in new inputs and perspective to managers, but also they can provide connections to outside parties, such as underwriters, financial institutions, and auditors.

Howton, Howton and Olson (2001, p. 102) point out that "a strong board of directors should act as a monitor for shareholders and deter managers from taking actions that negatively affect shareholder wealth". Given the monitoring role of the boards, a strong board should enhance shareholder value and help build investor confidence in the issuing firm and improve its appeal to investors. Following this view, this study argues that the structure of the board can influence investors' perceptions of the issuing firm and, if properly arranged, can act as endorsements of issuing firm quality at the time of listing when high information asymmetry exists between potential investors and corporate insiders. The strength of board monitoring signals if managerial decisions and outside shareholder interests are closely aligned, thereby serving as a "certification" of firm quality at IPOs. Thus, this study predicts that boards that are

structured in accordance with ASX's best practice recommendations (e.g. having an independent board and a dual leadership structure) at the time of IPO are associated with less underpricing, better long-run performance, and higher likelihood of SEOs. The following thus reviews the theory and empirical evidence on board composition, board leadership, board size, and director ownership.

2.4.1 Board composition

Board composition is a central issue in corporate governance. As the CEO is almost always the person who decides on what information to be provided to the board, the effectiveness of a board can be hindered by information problems between management and the board (Jensen, 1993). The argument for having inside directors on the board is thus based on the fact that insiders possess a superior amount and quality of information than outsiders. Through their association with the company, inside directors serve an important communication link between the management and other board members, promoting information transfer and improving the effectiveness of decision control (Kesner, 1988). With this view, having insiders on the board is argued to be associated with more effective board monitoring of the CEO and better firm performance. Vance (1978) and Kesner (1987) have found evidence in support of this argument. Both report a direct relationship between the proportion of *inside* directors on the board and corporate performance.

The agency literature, on the other hand, proposes a contrasting view that the independence of the board from the management is an important means to mitigate conflicts of interests between managers and shareholders. The legal obligations of directors to oversee the management on behalf of shareholders suggest that outside directors are more likely to provide dispassionate assessment of the firm's CEO (Hermalin & Weisbach, 1991). This is because outside directors are less likely to

collude with management. Therefore, according to the agency theory, the objectivity of outside directors and their independence from the top management are essential for effective board monitoring.

By measuring the changes in share prices around the announcement of new outside directors, Rosenstein and Wyatt (1990) find support for the agency perspective. Specifically, they find a significant increase in firm value when an additional outside director is appointed to the board.[5] The reason that inside directors (who are also full-time employee of the company) are questioned for their ability to provide effective oversight is that they may be subordinates of the CEO. It is doubtful if they can effectively review and evaluate the performance of their superior and of their colleagues while having to continue to work with them (Feure, 1965).

Outside directors are also perceived as value-adding because they have the incentives to develop or maintain reputations as competent business people and experts in decision control. This is because the value of their human capital depends on their performance as effective monitors, as suggested by Fama (1980) and Fama and Jensen (1983). Several studies have found support for the argument that the market for outside directorships motivates outside directors to be effective monitors. Kaplan and Reishus (1990), for example, find that CEOs of firms that are involved in dividend cuts tend to hold fewer additional outside directorships compared with CEOs of firms that do not reduce their dividends. In addition, Gilson (1990) shows that outside directors who resign from financially distressed firms have significantly less director appointments subsequent to their resignations. Further, Farrell and Whidbee (2000) find that outside directors with a relatively large equity stake in the firm are awarded through job

[5] However, as suggested by Bhagat and Black (2002), this increase in share prices may be a contaminated signal. It may be a signal of company's initiative to deal with its business problems rather than a reflect of value-adding from having a more independent board.

retention and gaining additional outside directorships after removing poorly performing CEOs.

Moreover, the resource dependence theory suggests that organizations can benefit from having outside directors on the board because they have board experience with different companies and industries (Kesner, 1988). Outside directors can utilize their external associations to help the organizations secure scare resources (Pfeffer & Salancik, 1978).

In summary, the impact of board composition on firm performance can be considered from three perspectives – service, resource dependence and control, which are not necessarily mutually exclusive (Pfeffer & Salancik, 1978). The service component recognises the advisory service of outside directors that inside directors may not be able to match up because of the wider experience and exposure of the former. The resource dependence component refers to the ability of outside directors to use their wider network to extract important external resources. The control factor is concerned with the monitoring role of the board (Daily & Dalton, 1993).

Empirical research on the effect of board composition on firm performance has generally adopted two approaches (Bhagat & Black, 1999). The ***first*** approach involves examining directly the relation between board composition and firm performance. A number of studies have examined the effectiveness of board composition using various performance measures (including Tobin's Q, ROA, and ROE), share price returns and meta-analysis, but there is a lack of consistency in results.

Early work by Schellenger, Wood and Tashakori (1989) reports a positive relationship between outside director representations and financial performance. Ezzamel and

Watson (1993), using a sample of UK firms, also report a positive relation. However, several other studies [e.g. Baysinger and Butler (1985); Fosberg (1989)[6]; Hermalin and Weisbach (1991); Mehran (1995); Bhagat and Black (2002)] using accounting performance measures have reported insignificant same-year relationship between firm performance and board composition. Their results are in direct contrast to the popular call for more director independence by board reform advocates and the stock exchange. For example, the ASX best practice recommendations strongly recommend companies to have a majority of independent directors on the board (ASX, 2003).

Bhagat and Black (2002) who further examine the relationship between long-term market performance (using market adjusted share price returns) and board composition also do not find any relationship. By drawing upon correlation results from 54 empirical studies on board composition, Dalton et al. (1998) perform a meta-analytic review in an attempt to reconcile the conflicting findings. Once again, no significant relationship between board composition and financial performance, measured by both market performance and accounting performance, is found.

Some studies, including Yermack (1996), Agrawal and Knoeber (1996), and Barnhart and Rosenstein (1998), even find evidence of a negative relationship between outside directors and firm performance, measured by Tobin's Q. Fosberg (1989) also finds that firms with a majority of outside directors have significantly lower sales-to-total assets ratios compared with firms that do not have a majority of outside directors on the board.

[6] Fosberg (1989) reports no relationship between the proportion of outside directors on the board and various firm performance measures (including the ratio of number of employees to total assets, ratio of selling, general and administrative expenses to total assets, and ROE) except for one measure, sales to total assets ratio. Fosberg (1989) reports a lower sales to total assets ratio for firms having a majority of outside directors.

Bhagat and Black (2002) argue that one possible explanation for the lack of consistency in results is that firm performance is a noisy measure and can be influenced by a number of other factors. Bathala and Rao (1995) suggest that since board composition is just one of the governance mechanisms that may be employed by a firm, the mixed evidence may be attributed to the fact that optimal board composition may depend on other corporate governance characteristics. Both Hermalin and Weisbach (1991) and Bhagat and Black (2002) have attempted to control for the spurious relation between board composition and performance using simultaneous-equation methods and lagged performance as an instrumental variable. However, even after taking into account the endogeneity of board composition, both studies still report no significant relation between board composition and firm performance.

Empirical research on the lagged relationship between board composition and firm performance also provides mixed evidence. An early study by Baysinger and Butler (1985) finds a positive lagged relation between board composition in 1970 and firm performance in 1980, measured by industry-adjusted return on equity. However, Ferris, Jagannathan, and Pritchard (2002) are not able to find a significant relation when using a shorter time frame, with board composition measured in 1995 and the market-to-book ratio measured in 1997.

In this thesis, we do not need to consider the endogeneity problem when examining the performance of IPO firms and their board structures at the time of listing because the board structures of IPO firms are predetermined at the time the prospectuses are lodged with ASX. This thus suggests that the aftermarket performance is influenced by initial board structures rather than the other way round.

The ***second*** approach to examine the effect of board composition on firm performance is to relate board composition to certain corporate events such as CEO removals, greenmail and takeover bidder returns. This type of studies can provide insight into the effectiveness of board composition on particular board tasks. Results from these studies have provided a more consistent result in favour of outside directors compared with the results based on the first approach where firm performance measures are used. For example, Weisbach (1988) finds that outside-dominated boards are associated with higher CEO removals. Kosnik (1987) uses payment of greenmail as a proxy for board's ineffectiveness and finds that boards with more outside directors are more effective in resisting greenmail. Bhagat and Black (2002) suggest that one reason this type of research tends to have statistically significant results is that they use tractable data. These studies have identifiable event dates and sharemarket prices available for estimating abnormal returns. However, there is one major drawback associated with this approach. That is, because only some specific events are studied, this type of studies can not provide an overall picture of how board composition affects firm performance.

Compared with studies on the board governance of more established firms, there is considerably less empirical evidence on the relationship between board structures of IPO firms and aftermarket performance. Studying the board composition of IPO firms can give particularly valuable insights and provide a stronger test for the relationship between board composition and firm performance. This is because at the time of IPO, issuing firms have the greatest incentive to adopt a governance structure that appeals most to potential investors and that maximises their returns from the offerings. Thus, issuers would arguably adopt a board structure that they deem as "optimal" in order to attract external investors.

As IPO firms are typically smaller in size, the study by Daily and Dalton (1993) that focuses on a sample of smaller firms can shed light on the relationship between board structures and the performance of IPO firms. Based on canonical correlation analyses, Daily and Dalton (1993) report a significant relation between board composition and firm performance, measured by ROA, ROE and P/E ratio. Their results imply that small corporations do value the service and resource dependence functions provided by the independent board.

Both studies by Mikkelson et al. (1997) and Balatbat et al. (2004) examine the post-listing operating performance of IPO firms and its relation with board structures. Mikkelson et al. (1997) provide mixed evidence on the relationship between board composition and firm performance based on a sample of US IPO firms during the period 1980-1983. Their univariate analysis shows no significant difference in performance between firms that have a majority of outside directors on the board and those that do not. As for the multivariate analysis, even though Mikkelson et al. (1997) find some evidence of a relationship between board composition and firm performance based on OLS regressions, the direction of relationship is mixed. On the one hand, a significant *positive* relationship is found between the proportion of outside directors at the time of IPO and the industry-adjusted operating return one year after the offering. On the other hand, a *negative* relationship is reported between board composition and changes in operating performance from the first to the fifth year after offerings. One explanation for the mixed results is that the possible endogeneity between governance variables and firm performance has not been controlled for.

Balatbat et al.'s (2004) study is based on Australian IPOs between 1976 and 1993. Using up to five years of post-listing operating performance measures, they do not find evidence of a relationship between board composition and post-IPO firm performance

based on both annual and pooled OLS regressions. In contrast to Balatbat et al.'s (2004) study, this thesis focuses on a more recent sample period from 1994 to 1999 and examines the relation between board composition and sharemarket performance.

Thus, the other approach to examine post-IPO firm performance, instead of focusing on the operating performance, is to use the sharemarket performance, which is adopted by Finkle (1998). Finkle (1998) focuses on the biotech industry and finds no significant relationship between aftermarket performance (both one year and two years after IPOs) and board composition, measured by affiliated directors from the top 20 venture capital firms and affiliated directors from prestigious underwriters. This result, however, may not be generalised to other industries due to industry effects. Zeckhauser and Pound (1990) suggest that monitoring of management is more difficult in technology-based industries because of the high intensity of R&D activities, which make the assets in these industries highly firm-specific.

Interestingly, both Howton et al. (2001) and Certo et al. (2001b) that focus on the relationship between boards of directors and initial IPO returns, instead of long-run aftermarket performance, find that inside directors who are more familiar with firms' operations and growth opportunities can better serve IPO firms than independent directors. Specifically, Howton et al. (2001) examine 412 IPO firms in the US over the period 1986-1994. They use a dummy variable to proxy for board independence, which takes the value of one if the percentage of independent directors[7] on the board is greater than 50% and zero otherwise and find that outsider-dominated boards are associated with greater underpricing, significant at the 5% level. Certo et al. (2001b) also examine US IPOs but over a different time period between 1990 and 1998. Their

[7] Howton et al. (2001) define an independent director as a director who is independent of the firm and its operation.

final sample consists of 748 IPO firms and they measure independence of the board by the proportion of outside directors[8] on the board. Similarly, Certo et al. (2001b) report a positive relationship between board independence and underpricing. Since underpricing represents a wealth loss for initial shareholders, the positive relationship between board independence and initial IPO returns (or underpricing) implies a preference for inside directors by IPO firms.

Given that no studies, to our knowledge, have investigated the relationship between the board composition of IPO firms and the degree of underpricing in Australia, this thesis contributes to the literature by providing evidence outside the US market. In addition, this thesis provides an assessment of the appropriateness of ASX's best practice recommendations, which suggest for a majority of independent directors, from investors' point of view.

2.4.2 Board leadership

Should companies separate the roles of CEO and chairman? An important consequence of becoming a public company is the separation of ownership from control. From the agency theory perspective, when the roles of chairman and CEO are combined to one individual (i.e., unitary leadership), the tasks of decision management and decision control are not separated (Fama & Jensen, 1983)[9]. The chairman-CEO is likely to have too much influence over other board members. This may not only compromise their independence but also lead to less effective monitoring by the board of directors. Consequently, firm performance may be hampered (Daily & Dalton, 1997).

[8] Certo et al. (2001b) define an outside director as a non-management director with no personal or professional association with the firm or the management.

[9] Decision management includes the initiation and implementation of investment proposals, and decision control involves the ratification and monitoring of investment proposals (Fama & Jensen, 1983).

On the other hand, the organization theory and stewardship theory take a different perspective, arguing that combining the roles of CEO and chairman can lead to superior firm performance. “The stewardship theory argues that managers are good stewards of the corporation and diligently work to attain high levels of corporate profit and shareholder returns” (Donaldson & Davis, 1994, p. 159). Advocates of these theories suggest that because of the centralization of authority, unitary leadership eliminates the potential for conflicts between the chair and the CEO, thereby creating unambiguous leadership that can facilitate internal efficiencies and result in better firm performance (Daily & Dalton, 1997).

The information flow theory also supports unitary leadership. The theory suggests that when the CEO is also the chairman, he/she can provide the board with accurate and timely information necessary for decision-making (Anderson & Anthony, 1986). With enhanced information flow and communication between the board and the management, the information flow theory argues that unitary leadership is associated with superior firm performance.

Another stream of theory related to a firm’s leadership structure is the normal succession theory suggested by Vancil (1987). The theory argues that the adoption of a dual leadership structure (i.e., the roles of chairman and CEO are performed by different individuals) is a normal part of the succession process to replace a retiring chairman-CEO. Therefore, it does not serve to reduce agency costs, nor will it have any impact on firm performance (Fosberg & Nelson, 1999).

Empirical evidence on board leadership does not unequivocally support a particular theory. Donaldson and Davis (1991), for example, find support for the stewardship theory in that firms relying on unitary leadership achieve higher shareholder returns,

measured by ROE, than those adopting dual leadership. On the other hand, Rechner and Dalton (1991) use multivariate analysis of variance to compare the performance of firms with dual leadership and those with unitary leadership and find that based on three accounting measures, ROE, ROI, and profit margin, firms with a dual leadership structure outperform those with a unitary leadership structure. However, their study fails to control for other variables (such as ownership structures, industries and firm size) that may also have an impact on firm performance and the leadership structure (Brickley et al., 1997). Pi and Timme (1993) who examine a sample of banks also find support for the dual leadership structure. Specifically, they report that cost efficiency and ROA are higher when the roles of CEO and chairman are separated. However, there is one potential limitation with their study, that is, generalisation of results to other industries.

Further, Fosberg and Nelson (1999) test if agency theory or normal succession theory explains a firm's leadership structure. They examine the performance of firms before and after a change in leadership structure occurs. As agency theory implies that dual leadership reduces agency costs, poorer performance is expected prior to a change to dual leadership and an improvement in firm performance is expected after switching to dual leadership. On the other hand, normal succession theory implies that firm performance should remain relatively stable both prior to and after the leadership structure changes. Using the ratio of operating income before depreciation, interest and taxes to total assets, and market-to-book ratio as the measures of firm performance, Fosberg and Nelson (1999) find support for both theories. Firms with poor performance prior to a leadership structure change show significant improvements in performance after changing to dual leadership, consistent with the agency theory. However, Fosberg and Nelson (1999) also find that firms showing stable performance prior to a change in leadership structure do not experience better performance after the

change, and this is consistent with normal succession theory.

Brickley, Coles, and Jarrell (1997) also find evidence supporting the normal succession theory in that firms often use this process as a reward for outperforming CEOs. They find little evidence that unitary leadership promotes managerial entrenchment. In addition, Brickley et al. (1997) employ both accounting and stock performance measures (i.e., return on capital and stock return) to test the relationship between leadership structure and firm performance and an event-study to examine the sharemarket reactions to changes in leadership structure. Overall, they do not find evidence that firms with a dual leadership structure outperform those with a unitary structure, contrary to the new conventional wisdom.

There are other studies that report no significant relationship between board leadership and firm performance. An early study by Berg and Smith (1978) uses a single-year sample of Fortune 200 companies and finds no difference in firm performance between firms adopting unitary and those with dual leadership. Rechner and Dalton (1989) examine shareholder returns over a five-year period (1978-1983) and again find no significant difference in performance between firms with dual leadership and those with unitary leadership. Baliga, Moyer and Rao (1996) focus on the announcement effects and changes in operating performance[10] when a firm's leadership structure changes. Their results show no evidence of significant announcement effects or difference in the operating performance associated with changes in leadership structures. Baliga et al. (1996) also compare long-term firm performance, measured by industry-adjusted standardized market value added, of firms adopting dual leadership and of those adopting unitary leadership consistently throughout the sample period.

[10] Baliga, Moyer and Rao (1996) measure the operating performance by ROE, ROA, operating cash flow to total assets, and operating cash flow to sales.

They find no significant difference in the performance of these two groups. Further, Dalton et al. (1998) employ a meta-analysis based on the correlation analyses of 31 empirical studies on board leadership and find no relationship between board leadership and firm performance.

A more recent study by Lucier, Schuyt and Handa (2004), based on a sample of global top 2,500 public companies, even reports evidence that dual leadership is associated with lower firm performance rather than enhancing firm performance. They find that companies adopting a dual leadership structure have lower performance, measured by total shareholder returns and net income growth rates. Lucier et al. (2004) argue that the superior firm performance may be driven by the increased authority of a chairman-CEO that according to the information flow theory allows timely decisions to be made. Because executive chairmen have greater experience, power and job security in the company, they can better afford to make short-term changes that do not necessarily pay off and/or undertake risky changes within a company.

One possible explanation for observing conflicting findings for the relationship between leadership structures and firm performance is that the performance measures used by these studies may not be suitable for detecting the effect of different leadership structures on firms (Fosberg, 1999). Fosberg (1999) argues that aggregate firm performance measures, such as, the return on firms' shares or accounting profits, are potentially affected by other extraneous factors such as interest rates and government policies, that are unrelated to leadership structures and have not been controlled for. In addition, different performance measures have been used by different studies (Baliga et al., 1996). Earlier studies [e.g. Rechner and Dalton (1991)] also did not control for industry effects or other moderating governance factors.

Thus, another stream of research on board leadership is to examine the governance role of dual leadership in non-financial outcomes, such as poison pills and CEO compensation (Fosberg, 1999). Mallette and Fowler (1992) find that dual leadership enhances the effectiveness of board monitoring. Fewer poison pills are passed under a dual leadership structure than under a unitary structure. However, such effect is moderated when the proportion of independent directors on the board is high. Fosberg (1999) studies the effect of leadership structure on CEO compensation. He also finds support for dual leadership; a chairman-CEO is more likely to extract excessive compensation than when the two roles are separated. Bhagat and Black (2002) observe that while this research approach is not affected by the type of extraneous factors as in studies that examine firms' financial performance, it is not able to tell us how board leadership structures affect overall firm performance.

Examining IPO firms can arguably provide a clearer relationship on firms' leadership structures and their performance because the IPO firms are typically younger and smaller in firm size. In other words, their organisational structures are less complex. Thus, the effect of leadership structure on firm performance can be a cleaner test. A number of studies [e.g. Howton, et al. (2001); Certo et al. (2001b); Filatotchev and Bishop (2002)] have tested the relationship between board leadership and IPO underpricing and found an insignificant result. Balatbat et al. (2004), on the other hand, based on a sample of Australian IPO firms find some support for a positive relationship between dual leadership and firm performance. The positive relationship is, however, significant only in the second year post-listing and in the pooled regression across the five-year post-listing years.

2.4.3 Board size

Another aspect of board structure is board size. The impact of board size on firm performance can be considered from the three perspectives – service, resource dependence and control (Pfeffer & Salancik, 1978) that have been discussed earlier under the board composition section. Agency theory suggests that the service and, in particular, the control functions of directors will be less effective when the board is large due to agency problems (such as director free-riding) (Hermalin & Weisbach, 2003).

Both Jensen (1993) and Lipton and Lorsch (1992) suggest that membership of the boards should be limited to about eight people in order for the boards to function effectively. From the strategic decision-making perspective, smaller boards are associated with group cohesiveness and more efficient decision making (Mak & Roush, 2000). Firstenberg and Malkiel (1994) argue that when the board gets beyond eight members, there will be less participation and candid discussion among board members. The board will also loose focus and become less efficient in decision-making because larger groups tend to develop factions and coalitions that inhibit reaching consensus and timely decisions (Goodstein et al., 1994). Advocates of small boards also argue from the organizational behaviour theory perspective that when group members grow relatively large, there will be losses associated with productivity (Yermack, 1996). In summary, larger boards are associated with increased problems of communication and coordination, and decreased ability of the board to control management that deepen the agency problem (Eisenberg et al., 1998).

Reducing board size has also been used as a way of improving troubled companies by institutional investors, dissident directors and corporate raiders (Yermack, 1996). Kini, Kracaw and Mian (1995) report that after successful tender offers for underperforming

firms, the board size reduces. Because board size may be influenced by a number of other factors, Yermack (1996) finds that after controlling for firm size, industry membership, inside ownership, growth opportunities and alternative corporate governance structures, smaller boards are associated with better firm performance, measured by Tobin's Q, for a sample of large US corporations.

Using a different sample set – small and midsize Finnish firms, Eisenberg, Sundgren and Wells (1998) report a similar finding to Yermack's (1996) using industry-adjusted ROA as the firm performance measure. Conyon and Peck (1998) conduct a similar test using samples from European economies, including the UK, France, the Netherlands, Denmark and Italy. Their results also show a negative relationship between board size and firm performance, measured by ROE and Tobin's Q, even though the results are not statistically significant for all countries and some are only marginally significant. A more recent study by Bhagat and Black (2002) again finds only some evidence of the negative relationship reported by Yermack (1996), depending on the performance measures used. A significant negative relation with board size is observed when the performance is measured by sales to assets ratio and a marginally significant negative relation is reported when Tobin's Q is used.

An alternative argument for larger boards is based on the resource dependence theory, which states that larger boards are associated with better firm performance (i.e., a positive relation) because the size of the board is related to a firm's ability to obtain critical resources (Pfeffer, 1972). Research on board interlocks [e.g. Bazerman and Schoorman (1983); Burt (1980)] also suggests a positive relationship between board size and firm performance because larger boards can provide more board interlocks that enable more effective resource acquisitions. Having a larger board also means that the board is less susceptible to the influence of the CEO (Ocasio, 1994) and this

ensures the board's independence from the management. Chaganti, Mahajan and Sharma (1985) compare the board size of 21 pairs of failed and non-failed firms and find that non-failed firms tend to have bigger boards compared to failed firms, showing support for larger boards.

Other studies that find some evidence supporting a larger board include Ferris, Jagannathan and Pritehard (2002), and Mak and Li (2001). Ferris et al. (2002) find that lagged board size in 1995 and market-to-book ratio in 1997 are positively related, but the result depends on the control variables used. The other study by Mak and Li (2001) is based on a sample of Singapore firms. Their study reports a significant positive relationship between board size and Tobin's Q when OLS regression is used. However, they find an opposite directional relationship when two-stage-least-squares regression is employed.

Bhagat and Black (2002) suggest that one possible explanation for the conflicting findings on the relationship between board size and firm performance is the endogeneity of some other factors in the firm performance model that may be sensitive to whether an OLS or a simultaneous equations method is used. Board size may be endogenous because firm performance may not only have an influence on board structures but also may itself be influenced by the actions of previous directors. Beiner et al. (2004) further suggest that even though some studies [e.g. Eisenberg et al. (1998)] have used simultaneous equations with board size and firm performance as the dependent variables, they fail to consider the complex interrelationships between different corporate governance mechanisms. There may be a substitution effect between board size and other governance mechanisms such as board composition and board leadership.

In terms of the evidence in the IPO context, Finkle (1998) has examined IPOs in the biotechnology industry and finds no relationship between board size and the aftermarket IPO performance (for both one and two years following initial listing). The empirical evidence on the relationship between board size and short-term underpricing is also mixed. Certo et al. (2001b) report a significant negative relationship between board size and underpricing in favour of larger boards while Howton et al. (2001) do not find any significant relationship.

2.4.4 Director ownership

Both the agency theory hypothesis (Jensen & Meckling, 1976) and the signalling hypothesis (Leland & Pyle, 1977) suggest that firms with higher director ownership will have better firm performance. The agency theory suggests that the effectiveness of board monitoring depends on the ability of directors to identify the interests of company's shareholders and their skills in assessing management performance (Kosnik, 1987). Kosnik (1987) argues that directors' relative ownership in the company can reinforce their monitoring function because as the director ownership increases, the interests of insiders and outside shareholder become more closely aligned. This is the notion of "financial dependence" by board members, which suggests that share ownership or financial commitment by directors can motivate them to become more active in company's strategic decisions. Accordingly, high director ownership at the time of IPO is likely to send positive signals to outside investors, leading to better firm outcomes, in terms of lower underpricing and higher post-IPO long-run performance.

Kosnik (1987) uses greenmail payment as a proxy for the board's ineffectiveness and finds a negative performance effect with outside directors' shareholdings. His result thus suggests that high director ownership is not associated with better firm performance. Kosnik (1987) argues that this finding could be due to the narrowed

focus of the study that cannot be generalised to other samples. In addition, Kosnik (1987) suggests that the equity ownership of directors may not have the same motivational effect as managerial ownership due to the relatively small equity interest by directors.

Kesner (1987), on the other hand, finds partial support for the financial dependence perspective. Kesner (1987) examines the relation between directors' share ownership and firm performance of Fortune 500 companies. He finds that directors' holdings have a significant impact on firm performance, but only for firms in rapid growth industries. Balatbat et al. (2004) who trace the board structures of Australian IPO firms for five years after going public also report some evidence of a positive relationship between director ownership and firm performance. Specifically, they find that firms with high director ownership (i.e., in the highest quartile) significantly outperform those with low director ownership (i.e., in the lowest quartile) but only in the second and fourth year after listing.

A recent study by Bhagat, Carey and Elson (1999) provides stronger support for the financial dependence perspective. Not only do they find a positive relationship between director ownership and firm performance, but they also report a positive relationship between the dollar value of a director's personal equity holdings and the likelihood of a disciplinary-type CEO turnover in a poorly performing company. The latter finding suggests that the positive relationship between director ownership and firm performance is due to better management monitoring by the board rather than due to the fact that directors know better about the company's prospect and increase their holdings when they anticipate future company success. In short, Bhagat et al.'s (1999) study confirms the linkage between high director ownership, effective monitoring and better firm performance.

As mentioned earlier, the potential effect of director ownership in IPOs can also be considered from the signalling perspective. Leland and Pyle (1977) argue that due to the high informational differences between issuers and potential investors at IPOs, retained ownership by insiders can be used by issuers to signal the quality of an IPO. This is because directors may have insider information that is unavailable to outside investors. Changes in their ownership may thus operate as a signal of future firm performance (Certo *et al.*, 2001b). Espenlaub and Tonks (1998) also suggest that insiders may communicate private favourable information to potential outsiders through retained share ownership, thereby reducing the level of underpricing. Moreover, Goot (1997) argues that the equity positions of inside shareholders can signal the expected cash flows of the issuing firm. The fact that the retained ownership can be a credible signal is because it is difficult for lower quality firms to imitate (Michaely & Shaw, 1994), and inside shareholders will find it costly to take up large equity positions in their own firms (Goot, 1997).

Based on a sample of US IPO firms, Howton et al. (2001) find support for this proposition; high director ownership is associated with better long-run sharemarket performance. Using operating performance measures, Jain and Kini (1994) also find a positive relationship between management ownership and various firm performance measures, including operating return on assets, operation cash flows, and sales growth. In particular, Jain and Kini (1994) report that firms in the high-ownership group (i.e., above the median) have superior performance than firms in the low-ownership group (i.e., below the median). Further, Keloharju and Kulp (1996) examine Finish IPOs. They again find a significant positive relationship between market-to-book ratio and the fraction of equity retained by original shareholders.

However, Lee et al.'s (1996a) study on Australian IPOs find a contrary result. The level of ownership retained by initial owners is negatively related to post-issue sharemarket returns. Lee et al. (1996a) argue that their result may be explained by Gale and Stiglitz's (1989) proposition that the possibility of reducing retained ownership through subsequent equity offerings hampers the positive signal of retained ownership. On the other hand, the study by Mikkelson et al. (1997), based on a sample of US IPO firms, finds no significant relationship between operating performance[11] of IPO firms and the ownership stakes of officers and directors. In addition, they find that changes in the ownership of officers and directors are not related to firms' operating performance after going public or with the changes in performance.

In terms of the evidence on the relationship between director ownership and IPO underpricing, while the expectation is that the higher the director ownership, the lower the asymmetric information between the issuing firm and outsiders, and thereby the lower the level of IPO underpricing, studies by Certo et al. (2001b), Howton et al. (2001) and Lee et al. (1996a) all report a significant positive relationship between board ownership and initial IPO returns. That is, they find that higher director ownership is associated with more, not less, underpricing, implying that "high quality firms [with high director ownership] intentionally underprice their shares as a quality signal" (Howton et al., 2001, p. 108).

However, two other studies by Filatotchev and Bishop (2002) and Brennan and Franks (1997) find no significant relationship between director ownership and IPO underpricing. Although Filatotchev and Bishop (2002) find that the share ownership retained by executive directors is negatively associated with underpricing, the result is

[11] Mikkelson, Partch and Shah (1997) define operating performance as the operating income before depreciation, interest, taxes and extraordinary items divided by end-of-year assets.

not significant. The share ownership retained by non-executive directors is also insignificantly associated with underpricing, but the two variables are positively related. Brennan and Franks (1997) find that the post-IPO holdings of directors is negatively related to underpricing, but the result is again not significant. Lee et al. (1996a) argue that because of the uncertainty about future cash flows, the observation on the direction of relationship between retained ownership and the level of underpricing can be difficult. In addition, the mixed findings on the relationship between ownership and IPO performance may be explained by the varying proxies used in different studies for "ownership" that may have different signalling effects. For example, studies by Howton et al. (2001) and Mikkelson et al. (1997) measure the ownership of officers and/or directors while studies by Jain and Kini (1994), Keloharju and Kulp (1996), and Lee et al. (1996a) measure the shares retained by original shareholders.

2.5 IPO underpricing

While several studies have shown that investment in IPO stocks is unprofitable in the long-run, evidence from the first-day returns shows otherwise, which suggests that investment in IPO stocks in the offering period is very profitable. In fact, underpricing of IPOs has been documented in many countries with most studies showing positive average initial returns and median returns close to zero (Ritter, 1998)[12]. Underpricing is the difference between a stock's offer price and its market price on the initial day of trading.

[12] Ritter (1998) provides a comprehensive summary of results from different studies around the world.

2.5.1 Evidence of underpricing

Logue (1973) and Ibbotson (1975) are among the first to have documented a systematic positive return on the first trading day. Ibbotson (1975) reports that the average initial return for IPOs during the period 1960-1969 in the US is 11.4%. Ritter and Welch (2002) document that US IPOs between 1980 and 2001 have an average initial day return of 18.8% and about 70% of the IPOs have the first day closing price greater than the offer price.

The evidence from Australia and the UK are consistent with the US findings; all show positive initial returns. For Australian IPOs between 1966 and 1978, Finn and Higham (1988) find an average initial market-adjusted return of 29.2%. Lee et al. (1996a) who also study Australian IPO firms find that the average unadjusted underpricing over the period 1976-1989 is 16.4% and the average market index adjusted underpricing is 11.9%. Evidence from the UK by Levis (1993) shows an average first day return of 14.3% for IPOs between 1980-1988.

2.5.2 Information asymmetry theory of underpricing

Underpricing is an indirect cost to issuing firms as it represents the money that vendors "leave on the table" (Tully, 1999). When a share is underpriced, a direct wealth transfer from initial shareholders to new investors occurs [e.g. Certo, Daily and Dalton (2001b); Brav et al. (2000)]. This is because initial shareholders who offer their shares to the public are not able to realise the full value of their investment. Even if they do not participate in the IPO, they will still face a dilution of their equity value because a greater number of shares needs to be sold to satisfy a given funding need (Jenkinson & Ljungqvist, 1996).

Different theories have been proposed to help explain the underpricing phenomenon.[13] Though no one common explanation has been agreed upon, most theories revolve around the information asymmetry between the issuing firm and other participants involved in the IPO process, including investment bankers who manage the issue, and outside investors. As noted in Certo et al. (2001b, p. 35), "not only is asymmetric information typically higher for the smaller, private firm, but resolving this problem can be difficult due to the costs external investors incur in evaluating the investment potential of the IPO firm". As a result, the asymmetric information problem increases the agency costs that manifest as underpricing (Ritter & Welch, 2002).

Jenkinson and Ljungqvist (1996, p. 50) state that theories of underpricing based on the information asymmetry can essentially be classified into one of two forms: "either underpricing is thought to be the involuntary but necessary response to some underlying information or other problems, or it is regarded as a deliberate action chosen by the issuing firm in the pursuit of some wealth-maximizing objective." Thus, the following discusses the two hypotheses based on the information asymmetry theory, including the winner's curse hypothesis, which falls into the former category and the signalling hypothesis, which falls into the latter category.

Winner's curse hypothesis

Rock (1986) develops a model that focuses on the ex ante information asymmetry in the issue process and argues that there is a "winner's curse" problem in the IPO market. Assuming that both the issuing firm and its investment banker are completely uninformed about the true value of the share on offer, Rock suggests that two types of investors exist in the IPO market: the informed and the uninformed investors. As the

[13] Tinic (1988), Ritter (1998), Ritter and Welch (2002), Loughran, Ritter, and Rydqvist (1994), and Jenkinson and Ljungqvist (1996) all provide a comprehensive review on the underpricing literature.

former possess superior information about the firm's true value, they are better able to discern between IPOs that are more likely to succeed and those that are likely to fail. As a result, the uninformed investors get bad issues most of the time or only small allocations of good issues. In order to keep uninformed investors in the IPO market, issuing firms must offer an additional premium in the form of underpricing as an incentive for uninformed investors and to compensate them for the winner's curse problem. Several studies, including Beatty and Ritter (1986), Koh and Walter (1989), Levis (1990), and Michaely and Shaw (1994), have found support for Rock's winner's curse problem.

Signalling hypothesis

The signalling hypothesis is based on the assumption that issuing firms have better information about the prospect of the company than outside investors. The signalling hypothesis suggests that in order for high quality firms to distinguish themselves from low quality firms, the former may choose to underprice their issues. Shah (1995, p. 5) notes that "the most basic problem of the IPO process is the presence of both 'good' and 'bad' firms going public, coupled with asymmetric information between firms and investors." When the issuer knows more about the prospect of the company than outsiders and it is costly for investors to gather information and conduct thorough analysis of the issuing firm, this information asymmetry causes a "lemon's problem" where low quality issuers will sell their shares at a price higher than their true value. Consequently, high quality issuers will have to underprice themselves to distinguish themselves from low quality issuers and to compensate investors for taking the risk to invest in a relatively unknown firm.

Allen and Faulhaber (1989), Grinblatt and Hwang (1989) and Welch (1989) all present models that argue that issuing firms use underpricing as a way of signalling firm

quality. Allen and Faulhaber (1989) suggest that because underpricing is a costly action for firms, it is difficult for low quality firms to imitate. As a result, underpricing becomes a credible signal for high firm quality. The signalling hypothesis suggests that only high quality firms are able to recoup this cost from subsequent issues (Welch, 1989) or from the more favourable market response to subsequent dividend announcements (Allen & Faulhaber, 1989). Ibbotson (1975) suggests that by underpricing new issues and "leaving a good taste" with investors, firms may be able to sell future offerings at a better price. Welch (1989), using a two-period model, finds evidence in support of the view that underpricing and firm quality are directly related. Specifically, Welch (1989) finds that only high quality firms can afford to underprice new issues and they choose to issue more than once with seasoned issues offered at a higher price to compensate for the loss at the IPO.

Because of the information asymmetry problem, issuers seek different mechanisms to signal firm quality and to try to communicate their true value to investors. Grinblatt and Hwang (1989) argue that issuing firms may employ two signals, i.e., underpricing and share retention by initial shareholders, to signal firm quality because outside investors are not only uncertain about the expected value of the firms' future cash flows but also the variances of their future cash flows. Grinblatt and Hwang (1989) find evidence in support of their model; there is a positive relationship between underpricing and firm value for a given fraction of insider holdings and for a given level of variance.

Apart from underpricing and insider holdings that have been suggested to serve as signals of firm quality, the idea of certification within the signalling theory has also been proposed. Jenkinson and Ljungqvist (1996, p. 55) argue that "unless underpricing proves to be the most cost-effective signal – which seems doubtful – the existence of

alternatives dents the credibility of the signaling models". Previous studies have examined the certification-of-quality role played by ***prestigious underwriters*** [e.g. Booth and Smith (1986); Carter, Dark and Singh (1998); Michaely and Shaw (1994)], ***auditors*** [e.g. Titman and Trueman (1986)], ***venture capitalists*** [e.g. Megginson and Weiss (1991); da Silva Rosa, Velayuthen and Walter (2003)], and ***boards of directors and their shareholdings*** [e.g. Certo et al. (2001b); Filatotchev and Bishop (2002); Howton, Howton and Olson (2001)].

Certo et al. (2001b) suggest that IPO firms' board structures can serve as a signalling device because two important characteristics of the signalling theory have been met. First, the signal must be observable and known in advance; and secondly, the signal must be costly and difficult to imitate. IPO firms' board structures, including the names of the directors and their profiles, are disclosed in prospectuses prior to the offering so they are known in advance. Further, due to the market for outside directorship and the incentive for outside directors to protect their reputations as effective monitors, outside directors will be reluctant to join the boards of low quality firms (Fama & Jensen, 1983). Therefore, boards of directors can also be a difficult signal for lower quality IPO firms to imitate. Based on the signalling theory, this study investigates how board governance factors, including board composition, leadership structure, board size, and director ownership, can help reduce agency costs, thereby lowering the level of IPO underpricing and minimising wealth loss to vendors.

2.6 Initial public offerings and seasoned equity offerings

Surveys by Smith (1986)and Eckbo and Masulis (1992) show that firms making SEOs experience, on average, negative abnormal returns of 3% on the announcement of equity issues. Long-run underperformance following SEOs has also been documented. Loughran and Ritter (1995) and Spiess and Affleck-Graves (1995) report that over the

subsequent three to five years post-IPO, industrial firms that make SEOs underperform non-issuing control firms by 40-60% in sharemarket performance. Loughran and Ritter (1997) also find the operating performance of issuing firms deteriorates after SEOs. Their findings indicate that before seasoned offerings, issuing firms tend to show improvements in operating performance but the performance worsens after the offerings.

The reason to expect a link between IPOs and SEOs is that IPO firms have a high propensity to return to the capital market and make subsequent issues within a few years of going public, as documented by Garfinkel (1993) and Welch (1989). In the US, Garfinkel (1993) reports that 20.5% of IPO firms listed during 1980-1983 reissue equity within seven years of their flotation; Welch (1989) finds a slightly higher percentage, 28%, for IPOs listed between 1977 and 1982. Garfinkel (1993) argues that different sample periods and the inclusion of IPOs with warrants in Welch's (1989) study may account for this difference. A more recent study by Zhang (2005) documents that 31% of US IPO firms listed between 1990 and 1996 issue additional equity within three years after going public.

A much higher percentage of equity reissuing activity has been documented in Australia. Lee et al. (2003) report that 51% of firms that issued IPOs between 1976 and 1994 made subsequent equity offerings within two years of listing. The present study also finds that 51% of IPO firms, between 1994 and 1999, return to the equity market within two years after going public.

2.6.1 Theories explaining the reissuing decision

Several theoretical models, including the signalling hypothesis, market feedback hypothesis, pooling hypothesis, and the information momentum hypothesis, have been proposed to explain firms' decision to issue seasoned equity. Each is discussed below.

Signalling hypothesis

The signalling models developed by Allen and Faulhaber (1989), Grinblatt and Hwang (1989), and Welch (1989) propose that the possibility of future equity issues influences the IPO prices set by issuing firms (Jegadeesh et al., 1993). In particular, IPO firms deliberately underprice their issues to signal quality so that subsequent equity offerings can be made at more favourable prices. The key assumptions of the IPO signalling models are that (Jenkinson & Ljungqvist, 1996):

(i) issuers are better informed about the present value of the firms' future cash flow than investors or underwriters; and

(ii) by going public, firms are to completely transfer ownership and control to new shareholders. By this, managers of the IPO firms are assumed to maximise the combined expected proceeds from a two-stage sale, the IPOs and subsequent equity offerings, where a fraction of the firms' equity is sold at IPOs and the rest later in the open market.

Spiess and Pettway (1997) suggest that there are two implications from the signalling models. One is that the firm's net proceeds from the initial and seasoned equity sales should, on average, be higher for issuers that underprice more at IPOs. Another implication is that original shareholders of the IPO firm would choose to sell their shares at a later date rather than at the time of IPO in order to benefit from the underpricing signal. In signalling models, high quality IPO firms separate themselves from low quality firms by underpricing their issues. As the true quality of the firm is

likely to be exogenously revealed to the market between the IPO and a subsequent sale, low quality firms are deterred from mimicking high quality firms. Moreover, low quality firms are less able to recoup the costs of IPO underpricing through better terms in subsequent seasoned offerings. Thus, under the signalling models, issuers that underprice more at IPOs are expected to be more likely to make seasoned equity offerings after listing.

One criticism of the signalling models by Jenkinson and Ljungqvist (1996, p. 53) is "whether [IPO] companies do indeed follow two-stage selling strategies, as they must in signalling models in order to recoup the cost of the signal". Jenkinson and Ljungqvist (1996) argue that the form of financing used in the second-stage sale affects the effectiveness of signalling. If shareholders can enjoy pre-emptive rights to SEOs as is the case in countries like Germany and the UK, signalling would have no beneficial effect. This is because the pricing of a rights issue is wealth-neutral (Jenkinson & Ljungqvist, 1996). Under the signalling hypothesis, IPO underpricing is assumed to be the only signalling mechanism that firms adopt. Given that there are a number of other ways that IPO firms can choose to signal their firm quality, such as by employing reputable underwriters, with venture capitalists involvement, or through the quality of the board of directors, issuers do not have to rely on the costly underpricing to signal quality as suggested by the signalling models (Jenkinson & Ljungqvist, 1996).

The study by Jegadeesh et al. (1993) in the US finds a positive relationship between IPO underpricing and the likelihood of an additional equity issue within three years of their IPOs. Lee et al. (2003) who study unit and share IPOs in Australia also find evidence confirming the prediction of a positive relationship between IPO underpricing and the likelihood of issuing additional equity within two years after listing. Moreover, the results from Finland by Keloharju (1993) provide evidence consistent with the

prediction of the signalling hypothesis; firms with greater IPO underpricing are more likely to reissue.

However, other studies, including Garfinkel (1993), Levis (1995), and Zhang (2005), find no support for the signalling models. These studies report an insignificant relationship between underpricing and the likelihood of reissue, suggesting that underpricing is not used by IPO firms to signal quality or to facilitate subsequent equity offerings. Bhabra and Pettway (2003) also find that contrary to the signalling models, underpricing is not related to the likelihood of a SEO despite the fact that the former has been found to be (positively) related to one-year post-IPO returns.

Further, Michaely and Shaw (1994) and James (1992) report no significant differences in the level of underpricing between firms that are involved in SEOs and those that are not. Michaely and Shaw (1994) find that, in contrast to the predictions of the signalling models, issuers that underprice more at the time of the IPO return to the capital market not only less frequently but also for smaller amounts. Spiess and Pettway (1997) also find no support for the signalling hypothesis. In particular, issuers do not recover the costs of IPO underpricing through higher combined issue net proceeds nor from the increased wealth gains to firms' original shareholders.

Overall, the evidence does not appear to support the argument that IPO underpricing is adopted by IPO firms as a way of signalling firm quality. IPO firms may in fact adopt other mechanisms to signal quality as suggested by Jenkinson and Ljungqvist (1996). Thus, this thesis examines if the quality of the board of directors is effective in signalling firm quality by testing the relationship between the board structure at the time of an IPO and the likelihood of a SEO.

Market feedback hypothesis

An alternative explanation of firms' reissuing decisions is the market feedback hypothesis. According to Jegadeesh et al. (1993, p. 154):

> "This hypothesis posits that the market is better informed than the issuer and hence a high return on the IPO date implies that the issuer has underestimated the marginal return to the project. The issuer uses this information and increases the scale of the project by raising additional capital through seasoned offerings."

In other words, this hypothesis suggests that the flow of information is from the market to the issuer, whereby the post-IPO sharemarket performance reveals important information about the issuing firm's real value and which the issuer uses to determine whether to reissue (Levis, 1995). Accordingly, high immediate aftermarket returns indicate that the firm is undervalued by the issuer who is then encouraged to take this opportunity to raise additional equity capital.

Jegadeesh et al. (1993) argue that under the market feedback hypothesis, the abnormal share price changes over the immediate post-IPO period will have equal or greater effect on the likelihood of reissue than underpricing. Their results show that not only the level of IPO underpricing is significantly positively related with the likelihood of SEOs, but also the immediate aftermarket returns after IPOs (measured by the two-month holding period returns following listing) have a significant and even stronger effect on subsequent equity offerings. Thus, Jegadeesh et al. (1993, p. 174) conclude that the market feedback hypothesis is supported by their results and that "the return on the date of the IPO does not play a unique role in predicting future seasoned equity offerings", contrary to the basic implication of the signalling hypothesis.

In addition, Garfinkel (1993) measures IPO firms' cumulative raw returns over 200 trading days post-IPO and finds a similar positive relation with the likelihood of reissue. Levis (1995), using the wealth relative in the fourth month in the aftermarket, also documents a significant positive relation with the reissuing decision. Further, Zhang (2005) reports a significant positive relationship between immediate aftermarket returns (within 30 days) and the likelihood of issuing seasoned equity within three years after going public. Bhabra and Pettway (2003) show that IPO firms that exhibit better aftermarket performance are either involved in a takeover or additional equity issue. The weight of evidence thus provides more consistent support for the market feedback hypothesis relative to the signalling hypothesis. In order to control for the market feedback effect on IPO firms' reissuing decisions, we include the immediate aftermarket returns after IPOs as a control variable when testing the relationship between IPO firms' initial board structures and the likelihood of a SEO.

Pooling hypothesis

The pooling hypothesis is based on the premise that in a pooling equilibrium, investors cannot distinguish ex ante between high and low quality firms. In this outcome, both types of firms would prefer to raise enough capital for future operations at the time of IPOs so as to eliminate the need to return to the equity capital markets (Welch, 1989). Thus, if high quality firms are to return to the equity capital market, they will wait until their true quality is revealed to the market.

Welch (1996) extends his initial model developed in Welch (1989) by suggesting a link between IPO underpricing and the timing of SEO. Welch (1996) shows how issuers can signal their quality through both IPO underpricing and waiting patiently to reissue, which increases the probability that the true firm quality will be revealed to the market. Lucas and McDonald (1990) argue that firms that are undervalued will wait to reissue

until the market revises their share prices upward while firms that are overvalued will issue equity as soon as the opportunity arises before the market learns about its true value. Welch (1996) provides a calibration of the model, which predicts that the probability of revealing firm quality is about 30% each year and that waiting to reissue costs the firm about 15% of its value. In addition, Welch (1996) is able to find evidence in support of his model. Specifically, IPO firms with greater underpricing wait longer before making subsequent equity offerings and firms that return to the market earlier (ostensibly because their quality has been revealed) experience higher aftermarket returns.

Information momentum hypothesis

The information momentum hypothesis, proposed by Aggarwal, Krigman and Womack (2002), argues that rather than focusing on IPOs' offer prices, managers' objective is to strategically underprice new issues so that they are able to sell more shares at higher prices later in the open market or through secondary offerings. The basis for this argument is that because significant underpricing generates information momentum by attracting the attention of the media and research analysts, more investors will be interested in the stock and additional demand for the stock is increased. Thus, according to the information momentum hypothesis, managers strategically underprice IPOs in order to maximise their personal wealth from selling shares after the lockup period expires. Aggarwal et al. (2002) find evidence consistent with their model's predictions. Specifically, they document the following four main findings:

1. retained share ownership of managers is positively associated with the level of underpricing;
2. greater IPO underpricing creates information momentum and is associated with more research coverage by non-lead analysts;

3. the enhanced research coverage leads to higher share prices at the expiration of the lockup period; and
4. managers are able to sell more shares at the lockup expiration with increased research coverage.

The information momentum hypothesis predicts that the size of the IPO issue and participation by insiders also form part of the decisions that owner-managers make to maximise their personal wealth, in addition to setting the IPO price (Zhang, 2005). The hypothesis argues that the goal of owner-managers is to maximise the combined proceeds from IPOs and subsequent equity offerings rather than from the IPO alone. Thus, even if it means offering fewer shares and underpricing more at the time of the IPO, as along as the aftermarket price can be boosted through the information momentum generated, owner-managers would follow this strategy since more shares can be offered at higher prices in the follow-on offerings. Accordingly, Zhang (2005) outlines two predictions from the information momentum hypothesis:

(i) IPO issue size is negatively related to the likelihood of SEOs. That is, issuers that offer fewer primary and secondary shares at the time of the IPO are more likely to return to the equity market.

(ii) Owner-managers who issue fewer shares at the time of IPO are more likely to sell their shares at higher prices in SEOs.

The results from Zhang's (2005) study provide some support for the information momentum hypothesis. Issuers that offer fewer shares and sell fewer of their shares at the time of IPO are associated with a higher likelihood of issuing seasoned equity within three years of listing, consistent with the prediction of the information momentum hypothesis. However, owner-managers are found to sell more of their shares in SEOs, the more shares being offered at IPOs and the more shares being sold

by owner-managers at IPOs, showing inconsistency with the information momentum theory.

To control for the possible information momentum effect on firms' reissuing decisions, we include IPO issue size in the regression model when testing the relationship between the likelihood of a SEO and initial board structures.

2.6.2 Seasoned equity offerings and board governance

There has been little empirical research relating the board of directors to SEOs except in the area regarding retained ownership. Brennan and Franks (1997) find that, in the UK, original shareholders who are also directors of the firm sell only a small proportion of their shares at and after the IPO while original shareholders who are not firm directors tend to relinquish their positions over the subsequent seven years post-IPO. Leland and Pyle (1977) suggest that the proportion of ownership retained by insiders at IPOs has signalling effects. By retaining a large fraction of equity in the firm, insiders can reveal the private information they hold about the firm and, in particular, the expected high future cash flows. The reason that insider ownership can be a credible signal is that under-diversification is costlier to owners of high-variance firms than to those of low-variance firms (Jenkinson & Ljungqvist, 1996).

Slovin, Sushka and Bendeck (1994) test Leland and Pyle's (1977) proposition and find only partial support. The market reaction is significantly negative when some insiders' shares are sold at SEOs, but no relationship is found between retained ownership and the market reaction to a SEO after controlling for underpricing. Gale and Stiglitz (1989) argue that the assumption in Leland and Pyle's (1977) model where insiders are assumed to have only one opportunity to sell their equity is unrealistic. If the possibility of subsequent selling is taken into account, the signal of retained ownership

will become less credible and effective. Gale and Stiglitz (1989) further suggest that unless the uncertainty is high or the costs for low quality firms to mimic are high, issuers will not choose to differentiate themselves.

Espenlaub and Tonks (1998) test the signalling model by examining the subsequent equity offerings by IPO firms and the post-IPO trading activities by directors. Contrary to the signalling hypothesis, they find that the proportion of equity retained by original shareholders at the time of listing is not related to the probability and volume of SEOs or directors' sales of shares in the open market. As previous studies have not considered how board structures are related to SEOs, one objective of this study is to examine whether board size, board leadership, and board composition, together with director ownership, have any impact on the likelihood of a subsequent equity issue following listing.

2.7 Post-IPO long-run performance

A growing body of evidence shows that IPO firms suffer long-run underperformance, which some studies suggest can last up to five years after initial flotation (Loughran & Ritter, 1995). This pattern of underperformance has been recognised as a "puzzle" (Loughran & Ritter, 1995). It has been documented in different countries over different sample periods, suggesting that it is not sample- or country-specific (Aggarwal et al., 1993). Thus, one objective of this study is to test if board structures that conform to ASX best practice recommendations can lower the degree of underperformance in the post-IPO period or lead to better aftermarket performance. In the following sections, we first review the evidence of IPOs' long-run performance, including both sharemarket performance and operating performance, and then discuss the possible explanations for long-run underperformance.

2.7.1 Evidence of long-run underperformance

The long-run aftermarket performance of IPOs is typically measured in one of two ways. The first, and the more popular approach is to analyse the stock price behaviour of IPOs. The second approach is based on firms' operating performance, that is, using IPO firms' reported accounting information. Evidence from these two approaches is discussed separately in the following sections.

Evidence based on sharemarket returns

Ibbotson (1975) is the first major study that analyses IPO firms' long-run performance. Using returns across time and securities (R.A.T.S.) regression, Ibbotson (1975) finds that aftermarket performance is positive in the first year, negative in the following three years and positive again in the fifth year. Aggarwal and Rivoli (1990), based on a sample of IPOs during 1977-1987, document significant aftermarket underperformance of –13.73% for investors holding IPO stocks from the first trading day to 250 (trading) days later.

Also, Ritter (1991) provides a comprehensive study of the long-run performance of IPOs in the US and shows that the underperformance is not confined to the first year of trading. In fact, he finds that IPOs over the period 1975-1984 significantly underperform control firms matched on size and industry by 29% after three years of public trading. Further, Ritter (1991) finds that the underperformance is concentrated among younger firms and firms that go public in periods with high IPO activities. Further, Ritter and Welch (2002) report that over a three-year period post-IPO, the average IPO during 1980-2001 underperforms the CRSP value-weighed index by 23.4% and underperforms seasoned companies matched on market capitalisation and book-to-market ratio by 5.1%.

As in the US, evidence from Australia and the UK also reveals IPO long-run underperformance. Finn and Higham (1988) examine the performance of Australian IPOs (1966-1978) for one year post-listing and report an average market-adjusted return of –6.5%. Lee, Taylor and Walter (1996a) also report underperformance in the three-year period post-listing for Australian IPOs between 1976-1989. They document an average market index adjusted return of –51.6% from the closing price on the first day of trading to three years after listing. In the UK, Levis (1993) reports that IPO firms between 1980-1988 underperform by 30.6% three years after initial listing. Espenlaub, Gregory and Tonks (2000), using a different dataset covering the period 1985-1992, confirm the existence of IPO long-run underperformance in the UK.

Evidence from other countries also shows long-run underperformance by IPO firms. For example, Keloharju (1993) reports statistically significant underperformance of –26.4% by Finnish IPOs. Aggarwal et al. (1993) report that the three-year market-adjusted returns for Brazil, Mexico and Chile are –47.0%, –19.6% and –23.7%, respectively. Firth (1997) finds that IPO firms in New Zealand significantly underperform the benchmark matched companies by 14% over a three-year period and by 18% after five years of public trading.

To add to the existing IPO studies in Australia, this thesis employs an additional measure of long-run returns (i.e., the decile adjusted return) in addition to the market adjusted return measure that was used in Lee et al. (1996a). The advantage of decile adjusted return is that it controls for the well-known firm size effect that has been documented as related to sharemarket returns. Moreover, this study uses a more recent dataset between 1994 and 1999 to see if long-run underperformance can also be observed during this time period.

Evidence based on operating performance

Jain and Kini (1994) and Mikkelson, Partch and Shah (1997) are the two early studies in the US that focus on post-IPO operating performance rather than the sharemarket performance. Using several accounting measures, Jain and Kini (1994) document that the post-issue operating performance (up to five years after the offering) declines significantly relative to their pre-IPO levels.

Balatbat et al. (2004) study the post-IPO operating performance of Australian IPOs between 1976 and 1993. Using size- and industry-matched firms, they find that IPO firms underperform control firms over the first four years after listing, confirming Jain and Kini's (1994) findings. In contrast, Mikkelson et al. (1997) find that the decline in operating performance of US IPO firms is confined to the first year of public trading only, with no further declines over the ten-year post-listing period.

One possible reason for the mixed findings in post-issue operating performance is that accounting measures of performance are subject to the accuracy of a company's reporting. As suggested by Chen and Shih (2001), IPO firms have the tendency to inflate their accounting figures prior to the IPO to disguise their true operating performance in order to make their company performance look good to potential investors and to secure stock market listing.

2.7.2 Explanations for long-run underperformance

It remains a puzzle as to why investors continue to buy IPO stocks if they lose in the long-run. The efficient market hypothesis implies that once the issuing firm becomes listed, the aftermarket share price should reflect its intrinsic value. This suggests that the post-IPO long-run performance after adjusting for risk should not be predictable (Ritter & Welch, 2002). The existence of systematic underperformance in the long-run

thus seems to cast doubts about aftermarket efficiency as it suggests that investors are able to develop trading strategies to consistently make profits from new issues (Ritter, 1991). Financial researchers who traditionally adhere to market efficiency have recently proposed other possible explanations[14]. Some explanations, including windows of opportunity, fads and divergence of opinion hypotheses, are founded on behavioural theories. As noted in Brav and Gompers (1997, p. 1793):

> "Behavioral theories posit that investors weight recent results too heavily or extrapolate recent trends too much. Eventually, overly optimistic investors are disappointed and subsequent returns decline."

Neo-classical finance explanations for underperformance include the agency costs hypothesis and mismeasurement of long-run performance. Both behavioural and neo-classical finance explanations are discussed in detail below.

Windows of opportunity hypothesis

One explanation for the phenomenon of long-run underperformance is the windows of opportunity hypothesis. That is, issuers time their issues to take advantage of the over-optimism about the prospect of issuing firms by investors (Levis, 1996). The windows of opportunity hypothesis predicts that firms that go public during periods with high issue volume are more likely to be overvalued and should thus have lower long-run returns (Ritter, 1998).

Empirical evidence from Shaw (1971) shows support for the hypothesis; underperformance is more prevalent in hot-issue periods. Loughran and Ritter (1995) report similar findings. They find that underperformance is relatively modest in periods

[14] See Ritter (1998), Jenkinson and Ljungqvist (1996) and Ritter and Welch (2002) for a review on explanations for IPO long-run underperformance.

with low volume of IPO activities but is more pronounced in periods with high IPO activities.

As this thesis examines IPOs only over a six-year period where the volume of IPOs in terms of the number of firms going public is relatively stable except for the last sample year, 1999, where there are many tech IPOs, it is not necessary to control for hot issue markets in this study. Instead, we adopt a tech industry dummy variable to control for the sharp increase in tech IPOs during the sample period.

Fads hypothesis

The fads hypothesis is also known as the “impresario” hypothesis and is attributed to Shiller (1990). Aggarwal and Rivoli (1990, p. 47) define a fad as “a temporary overvaluation caused by over-optimism on the part of investors”. The fads hypothesis is that “the market for IPOs is subject to fads and that IPOs are underpriced by the investment bankers (the impresarios) to create the appearance of excess demand, just as the promoter of a rock concert attempts to make it an ‘event’” (Ritter, 1991, p. 16). Aggarwal and Rivoli (1990) argue that the IPO market is particularly susceptible to fads because of four possible reasons: (1) the true intrinsic value of the IPO firm is difficult to estimate; (2) IPO firms tend to be riskier and are thus more likely to be subject to high levels of noise trading; (3) IPO investors are likely to be more speculative, causing larger deviations from intrinsic values; and (4) marginal buyers may be overoptimistic.

The fads theory, supported by Aggarwal and Rivoli (1990) and Ritter (1991), suggests that the long-run underperformance is caused by overoptimistic investors selling their shares in the post-IPO period when their high expectations are not fulfilled, causing mean-reverting fads. That is, assuming that the aftermarket is not immediately efficient

in valuing newly issued securities, investors who were attracted to the IPO market by the temporary overvaluation in the early aftermarket will sell their shares when they realise a mean-reverting pattern in share prices, leading to the long-run underperformance. The fads hypothesis thus predicts that IPO stocks with higher initial returns will have lower long-run returns due to the greater subsequent price correction to initial overpricing by investors. The study by Aggarwal and Rivoli (1990) finds support for the fads explanation; investors who purchase IPO stocks in the early aftermarket and hold them for one year underperform the market.

Divergence of opinion hypothesis

The divergence of opinion hypothesis suggests that the price of IPOs is set by the most optimistic investors who are also the buyers [Miller (1977); Miller (2000)]. Miller argues that if there is a great deal of uncertainty about the value of an IPO, there will be divergence of opinion between optimistic and pessimistic investors, with the former having a much higher valuation than the latter. When more information subsequently becomes available, the divergence of opinion will decrease, leading to a downward price adjustment. The hypothesis thus predicts that the higher the uncertainty and the greater the initial divergence of opinion, the lower the aftermarket performance will be.

Ritter (1991) and Rajan and Servaes (1997) suggest that if firms go public when investors are overoptimistic about the growth prospects of the companies, investors will overpay initially and when more information becomes available, they will correct their initial overvaluation by marking the prices down, causing the long-run returns to drop. Several studies [e.g. Bradley, Jordan, Roten and Yi (2001); Field and Hanka (2001); Brav and Gompers (2003)] have observed a drop in share prices at the end of the lockup period when more public shares are available for trading in the open market, showing support for the divergence of opinion hypothesis (Ritter & Welch, 2002).

Agency costs hypothesis

Jain and Kini (1994) argue that the poor performance in the long-run may be explained by the declining management ownership in the post-IPO period that is likely to give rise to the agency problem described in Jensen and Meckling (1976). Jensen and Meckling's (1976) theory of conflict of interest between managers and shareholders suggests that as managerial ownership reduces and the firm sells its shares to a wider range of investors, the manager's incentive to maximise his/her private benefits rather than to maximise the firm value increases. This is because as the managerial ownership decreases, a manager's own wealth is less affected by the performance of the firm. The interests of shareholders and the management are thus not as closely aligned as before and managers have greater incentives to pursue their own interests by excessive consumption of perquisites and investing in negative NPV projects at the expense of shareholders.

Using data from the US market, Jain and Kini (1994) provide evidence consistent with this hypothesis. They find that post-IPO operating performance is significantly positively related to the equity retained by initial shareholders. However, the study by Mikkelson et al. (1997) finds no significant relationship between IPO firms' ownership structures and their long-run performance. Thus, evidence based on the agency cost argument remains inconclusive.

Given that board of directors is one of the internal governance mechanisms for monitoring management, a properly configured board is likely to lower the agency cost arising from the separation of ownership and control as part of the IPO process. Thus, this thesis tests if long-run underperformance can be explained by board structures deviating from the ASX best practice recommendations at the time of an IPO. In other

words, if post-IPO long-run performance can be improved by adhering to ASX corporate guidelines on board structures because agency costs are lowered.

Long-run performance mismeasurement

One problem with the long-run performance tests is the nonstandard distribution of long-run returns (Brav & Gompers, 1997). Several researchers [e.g. Barber and Lyon (1997); Fama (1998); Kothari and Warner (1997); Lyon, Barber and Tsai (1999); Brav, Geczy and Gompers (2000); Brav (2000)] have attributed IPO long-run underperformance to the measurement and tests of long-run sharemarket performance. They argue that the choice of performance measurement directly affects the size and power of statistical tests.

The common method for measuring long-run performance is to calculate cumulative abnormal returns (CARs). Fama (1998) suggests that CARs should be used instead of buy-and-hold returns (BHRs) on both theoretical and statistical grounds. Both Fama (1998) and Mitchell and Stafford (2000) argue that CARs, usually calculated on a monthly frequency, are less likely to yield spurious rejections of market efficiency compared to the BHRs method because BHRs are calculated by compounding single period returns that can magnify the underperformance, even if it occurs in only one period. For these reasons, Fama (1998) contends that long-run performance studies involving extended event-windows can be misspecified.

On the other hand, Barber and Lyon (1997) argue that CARs are subject to measurement bias, new listing bias and rebalancing bias and that long-run performance should be measured using BHRs, which measure investor experience more closely. However, Kothari and Warner (1997) show that tests using BHRs are no better than that based on CARs because the empirical distribution of BHRs is also skewed,

suggesting that the statistical test may be misspecified. Further, Ritter and Welch (2002) point out that when multi-year buy-and-hold returns are used, the returns on individual IPOs overlap, making statistical inference problematic. On the debate of which is the better performance measure, Lyon et al. (1999) suggest that the two measures serve different purposes: buy-and-hold abnormal returns should be used if the research aims to find out if sample firms earn abnormal stock returns over a particular time period while the cumulative abnormal return method is preferred if the research aims to find out if sample firms persistently earn abnormal monthly returns.

In terms of statistical test of significance, both Barber and Lyon (1997) and Kothari and Warner (1997) document that long-run abnormal returns are skewed, suggesting that statistical tests of the significance of these returns may be misspecified. Barber and Lyon (1997) show that when long-run buy-and-hold abnormal returns are calculated using a reference portfolio composed of a number of stocks, the test statistics are generally negatively biased. Fama (1998) also points out that as abnormal returns are often positively skewed, this problem can lead to biased and inefficient results and may in fact explain the widely documented long-run underperformance. Lyon et al. (1999) thus propose a skewness-adjusted t-test statistic for testing the long-run abnormal returns. The adjustment originates from the third order moment adjustment of the asymptotic normality test.

Moreover, several researchers [e.g. Loughran and Ritter (1995); Mitchell and Stafford (2000)] have challenged the statistical power of long-run performance measures for the reason that important underlying statistical assumptions are potentially violated. Loughran and Ritter (1995) note that because of the possible cross-correlation in returns, the cross-sectional t-statistics used to assess the significance of abnormal returns are likely to have been overstated. Mitchell and Stafford (2000) argue that

because major corporate events like IPOs often cluster through time by industry, they are not random events. Thus, there is a problem of cross-sectional dependency between observations that lead to a positive cross-correlation in abnormal returns and the test statistics being overstated. Brav (2000) suggests that while BHRs can more precisely measure investor experience, this performance measure is more sensitive to the problem of cross-sectional dependence among sample firms.

To address the problem of cross-sectional dependency, two methods have been proposed. One is to use the ***bootstrapping approach*** for statistical inference, as suggested by Lee (1997) and Ikenberry, Lakonishok and Vermaelen (1995). The advantage of the bootstrapping approach is that it does not rely on the normality assumption and it stimulates an empirical null distribution of the estimator. However, this approach has been criticized as being too cumbersome to implement (Jegadeesh, 2000).

The other approach, as recommended by Fama (1998) and Mitchell and Stafford (2000), is to use the ***calendar-time method***[15], which can control for event clustering and cross-correlation in IPO returns because returns on sample firms are aggregated into one portfolio (Espenlaub et al., 2000). Lyon et al. (1999) show that the calendar-time method yields well-specified test statistics. Brav and Gompers (1997) employ the calendar-time method in their study and find that underperformance is more pronounced for small IPOs that are not backed by venture capitalists and that when IPOs are matched with firms of similar size and book-to-market ratio, the underperformance reported by Loughran and Ritter (1995) is eliminated. Given that underperformance is also observed in small, non-IPO firms with similar low

[15] The calendar-time method was developed by Jaffe (1974) and Mandelker (1974) and involves calculating average returns of rolling, calendar-time portfolios of event stocks (Espenlaub et al., 2000).

book-to-market values, Brav and Gompers' (1997) findings suggest that the underperformance is not unique to issuing firms and is sensitive to the method used to evaluate abnormal performance. This conclusion is shared by Ritter and Welch (2002, p. 32) who suggest that "long-run returns, even if remarkably low, are sufficiently noisy to make any statistical inference difficult".

The calendar-time method is however not without flaws. Fama (1998) notes that the calendar-time method does not measure investor experience as does the BHR method. Lyon et al. (1999) also point out that because the calendar-time method averages over both hot issue months and cold issue months, it has lower power in detecting abnormal performance. A subsequent study by Mitchell and Stafford (2000) proposes a method for addressing this problem. That is, estimates of portfolio standard deviation should be used to standardise the monthly calendar-time abnormal return series.

Overall, Jenkinson and Ljungqvist (1996, p. 93) argue that:

> "At this point, a definitive answer [to long-run underperformance] still eludes us. The explanations that have been offered remain speculative in nature, owing to the relative lack of structured tests designed not merely to produce results consistent with some theory or other, but rather to falsify their testable predictions."

Thus, despite that several explanations for underperformance have been proposed, the underlying reasons still remain inconclusive.

2.8 Summary

The process of going public leads to separation of ownership and control. Boards of directors, one of the internal corporate governance mechanisms, arguably serve an essential role in protecting shareholders' interests. Especially at the time of IPO where there is a lack of public information available about the issuing firm, the board structure may operate as a signal of firm quality and may be related to the degree of IPO underpricing and long-run underperformance and the probability of subsequent equity offerings. The next chapter thus develops the hypotheses tested in this thesis.

Chapter 3

Development of Hypotheses

3.1 Introduction

This chapter presents the hypotheses tested in this thesis. The main hypothesis is that good governance leads to positive signals about issuing firm quality and better firm outcomes, including lower underpricing at the IPO, better long-run performance, and a higher likelihood of SEOs. These tests can provide an insight into the preference of investors who arguably are best placed to assess the appropriateness of the recommendations outlined in the ASX best practice recommendations, which we use as "indicators" of good governance.

Thus, in Section 3.2, we explore the relationship hypothesised between IPO performance, including IPO underpricing and long-run aftermarket performance, and initial board structures. In Section 3.3, the testable hypotheses developed for the relationship between the likelihood of seasoned equity offerings and initial board structures are developed. Section 3.4 presents the hypotheses on the relationship between post-IPO long-run performance and changes in board structures after listing and Section 3.5 provides a summary of this chapter.

3.2 Relationship between IPO performance and initial board structures

In this section, testable hypotheses on the relationship between IPO performance and initial board structures, including board composition, board leadership, board size and director ownership, are developed. We posit that better governed boards, that is, boards that are more in line with the ASX best practice recommendations, can reduce the information asymmetry at the time of IPO through the certification effect and can

therefore lower the level of IPO underpricing, which will result in wealth loss to vendors at IPO, and enhance the long-run post-IPO performance. In other words, IPO firms' board structures are expected to be negatively associated with underpricing while positively related to long-run aftermarket performance

3.2.1 Board composition

Because of high information asymmetry between the firm and outside investors at the time of issuance, it can be particularly important for IPO firms to adopt an independent board. This is because having an independent board by appointing a majority of outside directors on the board is one way of communicating the quality of governance structures to potential investors. The reason why board independence can be used as a signal of firm quality is that it indicates that the company have an effective control system in place. Agency theorists (Fama & Jensen, 1983) argue that by being independent from any ties with the management, outside directors can enhance the effectiveness of board monitoring and deter managers from engaging in opportunistic behaviour that negatively affects shareholder wealth (Howton et al., 2001).

In Recommendations 2.1 and 2.2 of ASX's best practice recommendations, companies are recommended to adopt an independent board. Specifically, Recommendations 2.1 and 2.2 state that a majority of the board should be independent directors and that the chairperson should be an independent director (ASX, 2003). If board independence is value-adding as claimed by agency theorists, corporate governance reformers and regulators, this value should be reflected in the offer price at the time of IPO to avoid a transfer of wealth from original shareholders to first day investors and in the long-run performance. Therefore, we expect that the higher the proportion of independent directors on the board, the lower the underpricing and the better the long-run aftermarket performance.

Accordingly, this study posits that:

H1a: IPO underpricing is lower for issuing firms that have a higher proportion of independent directors on the board at the time of IPO.

H1b: Post-IPO long-run performance is higher for issuing firms that have a higher proportion of independent directors on the board at the time of IPO.

3.2.2 Board leadership

Given that there is relatively little public information available about firms making initial public offerings, the level of information asymmetry between outside investors and the first time issuers is potentially high. Thus, at the time of IPO, adopting dual leadership can be considered as one way of increasing the board's independence from the management (Certo *et al.*, 2001b) and reducing the uncertainty about the intrinsic value of issuing firms. Adopting dual leadership may be essential in signalling the quality of governance structure to potential investors because it, as argued by agency theorists (Fama & Jensen, 1983), can enhance the effectiveness of board monitoring. Recommendation 2.3 of the ASX best practice recommendations specifically suggests that the roles of chairperson and chief executive officer should be performed by different individuals. Hence, this study expects that IPO firms that adhere to ASX's recommendations by adopting a dual leadership structure should have lower underpricing (that is, less wealth loss to initial shareholders at the time of IPO) and better aftermarket performance.

Hypotheses 2a and 2b are therefore:

H2a: IPO underpricing is lower for issuing firms with a dual leadership structure at the time of IPO.

H2b: Post-IPO long-run performance is higher for issuing firms with a dual leadership structure at the time of IPO.

3.2.3 Board size

Because IPO firms are typically less established and require the establishments of access to critical resources, market power and brand name recognition in the market, the resource dependence theory is likely to be more relevant to IPO firms compared to mature firms. According to Pfeffer and Salancik (1978), the board should be larger the greater the reliance on external resources because larger boards can enhance external linkages, bring in multiple perspectives, enhance the power of the board relative to the CEO, and coopt resources from a firm's environment (Finkle, 1998). A previous Australian IPO study by Balatbat et al. (2004) has reported that the median board size over the sample period 1976-1993 is five. Thus, based on both resource dependence and agency theories, we expect that IPO firms with larger boards have lower underpricing and better long-run aftermarket performance.

Hypotheses 3a and 3b are therefore:

H3a: IPO underpricing is lower for issuing firms with larger boards at the time of IPO.

H3b: Post-IPO long-run performance is higher for issuing firms with larger boards at the time of IPO.

3.2.4 Director ownership

Directors who have high financial stakes in the firm are more likely to ensure stringent monitoring of the management to protect their interests. Given the high information asymmetry at the time of the IPO, a high level of director ownership at that time can help signal the quality of an issue and thus be associated with better long-run performance and less wealth loss to initial shareholders at the IPO.

Prior evidence on the relationship between director ownership and IPO performance has mostly shown a positive relationship between director ownership and long-run aftermarket performance, consistent with the prediction [e.g. Howton et al. (2001); Jain and Kini (1994)]. However, studies [e.g. Howton et al. (2001); Certo et al. (2001b); Lee et al. (1996a)] on the impact of director ownership on IPO underpricing report results contrary to the expectation; specifically, higher director ownership is associated with larger underpricing. Lee et al. (1996a) suggest that due to the high uncertainty about future cash flows at the time of IPO, the direction of relationship between retained ownership and the level of underpricing can be difficult to predict.

While the results from short-run and long-run performance of IPO firms provide contradictory implications for the level of director ownership, it is likely that directors with higher ownership in the firm are likely to monitor the firm more closely to ensure good firm performance as their interests are also at stake. Hence, based on the financial dependence theory, this study predicts that higher director ownership will be associated with less underpricing at the IPO and better long-run performance.

Hypotheses 4a and 4b are therefore:

H4a: IPO underpricing is lower for issuing firms with higher director ownership at the time of IPO.

H4b: Post-IPO long-run performance is higher for issuing firms with higher director ownership at the time of IPO.

3.3 Relationship between the likelihood of seasoned equity offerings and initial board structures

Is the likelihood of SEOs a function of initial board structures at the time of IPO? The board of directors represents the highest internal control mechanism (Fama & Jensen, 1983). The duty of board of directors is to monitor the activities of management and to represent the interests of different groups of shareholders. Their governance responsibilities include setting strategic aims for the company, overseeing the implementation of the strategies, supervising the management and reporting back to shareholders (Ching et al., 2002).

The ASX best practice recommendations recommend that the board should have a majority of independent directors and that the chairperson should be an independent director. Further, different individuals should perform the roles of chairperson and chief executive officer. IPO issuers that adopt a board structure consistent with these recommendations are expected to have a substantial advantage since a strong board with developed governance is likely to boost investor confidence not only at the time of the IPO but also at SEOs. As suggested by Harjoto and Garen (2004, p. 1), “after the IPO, management attains only a fraction of the benefits of good governance”, so the board of directors needs to take on the important role of monitoring management. The inference is IPO firms that meet ASX’s recommendations are more likely to attract

existing and new investors in subsequent equity offerings. Thus, this study tests whether issuing firms that have more independent directors on the board, adopt dual leadership, have larger boards and have higher director ownership at the time of IPO are associated with a higher likelihood of reissuing equity. The following section discusses the development of these hypotheses in detail.

3.3.1 Board composition

Boards that are independent of management can perform more independent oversight functions. Fama (1980) suggests that when the board is dominated by executive directors, collusions or expropriations of shareholder wealth are likely to happen. Because outside directors' reputations are at stake and they are evaluated on their performance as outside directors, they have strong incentives to carry out their monitoring tasks. Therefore, appointing outside directors to the board not only increases a board's independence but also promotes stronger corporate governance that enhances firm value. Hence, it is expected that IPOs firms with a higher proportion of independent directors on the board at the time of listing are more likely to be involved in SEOs.

Accordingly, hypothesis H5 is:

H5: The likelihood of a SEO is higher for issuing firms that have a higher proportion of independent directors on the board at the time of IPO.

3.3.2 Board leadership

Agency theory suggests that when the roles of chairman and CEO are separated (i.e., dual leadership), the board is more independent from the management. By ensuring that the CEO does not dominate the board, dual leadership is able to facilitate more effective board monitoring. Thus, through the adoption of a dual leadership structure at the time of IPO, the issuing firm can signal to the market that it has well structured corporate governance system in place, ceteris paribus. Consequently, issuing firms with dual leadership are better able to convince investors to put up their money in the firms not only at IPOs but also at seasoned equity offerings. Accordingly, this study posits that IPO firms with dual leadership structures are more likely to return to the equity market after listing.

Hypothesis H6 is therefore:

H6: The likelihood of a SEO is higher for issuing firms that adopt dual leadership at the time of IPO.

3.3.3 Board size

Agency theorists, including Jensen (1993) and Lipton and Lorsch (1992), argue that the size of the board should be about eight people. Since the Australian IPO study by Balatbat et al. (2004) has reported that the median board size of IPO firms is five, which still falls short of that suggested by agency theorists. Thus, based on both the agency theory and the resource dependence theory, which argues that larger boards will provide greater external links to resources (Pfeffer & Salancik, 1978), adopting larger boards are likely to be more beneficial to IPO firms, which are typically start-up companies and require substantial funding. Hence, this study expects that firms with larger boards are associated with a greater chance of making a SEO.

Hypothesis H7 is therefore:

H7: The likelihood of a SEO is higher for issuing firms with larger boards at the time of IPO.

3.3.4 Director ownership

The level of ownership retained by insiders is regarded as an indicator of firm risk by several studies [e.g. Leland and Pyle (1977); Gale and Stiglitz (1989); Grinblatt and Hwang (1989)]. These studies argue that the level of shares retained by insiders serves as an indication of their commitment in the firm. The more shares retained by insiders at the time of IPO signal to the market that the issuing firm is of better quality and is thus expected to be associated with a higher likelihood of reissue. Evidence from Bhabra and Pettway's (2003) study shows support for this argument. Specifically, Bhabra and Pettway (2003) use a dummy variable, which equals one if management (including all officers and directors of the company) sells shares at the IPO and zero otherwise, to test the impact of ownership retention by insiders on the likelihood of a SEO. Their finding shows that firms in which the management has sold shares in the IPO are less likely to issue additional equity that will further dilute their holdings. However, their results are not robustly significant across regression models.

The study by Levis (1995) finds a contradictory result. Rather than directly measuring the proportion of shares retained by original shareholders, Levis (1995) tests the relationship between the proportion of shares offered at IPOs (i.e., the reverse of the shares retained) and the reissuing activity. Levis (1995) reports a significant positive relationship; that is, IPO firms that offer a large proportion of equity (i.e., original shareholders retain fewer shares) at the time of listing are associated with a higher

likelihood of equity reissuance.

The differences in results between the two studies discussed above may be due to the fact that they are tested in different markets. The study by Bhabra and Pettway (2003) adopts a US sample, comprising 242 IPO firms, between 1987 and 1991 while Levis' (1995) study is based on the UK market during the period 1980-1991. In the UK, rights issue is the predominant method for raising additional equity capital while general cash offers are more frequently used by US firms (Levis, 1996). This difference implies different dilution effect on existing shareholders' wealth and therefore has different impact on the likelihood of a seasoned equity offering.

Harjoto and Garen (2004) examine how managerial ownership is affected by IPO firms' desires to issue seasoned equity. They argue that because management will receive revenue from the subsequent equity issue, they have stronger incentives to maintain share ownership rather than to sell off their shares after listing. Harjoto and Garen (2004) find support for their argument; the reissuing activity raises management shareholdings relative to what it otherwise would have been. Their results suggest that a SEO provides an avenue for firms to improve their corporate governance through higher management ownership. Hence, this study argues that issuing firms with higher director ownership at the time of IPO are associated with better corporate governance and are thus expected to be associated with a higher likelihood of reissuing equity.

Therefore, hypothesis H8 is:

H8: The likelihood of a SEO is higher for issuing firms with higher director ownership at the time of IPO.

3.4 Relationship between post-IPO long-run performance and changes in board structures five years following initial listing

This section discusses the development of hypotheses on the relationship between post-IPO long-run performance and changes in board structures, including changes in board composition and changes in board size.

3.4.1 Changes in board composition

Prior studies have mostly focused on same-year relationship between board structure and firm performance. Because of the potential joint-endogeneity problems, some studies have examined the impact of ***prior firm performance*** on subsequent changes in board composition. Baysinger and Butler (1985) explore the direction of causation between firm performance and board composition, and report a positive correlation between the proportion of independent directors in 1970 and firm performance in 1980. However, no significant relationship is found between firm performance in 1970 and the proportion of independent directors in 1980. Their study thus suggests that an independent board leads to higher performance rather than the other way round.

In contrast, both Hermalin and Weisbach (1988) and Bhagat and Black (2002) report an opposite direction of causation. They find that firms that perform poorly in the past tend to adopt more independent boards. Hermalin and Weisbach (1988) show that poorly performed firms are more likely to remove inside directors and add outside directors to the board. Bhagat and Black (2002) report a significant negative relationship between performance, measured by Tobin's Q and the ratio of operating income to assets during the period 1985-1987, and board independence in 1988. Denis and Sarin (1999) also report that changes in board composition are strongly related to prior stock price performance. However, in contrast to the findings of Hermalin and Weisbach (1988), Denis and Sarin (1999) show that firms tend to increase the

proportion of outsiders on the board following good prior performance rather than after poor firm performance. Denis and Sarin (1999) also document the prevalence of annual changes in board composition in their sample; 4% of the sample firm-years between 1983 and 1992 show more than 20% changes in the proportion of outsiders on the board.

Bhagat and Black (2002) also examine if recent past performance can explain the changes in board independence. The OLS regressions do not show any significant relationship while the 3SLS regression shows a significant negative relationship between changes in board independence from 1988 to 1991 and prior performance in 1988-1990, measured by Tobin's Q and the ratio of operating income to assets, suggesting that firms tend to increase board independence after poor performance.

Denis and Sarin (1999) suggest that not only are changes in ownership and board structures common over time but the changes also tend to persist for another three years. Their study points to the importance of examining the relatively under-researched area – how board composition changes over time and how this evolution is related to firm performance. Thus, this study aims to provide evidence on these issues by comparing the board structures at the time of IPO and the board structures five years after listing and test if the changes in board structures are related to long-run aftermarket performance.

Apart from Bhagat and Black (2002) that test if the change in board independence is related to ***firm performance in the prospective period***, most of previous studies have concentrated either on the same-year relationship between board structures and firm performance (as discussed in the literature review chapter), or on the relationship between past firm performance and board structures (as just discussed). Using a

sample of large US firms, Bhagat and Black (2002) do not find a significant relationship between board independence and prospective firm performance. Given that the board structures adopted by IPO firms at the time of offering may signal firm quality, studying how the board structure changes afterwards and the relationship with long-run aftermarket performance provides a closer look at the new conventional wisdom that is in favour of highly independent boards. This also serves as another test of the cause and effect between board composition and firm performance.

Mikkelson et al. (1997) find that for US IPO firms between 1980 and 1983, the proportion of inside directors on the board has decreased from 50% prior to the offering to 40% five years after listing and to 30% ten years after listing. Also, Balatbat et al. (2004) document that the percentage of Australian IPO firms with a majority of outside directors on the board increases from 15% to 20% and the percentage of IPO firms with dual leadership increases from 55% to 63% from the first year post-listing to the fifth year post-listing. However, Balatbat et al. (2004) do not investigate whether these changes in board structures are related to long-run aftermarket performance. Based on the agency perspective that a more independent board is value enhancing, this study expects a positive relationship between changes in board composition and long-run post-IPO performance.

Hypothesis H9 is therefore:

H9: Post-IPO long-run performance is higher for issuing firms that have increased the proportion of independent directors on the board five years after listing.

3.4.2 Changes in board size

After initial public offerings, the size of the board may change and possibly increase because firms have become more established. Eisenberg et al. (1998) suggest that increasing the size of the board may be reflecting the changing nature of the firm, that is, maturing from a previously young, risky firm. Accordingly, board size would be correlated with firm performance.

However, prior studies have found a relatively constant trend in the size of the board. Based a randomly selected sample of 583 firms over the period 1983-1992, Denis and Sarin (1999) find that board size has remained relatively stable except for those firms that start with a large board. Specifically, they find that only 13% of the firm-years change the number of directors on the board by more than two members. Wu (2000) examines 350 Forbes 500 corporations in 1987 over a eight-year period and finds that the median board size decreases from 12 in the first year to 11 in the last year and that the decrease may be partly attributed to the emergence of governance activists.

Studies on the time-series analysis of IPO firms' board size have also in general reported a relatively constant trend after listing. Balatbat et al. (2004) report that the median board size during the five-year post-IPO period remains constant at five. Mikkelson et al. (1997), based on a sample of US IPO firms, report that the median board size stays unchanged at six directors five years after listing and increases only by one to seven directors ten years after listing.

Studies on the association between past performance and current board size, including Hermalin and Weisbach (1988), Yermack (1996), and Eisenberg et al. (1998), have generally documented that poorly performing firms are associated with a higher likelihood of director appointments and departures. Denis and Sarin (1999) report that

changes in board size and prior stock price performance are significantly positively related, indicating that firms that perform poorly are more likely to reduce the number of board members while firms that perform better tend to increase their board size. Accordingly, this study posits that the changes in board size after listing are positively related to post-IPO long-run performance.

Therefore, hypothesis H10 is:

H10: Post-IPO long-run performance is higher for issuing firms that have increased the board size five years after listing.

3.5 Summary

In this chapter, the hypotheses to be tested were developed. As outlined in Chapter 1, this thesis addresses the following research questions:

1. Do initial board structures of IPO firms conform to ASX best practice recommendations?
2. Do firms that conform to best practice recommendations have better firm outcomes? Specifically, the following relationships are examined:
   (i) What is the relationship between IPO underpricing and initial board structures?
   (ii) What is the relationship between post-IPO long-run performance and initial board structures?
   (iii) What is the relationship between the likelihood of SEOs and the initial board structures of IPO firms?
3. Do the board structures of IPO firms become more in line with ASX best practice recommendations five years after listing?

4. Are the changes in board structures from the time of IPO to five years later related to post-IPO long-run performance?

The hypotheses were categorized into three topic areas: (i) IPO performance and initial board structures, (ii) the likelihood of a SEO and initial board structures, and (iii) post-IPO long-run performance and changes in board structures after listing. The board characteristics considered included board composition, board leadership, board size, and director ownership.

In the next chapter, we discuss the data used to test these hypotheses and define the variables employed. Descriptive statistics of the sample are also presented.

Chapter 4

Data, Variable Definitions, and Descriptive Statistics

4.1 Introduction

This chapter begins by describing the data used to test the hypotheses developed in the previous chapter. The sample selection process and data sources are outlined in Section 4.2 and 4.3, respectively. The final sample includes 320 IPO firms over the period 1994-1999. Variable definitions are then provided in Section 4.4. Section 4.5 contains the descriptive analyses on the characteristics of sample firms.

4.2 The sample

The sample for this research comprises IPO firms that lodged prospectuses with the ASX between 1994 and 1999 and were successfully listed on the ASX. Initial public offerings during this period are identified using the Connect 4 database and checked against the “Additions to the Official List” in the ASX Fact Book published yearly. Our sample period covers a relatively "unregulated" period with respect to corporate governance practices of ASX firms. As late as March 1996, Maurice Newman, the chairman of the Australian Stock Exchange, defended the then current Listing Rule 4.10.3, which required listed companies to simply describe the corporate governance practices they had in place without recommending particular practices, on the grounds, among others, that it was not convinced that best practice in corporate governance could be defined.

Based on the Connect 4 database, an initial total of 547 firms are identified to have lodged prospectuses with ASX between the years 1994-1999. However, as the Connect 4 database includes entitlements and rights issues in addition to the IPOs, a careful

screening is undertaken to ensure that only “unseasoned” issues of “pure” common stock are included in the sample. Entitlements and rights issues that are considered as seasoned offerings and non-ordinary share offers (such as convertible preference share and unsecured notes) are all excluded from the final sample. Withdrawn offers and offers by foreign companies are also excluded.

IPOs by real estate investment trusts (REITs), unit trusts and pooled development funds are further excluded because the nature of these entities is very different to other listed companies. They function more as conduits for investment into other entities and the equity offerings by these companies are generally not underpriced (Ritter & Welch, 2002). Moreover, unlike companies, unit trusts are not a separate legal entity so different governance issues may be involved in unit trusts compared with industrial and services companies. The study by Lee, Lee and Taylor (2003) finds that compared with other IPOs, unit offerings are riskier, choose less prestigious underwriters and have a lower fraction of ownership retained by initial shareholders. Therefore, in line with the common practice in corporate governance literature, these companies are excluded from the final sample. Interestingly, the ASX recommendations document explicitly includes in its scope "any listed entity, including listed management investment schemes (trusts), listed stapled entities and listed foreign entities" (ASX, 2003, p. 7). The final sample size comprises 320 IPO firms that lodged prospectuses between 1994 and 1999. Table 4.1 presents the selection criteria that have been applied to obtain the final sample.

Table 4.1 Sample selection criteria

	Year						Total
Year lodged prospectuses	**1994**	**1995**	**1996**	**1997**	**1998**	**1999**	**94-99**
Total no. of firms lodged prospectuses with ASX	**121**	**46**	**79**	**85**	**51**	**165**	**547**
Less: Withdrawn offers	21	4	4	10	7	2	**48**
Less: Issues by foreign companies	9	8	3	3	1	1	**25**
Less: Relisting issues	1	2	2	4	0	0	**9**
Less: Seasoned issues							
Entitlement	7	1	3	2	1	10	**24**
Rights	0	0	1	0	0	37	**38**
Less: Non-ordinary share issues							
Convertible preference shares	1	0	1	0	0	0	**2**
Unsecured notes	1	2	0	0	1	0	**4**
Stapled securities	2	0	5	2	1	2	**12**
Mixed issues	2	1	0	0	2	3	**8**
Permanent shares	1	0	0	0	0	0	**1**
Less: Companies with very different structures							
Trust	6	4	10	12	9	5	**46**
Pooled development fund	1	1	1	0	3	2	**8**
Demutualisation	0	0	1	0	1	0	**2**
Final Sample Size	**69**	**23**	**48**	**52**	**25**	**103**	**320**

The sample IPO firms are taken from Connect 4 database from 1994 to 1999.

4.2.1 Survivorship of sample firms

In this section, we examine the survivorship of sample firms. The exclusion of sample firms that do not survive for the full period can lead to a survivorship bias, for example, in the examination of post-IPO long-run performance and board characteristics. This is because IPO firms that survived are likely to be better performers and have different board structures. To determine the survivorship of sample firms, Panel A of Table 4.2 reports the number and proportion of IPO firms that are subsequently delisted in the post-IPO period.[16] Of the total sample of 320 IPO firms, 1.9% or 6 firms are delisted in the first year subsequent to listing. The percentage then rises to 5.9% in the second year, 8.8% in the third year, 12.5% in the fourth year and 15% in the fifth year.

While we believe that non-surviving firms represent only a small proportion of less than 10% of our sample and should not significantly affect our results, we will adopt the long-run performance measure developed by Brown and da Silva Rosa (1998) (as described in Section 4.4.1) to control for the potential bias induced by the survivorship of sample firms. Additionally, we will compare the board characteristics of surviving and non-surviving IPO firms in Section 7.3 to determine if the board structures that IPO firms adopt at the time of IPO are related to their survivorship after listing.

Panel B reports the delisting reasons for IPO firms that were delisted within the five-year period following listing. We find that most IPO firms were delisted because they were involved in mergers or acquisitions (i.e., 30 firms or 63% of the delisted firms) or failed to pay listing fees (i.e., 12 sample firms or 25% of the delisted firms). Panel C classifies these delisted firms by industry groups. Of the 48 firms that were delisted within five years after listing, most firms (9 IPO firms or 19% of the delisted

[16] Note that firms that were delisted for the sole reason of company name or code changes are not considered as non-surviving and thus are not regarded as delisted firms in this study.

firms) were from the telecommunications sector, followed by the miscellaneous sector (7 IPO firms or 15% of delisted firms), gold, alcohol & tobacco, and media sectors. The latter three sectors all have four IPO firms (or 8% of delisted firms) delisted within a five-year period following initial listing.

Panel D of Table 4.2 summarises the year in which IPO firms were delisted and this information is captured up till 11th October 2004. Among the 58 firms that became delisted before 11th October 2004, 48% of these firms drop out within three years after the IPO. The majority of delisting events occur in the second (13 IPO firms) and fourth year (12 IPO firms) following initial listing. The annual drop-out rate is 2%, 4%, 3%, and 4% in the first, second, third and fourth year after IPOs, respectively. This drop out rate is in line with the finding reported in Lee et al. (1996a). Lee et al. (1996a) find that for IPOs between 1976 and 1989, the probability of drop-out within three years of listing is 3.88% per annum. Therefore, our sample has similar attributes as those of other Australian IPO studies and is representative of average Australian IPO firms.

Table 4.2 Survivorship of IPO firms

Panel A

Number and proportion of sample firms become delisted* in the post-IPO period

Prospectus year	Initial IPO sample size	# delist within 1 yr	% delist	# delist within 2 yrs	% delist	# delist within 3 yrs	% delist	# delist within 4 yrs	% delist	# delist within 5 yrs	% delist
1994	69	2	0.6%	5	1.6%	7	2.2%	9	2.8%	12	3.8%
1995	23	0	0.0%	0	0.0%	1	0.3%	2	0.6%	2	0.6%
1996	48	0	0.0%	0	0.0%	1	0.3%	3	0.9%	5	1.6%
1997	52	1	0.3%	4	1.3%	6	1.9%	8	2.5%	9	2.8%
1998	25	1	0.3%	3	0.9%	4	1.3%	7	2.2%	7	2.2%
1999	103	2	0.6%	7	2.2%	9	2.8%	11	3.4%	13	4.1%
Total	**320**	**6**	**1.9%**	**19**	**5.9%**	**28**	**8.8%**	**40**	**12.5%**	**48**	**15.0%**

* Firms that were delisted for the sole reason of company name or code changes are not considered as non-surviving and thus are not regarded as delisted firms.

Panel B

Reasons for delisting (within five years after listing)

Year lodged prospectuses	1994		1995		1996		1997		1998		1999		1994-1999	
Delisting reasons	No. of firms delisted	%	No. of firms delisted	%	No. of firms delisted	%	No. of firms delisted	%	No. of firms delisted	%	No. of firms delisted	%	No. of delisted firms	%
Involved in a takeover or merger	9	75.0	2	100.0	4	80.0	7	77.8	3	50.0	5	38.5	30	62.5
Failed to pay listing fees	1	8.3	0	0.0	1	20.0	1	11.1	3	50.0	6	46.2	12	25.0
Requested by the company	2	16.7	0	0.0	0	0.0	0	0.0	1	0.0	2	15.4	5	10.4
After a long suspension	0	0.0	0	0.0	0	0.0	1	11.1	0	0.0	0	0.0	1	2.1
Total	**12**	**100**	**2**	**100**	**5**	**100**	**9**	**100**	**7**	**100**	**13**	**100**	**48**	**100**

Panel C

Number of IPO firms delisted within 5 years after listing by ASX industry groups

Year lodged prospectuses	1994	1995	1996	1997	1998	1999	1994-1999	
ASX Sector	No. of firms delisted	No. of firms delisted	No. of firms delisted	No. of firms delisted	No. of firms delisted	No. of firms delisted	No. of firms delisted	%
Gold	2	-	1	1	-	-	4	8.3%
Other Metals	1	-	-	-	-	-	1	2.1%
Energy	-	-	-	1	-	-	1	2.1%
Infrastructure & Utilities	-	-	-	1	-	-	1	2.1%
Developers & Contractors	-	-	1	-	-	-	1	2.1%
Alcohol & Tobacco	1	-	-	1	1	1	4	8.3%
Food & Household Goods	-	-	-	-	-	3	3	6.3%
Engineering	-	-	-	1	-	-	1	2.1%
Retail	-	-	-	-	-	2	2	4.2%
Transport	-	-	-	1	-	-	1	2.1%
Media	2	-	-	-	-	2	4	8.3%
Insurance	2	-	-	-	-	-	2	4.2%
Telecommunications	1	1	1	2	3	1	9	18.8%
Invest & Financial Services	1	-	-	-	-	2	3	6.3%
Healthcare & Biotechnology	1	-	1	-	-	-	2	4.2%
Miscellaneous Industries	1	-	-	1	3	2	7	14.6%
Tourism & Leisure	-	1	1	-	-	-	2	4.2%
Total	**12**	**2**	**5**	**9**	**7**	**13**	**48**	**100%**

Panel D

Year in which the IPO firms become delisted

IPO firms delisted in the ... *	No. of delisted firms	% of total delisted firms	% of the sample
1st yr after IPO	6	10.3%	1.9%
2nd yr after IPO	13	22.4%	4.1%
3rd yr after IPO	9	15.5%	2.8%
4th yr after IPO	12	20.7%	3.8%
5th yr after IPO	8	13.8%	2.5%
6th yr after IPO	5	8.6%	1.6%
7th yr after IPO	1	1.7%	0.3%
8th yr after IPO	2	3.4%	0.6%
9th yr after IPO	2	3.4%	0.6%
Total delisted firms	**58**	**100%**	
Total sample firms	**320**		**18.1%**

*Data captured as at 11 October 2004.

4.3 Data sources

Details of the IPO offers, including the issue prices and total shares offered, and the information on boards of directors, including board size, leadership structures, board composition and directors' share ownership, were hand collected from company prospectuses maintained by the Connect 4 database. Industry sectors and accounting information (such as total revenue) were obtained from the Aspect Financial database. IPO firms' listing date, delisting date and delisting details were also obtained from the Aspect Financial database. The Share Price and Price Relatives (SPPR) database, supplied by the Centre for Research in Finance, was used to obtain monthly share price data for calculating post-IPO long-run returns. Daily share price data and ASX All Ordinaries Accumulation Index value were gathered from the Core Research Data (CRD) database, provided by Securities Industry Research Centre of Asia-Pacific (SIRCA), to calculate IPO underpricing (or initial day returns) and immediate aftermarket returns. Thompson Financial SDC Platinum New Issues database was used to identify which IPO firms issued seasoned equity offerings (SEOs) after listing and to gather information on the issue details of SEOs, including the offering date, type of issue, offering price, and the number of shares offered.

4.4 Variable definitions

The following section defines the dependent, independent, and control variables used to test the hypotheses developed in the previous chapter, including (i) the relationship between IPO underpricing and initial board structures, (ii) the relationship between post-IPO long-run performance and initial board structures, (iii) the relationship between the likelihood of a SEO and initial board structures, and (iv) the relationship between post-IPO long-run performance and changes in board structures. Descriptive statistics for the variables defined are also provided, except for variables relating to board characteristics, which are discussed in the next chapter.

4.4.1 Dependent variables

IPO underpricing (UPRICE)

IPO underpricing is measured by initial returns. The more an issue is underpriced, the higher the initial returns. In the IPO literature, the term "underpricing" is used interchangeably with the term "initial returns".

The raw initial return (RIR) on the first day of trading is defined as the percentage difference between the offer price and the Day 1 closing price, and is calculated as follows:

$$R_{i,t} = \frac{P_{i,1} - P_{i,0}}{P_{i,0}}$$

To adjust for market movements between the prospectus date and the first trading day of the IPO, market adjusted initial return (MAIR) is also calculated by subtracting the return to ASX All Ordinaries Accumulation Index[17] from the RIR. The equation for MAIR is presented below:

$$R'_{i,t} = \frac{P_{i,1} - P_{i,0}}{P_{i,0}} - \frac{M_{i,1} - M_{i,0}}{M_{i,0}}$$

where

$R_{i,t}$ = Raw initial return of company *i* on the day of initial listing
$P_{i,1}$ = Closing price of company *i* on the first trading day
$P_{i,0}$ = IPO offer price as per prospectus of company *i*
$R'_{i,t}$ = Market adjusted initial return of company *i* on the day of initial listing
$M_{i,1}$ = ASX All Ordinaries Accumulation Index on the 1st trading day of company *i*
$M_{i,0}$ = ASX All Ordinaries Accumulation Index at the prospectus date of company *i*

[17] The reason for using the market index as a benchmark is that it is convenient and readily available while we note that there are other specifically constructed benchmarks, such as excluding recent IPOs, book to market and size adjusted.

Raw and market adjusted initial returns by sample (or prospectus) years and over the entire sample period are reported in Table 4.3. The Table shows that the overall average RIR and MAIR are 26.7% and 24.9% respectively, with the year 1998 having the highest average RIR of 79.1% and MAIR of 75.3%. Over the sample period 1994-1999, positive RIRs and MAIRs are observed for most IPO firms. Of the total 320 IPOs, about two third of the IPOs (203 firms) have MAIRs greater than zero, suggesting that most IPOs have been underpriced.

Table 4.3 Descriptive statistics for raw and market adjusted initial returns

Panel A

Raw initial returns (RIRs)

Prospectus year	n	Mean (%)	Median (%)	SD (%)	Min (%)	Max (%)	Positive^	Fair*	Negative#
1994	69	0.66	0.00	20.90	-45.00	60.00	33	5	31
1995	23	9.55	5.00	33.39	-20.00	140.00	14	0	9
1996	48	15.45	6.50	56.39	-30.40	370.00	31	2	15
1997	52	18.94	6.75	78.89	-69.19	546.50	33	4	15
1998	25	79.06	64.00	156.65	-82.50	458.00	14	0	11
1999	103	44.34	19.24	63.93	-31.67	342.00	80	6	17
1994-1999	**320**	**26.67**	**8.82**	**72.79**	**-82.50**	**546.50**	**205**	**17**	**98**

Panel B

Market adjusted initial returns (MAIRs)

Prospectus year	n	Mean (%)	Median (%)	SD (%)	Min (%)	Max (%)	Positive^	Fair*	Negative#
1994	69	2.80	2.23	21.04	-41.28	66.05	38	0	31
1995	23	4.46	0.22	35.09	-32.21	141.06	13	0	10
1996	48	11.92	3.60	56.18	-34.68	363.26	27	0	21
1997	52	18.47	5.34	78.34	-34.02	545.64	32	0	20
1998	25	75.29	55.11	156.37	-102.34	458.61	14	0	11
1999	103	41.32	15.91	62.85	-28.75	332.32	79	0	24
1994-1999	**320**	**24.90**	**7.15**	**71.99**	**-102.34**	**545.64**	**203**	**0**	**117**

^ Positive records number of IPO firms whose initial returns are greater than zero. # Negative records number of IPO firms whose initial returns are less than zero. * Fair records number of IPO firms whose initial returns are equal to zero.

Raw initial return is measured by $R_{i,t} = \frac{P_{i,1} - P_{i,0}}{P_{i,0}}$

Market adjusted initial return is measured by $R'_{i,t} = \frac{P_{i,1} - P_{i,0}}{P_{i,0}} - \frac{M_{i,1} - M_{i,0}}{M_{i,0}}$

where $R_{i,t}$ = Raw initial return of company i on the day of initial listing; $P_{i,1}$ = Closing price of company i on the first trading day; $P_{i,0}$ = IPO offer price as per prospectus of company i; $R'_{i,t}$ = Market adjusted initial return of company i on the day of initial listing; $M_{i,1}$ = ASX All Ordinaries Accumulation Index on the first trading day of company i; $M_{i,0}$ = ASX All Ordinaries Accumulation Index at the prospectus date of company i.

Post-IPO long-run performance (LRRETURN)

The post-IPO long-run performance is assessed using equal-weighted buy-and-hold abnormal returns. Equal-weighted returns are used in all analyses in this study as Brown and Warner (1980) suggest that an equal-weighted benchmark is more powerful than a value-weighted benchmark in detecting abnormal performance. Also, the buy-and-hold return (BHR) method is adopted here because it can measure the actual investor behaviour more closely. The raw BHR is defined as:

$$R_{i,T} = \prod_{t=1}^{T} (1 + r_{it}) - 1$$

where T is the holding month and r_{it} is firm $_i$'s return in month t, inclusive of cash dividends paid in month t. In the case where there are capital changes (e.g. stock splits and rights offerings), they are also adjusted for. $R_{i,T}$ measures the returns from a buy-and-hold strategy where a share is purchased at the initial day's closing market price after going public and holding it until the end of month T. The sample for this analysis includes only firms with share price data available over the entire event-window. The mean BHR is computed as:

$$R_T = \frac{1}{N}\left[\sum_{i=1}^{N} R_{iT}\right]$$

where N denotes the number of companies. The mean abnormal buy-and-hold return adjusted for size decile is thus given by:

$$AR_T = R_{T,\text{IPO}} - R_{T,\text{Decile}}$$

That is, the decile adjusted return (AR_T) is defined as the difference between the BHRs to sample IPO firms ($R_{T,\text{IPO}}$) and the BHRs to the decile to which sample firms belong (i.e., $R_{T,\text{Decile}}$ or size-decile return).

The procedures involved in obtaining the size-decile return for each sample firm are described below (Brown & da Silva Rosa, 1998):

1. Identify all firms listed on the ASX that have sufficient share price data available for calculating BHRs over the given event-window.
2. Rank the firms based on their market capitalisation at the beginning of the event-window.
3. Sort them into size-deciles with decile one comprising the smallest ten percent of firms.
4. Calculate the BHRs for the deciles that sample firms belong to.

A positive (or negative) value of *AR* indicates that IPOs outperform (or underperform) a portfolio of control firms matched on size. To control for the survival bias, only firms that have survived over the entire event-window are included in the control portfolio. Thus, the advantage of calculating decile adjusted returns is that both the firm size effect and survival bias are controlled for (Brown & da Silva Rosa, 1998).

The method for testing the significance of post-IPO long-run performance relies on the construction of 1002 control portfolios as described in Brown and da Silva Rosa (1998). The mean return to the sample firms is compared against an empirically generated distribution of returns from 1002 control portfolios, matched on size-decile and survival. Previous researchers [e.g. Kothari and Warner (1997); Barber and Lyon (1997); Brav, Geczy and Gompers (2000)] have questioned the statistical power of long-run performance measures because the abnormal returns are often positively skewed that can lead to biased and inefficient results. Thus, the advantages of the approach used here are that the control is an empirical distribution under the null hypothesis and no formal test statistics are required. There are thus no concerns for the skewness bias or that parametric assumptions may be violated.

Specifically, the procedures for size matching and constructing the 1002 control portfolios involve four steps, and they are repeated for each sample IPO firm that has share price data available over the event-window under investigation. Suppose the event-window of interest is [X, Y], defined in months relative to the listing month. The steps required for constructing the 1002 control portfolios are as follows (Brown & da Silva Rosa, 1998):

1. Identify all firms listed on the ASX that have survived over the period [X, Y], denoted as the set {PQ}.
2. Calculate the market capitalisation of firms in the set {PQ} as at the starting month [X] of the event-window and determine the size decile that each sample firm belongs to.
3. Select a firm randomly with replacement from the set {PQ} that has the same size decile as the sample firm and allocate it to the first of 1002 control portfolios.
4. Repeat step three for 1001 more times to obtain a total of 1002 control portfolios.

Table 4.4 reports the number and percentage of sample firms in each size decile (by market capitalisation) for each event-window. Apart from the event-window [+1,+60][18], most sample firms (about 18% of the firms) in each event-window belong to decile five; the average and median size decile is four. The five smallest deciles contain about 70% of the IPOs, indicating that most of the sample IPO firms have small to medium firm size, and no sample firms belong to the largest decile.

[18] Note that IPO firms that were listed in and after December 1999 do not have post-five year share price data available due to the finish date of the database at the time of data collection.

Table 4.4 Size decile of sample IPO firms

	Number and percentage of sample firms in each size decile									
Event-windows	**[+1,+12]**		**[+1,+24]**		**[+1,+36]**		**[+1,+48]**		**[+1,+60]**	
Size decile	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**
1	48	15.3%	46	15.2%	45	15.5%	37	15.3%	35	20.0%
2	43	13.7%	42	13.9%	41	14.1%	33	13.6%	29	16.6%
3	41	13.1%	40	13.2%	39	13.4%	35	14.5%	29	16.6%
4	30	9.6%	28	9.2%	24	8.3%	19	7.9%	10	5.7%
5	57	18.2%	54	17.8%	53	18.3%	45	18.6%	27	15.4%
6	28	8.9%	27	8.9%	26	9.0%	22	9.1%	12	6.9%
7	31	9.9%	31	10.2%	28	9.7%	23	9.5%	17	9.7%
8	24	7.7%	24	7.9%	24	8.3%	18	7.4%	9	5.1%
9	11	3.5%	11	3.6%	10	3.4%	10	4.1%	7	4.0%
10	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Total	**314**	**100%**	**301**	**100%**	**292**	**100%**	**242**	**100%**	**175**	**100%**
Average	4.2		4.3		4.2		4.2		3.8	
Median	4.0		4.0		4.0		4.0		3.0	
SD	2.4		2.4		2.4		2.4		2.5	

The event-windows are defined in months relative to the listing month. Decile 1 comprises the smallest 10% of firms, measured in market capitalisation, while decile 10 comprises the largest 10% of firms.

Table 4.5 reports the summary statistics for the post-IPO long-run performance over various event-windows, which are expressed in months relative to the listing month. In addition to raw buy-and-hold returns and decile adjusted returns, Table 4.5 also reports equal-weighted and value-weighed market adjusted BHRs, where the market portfolio includes all firms that have the share price available for calculating the BHRs over the given event-window. As the biases associated with market adjusted returns are more severe the wider the event-windows (da Silva Rosa *et al.*, 2004), the analyses in this thesis place more weight on decile adjusted returns.

The number in bold italic below each return figure is the significance test, which shows the number of control portfolios, out of 1002, that have a return higher than the average return to sample IPO firms. As discussed in Brown and da Silva Rosa (1998) and da Silva Rosa et al. (2004), because the decile and market adjusted returns are generated conditioning on survival, the return estimates incorporate a deliberate "look-ahead" bias. Given that the estimates of abnormal return cannot be attributable to a feasible investment strategy, they do not provide estimates of economic gains or

losses after IPOs. Hence, the relative performance, which is a more meaningful assessment of post-IPO long-run performance, is focused on here.[19]

Table 4.5 shows that the long-run performance is positively skewed as widely document in previous long-run performance studies. Not only is the average return for each measure consistently higher than its median over different event-windows but also the maximum return value is considerably large. Another interesting finding from the Table is that the median adjusted returns are consistently negative across different measures and event-windows. The median (equal-weighted) market adjusted returns for IPOs between 1994 and 1999 are –20.7%, –43.4% and –57.1% over the one, two, and three years post-listing, respectively. The study by Lee et al. (1996a) documents that the median market adjusted returns for Australian IPOs between 1976 and 1989 are –30.6%, –51.0%, and –63.8% for a holding period of one, two and three years, respectively. Thus, in line with what have been documented in prior IPO studies, we also find a negative drift in long-run returns in our sample.

[19] As noted in da Silva Rosa et al. (2004, p. 118), although the estimate of abnormal returns cannot be attributable to a feasible investment strategy, it does not matter since "our principal interest is not in estimating precise point estimates of abnormal return but in detecting if our experimental sample firms exhibit significant abnormal performance".

Table 4.5 Summary statistics of post-IPO long-run performance

Event-windows		Raw BHRs	E Decile Adj R	V Decile Adj R	E Mkt Return	V Mkt Return	Sample No
[+1,+12]	Mean	-4.58%	-0.88%	-0.50%	-5.90%	-6.92%	314
	Median	-19.81%	-16.07%	-15.32%	-20.74%	-23.17%	
	Min	-94.86%	-96.95%	-96.25%	-105.11%	-95.82%	
	Max	871.55%	839.05%	837.57%	843.01%	867.98%	
	SD	82.24%	76.31%	76.02%	77.84%	81.37%	
	No of control portfolios with a higher mean return	***593***	***543***	***544***	***564***	***593***	
[+1,+24]	Mean	-8.66%	-11.56%	-11.11%	-15.23%	-13.98%	301
	Median	-37.88%	-40.34%	-36.38%	-43.44%	-44.03%	
	Min	-98.90%	-221.57%	-220.32%	-126.64%	-102.48%	
	Max	880.01%	856.66%	852.64%	847.64%	873.55%	
	SD	105.07%	102.95%	102.90%	101.40%	104.58%	
	No of control portfolios with a higher mean return	***988***	***979***	***980***	***983***	***988***	
[+1,+36]	Mean	10.81%	3.98%	4.69%	0.99%	2.67%	292
	Median	-49.13%	-50.14%	-49.30%	-57.09%	-57.49%	
	Min	-99.70%	-170.73%	-160.93%	-127.18%	-121.95%	
	Max	2209.61%	2197.47%	2200.42%	2200.61%	2203.32%	
	SD	220.64%	217.44%	217.28%	218.61%	219.50%	
	No of control portfolios with a higher mean return	***284***	***269***	***269***	***277***	***284***	
[+1,+48]	Mean	17.49%	8.24%	9.57%	4.69%	4.79%	242[#]
	Median	-50.26%	-52.22%	-50.40%	-59.55%	-62.63%	
	Min	-99.20%	-164.58%	-165.94%	-132.52%	-116.99%	
	Max	2926.89%	2911.63%	2915.62%	2912.39%	2905.98%	
	SD	253.48%	251.48%	251.66%	252.58%	252.54%	
	No of control portfolios with a higher mean return	***193***	***187***	***187***	***191***	***193***	
[+1,+60]	Mean	29.86%	20.71%	22.48%	15.19%	10.17%	175*
	Median	-47.77%	-51.82%	-49.57%	-64.28%	-68.45%	
	Min	-98.60%	-173.37%	-155.29%	-136.82%	-125.85%	
	Max	1994.06%	1970.45%	1968.45%	1981.48%	1969.12%	
	SD	273.16%	270.09%	270.24%	272.54%	272.31%	
	No of control portfolios with a higher mean return	***80***	***74***	***74***	***79***	***80***	

The event-windows are defined in months relative to the listing month. ***Raw BHRs*** (buy-and-hold returns) is the BHRs to sample IPO firms. ***E Decile Adj R*** is the equal-weighted decile adjusted returns, which is defined as the difference between BHRs to sample IPO firms and BHRs to the decile to which sample firms belong. ***V Decile Adj R*** is the value-weighted decile adjusted returns. ***E Mkt Return*** is the equal-weighted market adjusted return, which is the Raw BHRs adjusted for returns to the market portfolio. The market portfolio is defined to include all firms that have the share price available for calculating the BHRs over the given event-window. ***V Mkt Return*** is the value-weighted market adjusted return. ***Sample No*** shows the number of sample firms with the share price data available over the event-window. The number in bold italic below each return is the significance test, which shows the number of control portfolios, out of 1002, that have a return greater than the average return to sample IPO firms.

[#] Due to the finish date of the database at the time of data collection, IPO firms (38 firms) that were listed in and after December 1999 do not have the post-four year share price data.

* The post-5 year share price data for IPO firms listed in and after December 1998 was not available at the time of data collection.

In addition, Table 4.5 shows that the poor performance extends to five years post-listing, though it is more significant over the first two years post-IPO. Specifically, over the event-window [+1,+24], well over 95% of all control portfolios (or 979 of the 1,002 control portfolios) have a higher average (equal-weighted) decile adjusted return than the average return of –11.6% to sample IPO firms. In fact, there appears to be a slow-down in the rate of deterioration for long-run returns after a three-year holding period, with the median decile adjusted returns stay at about –50%. This pattern is similar to that documented in Espenlaub et al. (2000) who examine UK IPOs between 1985-1992 and find that after three years of public trading, the cumulative average abnormal returns, though remain negative, show a slow-down in deterioration.

Conditioning on survival, Table 4.6 reports the post-IPO long-run performance of 292 IPO firms that have survived for at least three years after listing over three event-windows. Comparing figures in Table 4.6 with that in Table 4.5, firms that have survived for at least three years do not appear to perform better than sample firms that have not been conditioned on survival. On the contrary, IPO firms that have survived for at least three years are found to underperform the sample firms without conditioning on survival by up to 2% based on median returns.[20]

Table 4.7 then reports the post-IPO long-run performance of 242 IPO firms that have survived for at least four years after listing over four event-windows.[21] This time when comparing the returns in Table 4.7 with that in Table 4.5, better performance have been observed for sample firms conditioning on survival. Based on equal-weighted decile adjusted returns, the median return for sample firms conditioned on survival (Table 4.7)

[20] The only exception is the value-weighted market adjusted returns over the event-window [+1,+12], which show slightly better performance when survival has been conditioned for three years post-IPO.

[21] Note that the decrease in sample size from 292 firms over the event-window [+1,+36] to 242 firms over the event-window [+1,+48] cannot be solely attributed to firms becoming delisted. Firms listed in and after December 1999 are also excluded from the sample for event-window [+1,+48] due to the unavailability of post-four-year share price data.

is 5%, 6.9% and 1.6% higher than sample firms without conditioning on survival (Table 4.5) over the event-window [+1,+12], [+1,+24] and [+1,+36], respectively. Overall, survived IPO firms do not appear to consistently outperform or underperform sample firms that have not been conditioned on survival.

Table 4.6 Long-run performance of IPO firms that have survived for at least 3 years after listing

Event-windows		Raw BHRs	E Decile Adj R	V Decile Adj R	E Mkt Return	V Mkt Return	Sample No
[+1,+12]	Mean	-3.95%	-0.60%	-0.18%	-5.31%	-6.38%	292
	Median	-19.22%	-16.32%	-15.42%	-20.89%	-22.86%	
	Min	-94.86%	-96.95%	-96.25%	-105.11%	-95.82%	
	Max	871.55%	839.05%	837.57%	843.01%	867.98%	
	SD	84.01%	78.01%	77.74%	79.59%	83.18%	
[+1,+24]	Mean	-8.39%	-11.47%	-10.95%	-14.89%	-13.73%	292
	Median	-37.32%	-40.69%	-37.80%	-45.62%	-44.10%	
	Min	-98.90%	-221.57%	-220.32%	-126.64%	-102.48%	
	Max	880.01%	856.66%	852.64%	847.64%	873.55%	
	SD	106.44%	104.40%	104.34%	102.77%	105.96%	
[+1,+36]	Mean	10.81%	3.98%	4.69%	0.99%	2.67%	292
	Median	-49.13%	-50.14%	-49.30%	-57.09%	-57.49%	
	Min	-99.70%	-170.73%	-160.93%	-127.18%	-121.95%	
	Max	2209.61%	2197.47%	2200.42%	2200.61%	2203.32%	
	SD	220.64%	217.44%	217.28%	218.61%	219.50%	

The event-windows are defined in months relative to the listing month. ***Raw BHRs*** (buy-and-hold returns) is the BHRs to sample IPO firms. ***E Decile Adj R*** is the equal-weighted decile adjusted returns, which is defined as the difference between BHRs to sample IPO firms and BHRs to the decile to which sample firms belong. ***V Decile Adj R*** is the value-weighted decile adjusted returns. ***E Mkt Return*** is the equal-weighted market adjusted return, which is the Raw BHRs adjusted for returns to the market portfolio. The market portfolio is defined to include all firms that have the share price available for calculating the BHRs over the given event-window. ***V Mkt Return*** is the value-weighted market adjusted return. ***Sample No*** shows the number of sample firms with the share price data available over the event-window.

Table 4.7 Post-IPO long-run performance for the 242 IPO firms that have survived over the event-window [+1,+48]

Event-windows		Raw BHRs	E Decile Adj R	V Decile Adj R	E Mkt Return	V Mkt Return	Sample No
[+1,+12]	Mean	3.22%	4.27%	4.73%	-0.50%	0.38%	242
	Median	-14.98%	-11.04%	-11.05%	-16.63%	-16.95%	
	Min	-89.51%	-96.95%	-96.25%	-105.11%	-92.44%	
	Max	871.55%	839.05%	837.57%	843.01%	867.98%	
	SD	87.95%	82.61%	82.26%	84.19%	87.24%	
[+1,+24]	Mean	-2.06%	-8.66%	-8.04%	-11.63%	-7.61%	242
	Median	-28.34%	-33.44%	-32.19%	-38.16%	-35.76%	
	Min	-96.56%	-221.57%	-220.32%	-122.47%	-100.38%	
	Max	554.97%	558.81%	560.22%	556.31%	541.58%	
	SD	95.64%	95.64%	95.69%	93.19%	95.18%	
[+1,+36]	Mean	24.76%	13.99%	14.82%	11.05%	14.78%	242
	Median	-33.39%	-48.58%	-47.50%	-50.97%	-45.82%	
	Min	-99.20%	-170.73%	-160.93%	-127.18%	-121.95%	
	Max	2209.61%	2197.47%	2200.42%	2200.61%	2203.32%	
	SD	237.80%	235.74%	235.53%	237.08%	237.31%	
[+1,+48]	Mean	17.49%	8.24%	9.57%	4.69%	4.79%	242
	Median	-50.26%	-52.22%	-50.40%	-59.55%	-62.63%	
	Min	-99.20%	-164.58%	-165.94%	-132.52%	-116.99%	
	Max	2926.89%	2911.63%	2915.62%	2912.39%	2905.98%	
	SD	253.48%	251.48%	251.66%	252.58%	252.54%	

The event-windows are defined in months relative to the listing month. ***Raw BHRs*** (buy-and-hold returns) is the BHRs to sample IPO firms. ***E Decile Adj R*** is the equal-weighted decile adjusted returns, which is defined as the difference between BHRs to sample IPO firms and BHRs to the decile to which sample firms belong. ***V Decile Adj R*** is the value-weighted decile adjusted returns. ***E Mkt Return*** is the equal-weighted market adjusted return, which is the Raw BHRs adjusted for returns to the market portfolio. The market portfolio is defined to include all firms that have the share price available for calculating the BHRs over the given event-window. ***V Mkt Return*** is the value-weighted market adjusted return. ***Sample No*** shows the number of sample firms with the share price data available over the event-window.

Table 4.8 reports the initial returns and long-run performance of IPOs by industry groups. The industry classifications adopted here are the ASX industry classifications, used by ASX up until September 2002. The Table shows wide variations in IPO performance across industries. The average market adjusted initial returns range from a low of -10.14% for the gold sector to a high of 44.67% for the miscellaneous industries. The average three-year holding period decile adjusted returns range from –85.41% for the diversified resources sector to 68.75% for the healthcare and biotechnology sector.

It is interesting to note that based on average returns, some industries do exhibit the inverse relationship between initial day returns and long-run returns, as suggested by Levis (1993) and Brown (1999). For example, industries, including diversified

resources, paper & packaging, food & household goods, media, and telecommunications, are found to have high average initial day returns while exhibiting poor long-run performance. Gold industry, on the other hand, provides a notable exception to this pattern; firms in this industry rank among the worst performers not only in initial day returns but also in long-run returns.

Table 4.8 IPO performance by ASX industry groups, 1994-1999

ASX sector	Number of issues	Average market adjusted initial returns (%)	Median market adjusted initial returns (%)	Average 3-year holding period decile adjusted returns (%)	Median 3-year holding period decile adjusted returns (%)
01 Gold	27	-10.14	-13.68	-31.93	-54.81
05 Infrastructure & Utilities	4	0.55	1.44	-29.38	-2.30
07 Building Materials	3	1.72	3.42	-2.07	11.25
03 Diversified Resources	2	3.85	3.85	-85.41	-85.41
12 Paper & Packaging	1	5.43	5.43	-32.90	-32.90
09 Food & Household Goods	6	5.65	11.92	-39.16	-32.02
14 Transport	5	6.36	3.02	28.92	-4.30
24 Tourism & Leisure	13	6.84	6.96	-1.87	-36.54
17 Insurance	2	9.68	9.68	31.87	31.87
11 Engineering	5	10.96	9.42	-0.03	-62.56
16 Banks & Finance	2	12.35	12.35	61.64	61.64
21 Healthcare & Biotechnology	25	13.35	6.32	68.75	-50.80
15 Media	21	21.42	8.12	-69.93	-79.52
08 Alcohol & Tobacco	6	23.63	25.24	11.86	26.89
13 Retail	18	24.54	12.71	32.20	-48.14
04 Energy	17	24.82	2.14	43.30	-44.96
10 Chemicals	1	25.27	25.27	46.50	46.50
02 Other Metals	23	32.03	0.08	-0.72	-53.29
18 Telecommunications	34	34.88	14.46	-25.47	-63.10
19 Invest & Financial Services	22	35.29	8.88	44.08	-20.61
06 Developers & Contractors	8	41.19	8.44	4.84	-16.04
22 Miscellaneous Industries	75	44.67	15.79	-1.13	-60.77
20 Property Trusts	0				
23 Diversified Industrials	0				
All firms	**320**	**24.90**	**7.15**	**3.98**	**-50.14**

Market adjusted initial return is defined as the raw initial returns adjusted for returns to the ASX All Ordinaries Accumulation Index. ***Decile adjusted return*** is the equal-weighted decile adjusted return, defined as the difference between the buy-and-hold returns (BHRs) to sample IPO firms and the BHRs to the decile to which sample firms belong.

Likelihood of subsequent equity offerings (SEO)

Likelihood of a SEO is proxied by a binary variable – whether or not an IPO firm has made seasoned equity offerings (SEOs), either a rights issue or a private placement, over the two-year period following the initial issue. To avoid using overlapping data in the analysis, IPO firms that have made multiple SEOs over the two-year period are counted only once.

Table 4.9 reports the timing of the first SEO over the two-year period post-IPO. Across the sample period, about half of the IPO firms (51%) come back to the equity market within two years. Table 4.10 shows the distribution of total number of SEOs since IPO to two years thereafter. The Table shows that of the total 320 firms, 80 firms (or 25% of firms) make one SEO and 37 firms (or 12% of firms) make two SEOs over the first two years post-IPO. It is also worth to note that there are two firms, Phoenix Technology Corporation Ltd and P.O.S. Media Online Ltd, that make more than 10 SEOs over the immediate two-year period post-IPO.

Table 4.9 Timing of the first SEO over the two-year period post-IPO

Prospectus year	**1994**	**1995**	**1996**	**1997**	**1998**	**1999**	**1994-1999**
Timing of first SEO				**No. of firms**			
t (Year of IPO)	4	2	5	5	1	6	23
t+1	11	6	9	8	13	40	87
t+2	18	4	7	12	2	11	54
Total	**33**	**12**	**21**	**25**	**16**	**57**	**164**
No. of IPO firms	**69**	**23**	**48**	**52**	**25**	**103**	**320**
% of firms that have SEOs during the first two years following listing	47.8%	52.2%	43.8%	48.1%	64.0%	55.3%	51.3%

Table 4.10 Distribution of number of SEOs since IPO to 2 years thereafter

Prospectus year	1994	1995	1996	1997	1998	1999	1994-1999	
No. of SEOs	No. of firms						No. of firms	% of firms
0	36	11	27	27	9	46	156	48.8%
1	22	5	9	12	7	25	80	25.0%
2	5	0	6	5	6	15	37	11.6%
3	3	3	4	6	1	5	22	6.9%
4	3	0	1	1	0	6	11	3.4%
5	0	2	1	0	0	4	7	2.2%
6	0	1	0	1	1	0	3	0.9%
7	0	1	0	0	0	1	2	0.6%
8	0	0	0	0	0	0	0	0.0%
9	0	0	0	0	0	0	0	0.0%
10	0	0	0	0	0	0	0	0.0%
11	0	0	0	0	1	0	1	0.3%
:	:	:	:	:	:	:	:	:
16	0	0	0	0	0	1	1	0.3%
Total	**69**	**23**	**48**	**52**	**25**	**103**	**320**	**100%**

Summary statistics:	1994	1995	1996	1997	1998	1999	1994-1999
Mean	0.8	1.6	0.9	1.0	1.6	1.3	1.1
Median	0	1	0	0	1	1	1.0
Minimum	0	0	0	0	0	0	0.0
Maximum	4	7	5	6	11[a]	16[b]	16.0
Standard Deviation	1.06	2.21	1.25	1.33	2.38	2.10	1.7

[a] Phoenix Technology Corporation Ltd; [b] P.O.S. Media Online Ltd

Table 4.11 reports the number of firms conducting SEOs within two years of listing by industry groups. Miscellaneous industries have the highest number of IPO firms (41 firms) that are involved in subsequent equity offerings within two years of listing, followed by telecommunications sector (20 firms), gold (18 firms), and the healthcare & biotechnology sector (13 firms).[22] The fact that firms in the telecommunications and gold industries typically face large initial investment and that biotech firms require large funds for research and development may explain the high frequency of SEOs by firms in these industries in the post-IPO period.

[22] While the absolute number of firms conducting SEOs in each industry is quoted, this study notes that the total number of firms in each industry should also be considered in the analysis.

Table 4.11 Number of IPO firms that issue SEOs within 2 years after listing by industry groups, 1994-1999

ASX sector	No. of firms issue SEOs within 2 years after listing	Total no. of firms in each industry
01 Gold	18	25
02 Other Metals	12	23
03 Diversified Resources	0	2
04 Energy	6	16
05 Infrastructure & Utilities	3	4
06 Developers & Contractors	1	8
07 Building Materials	1	3
08 Alcohol & Tobacco	2	4
09 Food & Household Goods	2	5
10 Chemicals	0	1
11 Engineering	2	4
12 Paper & Packaging	1	1
13 Retail	4	18
14 Transport	0	5
15 Media	12	18
16 Banks & Finance	1	2
17 Insurance	1	2
18 Telecommunications	20	32
19 Investment & Financial Services	12	20
20 Property Trusts	0	0
21 Healthcare & Biotechnology	13	24
22 Miscellaneous Industries	41	71
23 Diversified Industrials	0	0
24 Tourism & Leisure	5	13
Total	157	301[#]

Excluding firms that are delisted within 2 years after listing.

4.4.2 Independent variables

In this section, we provide the definitions of independent variables – the board characteristics. The descriptive statistics at the time of IPO for these are discussed separately in Chapter 5 and the analyses for subsequent changes in board structures after IPOs are provided in Chapter 7.

Proportion of independent directors (INDEPDIR)

Directors are classified into three categories: independent, grey, and executive directors. This study defines an independent director as a director who is not a current or past employee of the corporation, does not have substantial business or family ties with the management, nor does he/she have potential business ties with the firm. Directors who are employees of banks, law and consulting firms are excluded by the last criterion.

Note that the definition of an independent director adopted by this study is consistent with the definition provided in ASX's best practice recommendations.[23]

A grey director is either a former employee of the firm or is affiliated with managers through current or potential future business or family ties. Lastly, an executive director refers to a director who is a full-time employee of the firm.

Board leadership (LEADER)

Board leadership is measured by a binary variable and is coded as 1 if the CEO and chairman positions are separated (i.e., a dual leadership structure) and as 0 if the same person serves both the roles of the CEO and the chairman (i.e., a unitary leadership structure).

Board size (BSIZE)

Board size is measured by the total number of directors on the board, including alternate directors.

Director ownership (DIROWN)

Director ownership is measured by the total number of shares (excluding options) held directly, indirectly, or beneficially by directors and/or director-related entities as a proportion of total shares outstanding at the time of IPO. To avoid double counting the same shares held indirectly by different directors on the same board, directors' profiles, statements of directors' relevant interests and notes on related party transactions are reviewed to ensure that the same shares have only been counted once.

[23] Principle Two of the new guidelines states that "an independent director is independent of management and free of any business or other relationship that could materially interfere with – or could reasonably be perceived to materially interfere with – the exercise of their unfettered and independent judgement" (ASX, 2003, p.19)

As previous studies [e.g. Morck, Shleifer and Vishny (1988); McConnell and Servaes (1990)] have suggested a non-linear relationship between managerial ownership and firm performance, to test for the possible curvilinear relationship between director ownership and IPO performance, squared director ownership is included in the robustness test.

Change in the proportion of independent directors (CH_DIROWN)

The change in the proportion of independent directors is measured by subtracting the proportion of independent directors on the board at the time of IPO from the proportion of independent directors on the board five years thereafter.

Change in board size (CH_BSIZE)

The change in board size is measured by subtracting the board size at the time of IPO from the board size five years later.

4.4.3 Control variables

Operating history (OPHIST)

Operating history is measured by the number of years the issuing firm has been incorporated prior to the IPO, computed as the listing year minus the year of incorporation. We observed earlier that board characteristics during an IPO are likely to be used to signal firm quality. This signal assumes greater than usual importance given that little other public information is available about the issuing firms.

One indicator of the degree of opportunity (or lack thereof) for investors to be informed about a firm is its length of operating history. The longer the IPO firm has been in business, the more information about the firm will be available in the market and the less uncertainty potential investors have about the issuing firm at the time of

IPO. By being more established, older firms are likely to have more resources, experience and recognitions in the market than younger firms. The study by Ritter (1998) finds that older firms outperform younger firms financially both prior to and after the IPO. Hensler, Rutherford and Springer (1997) also report that older IPO firms are associated with a longer period of survival after listing.

Ritter (1991) suggests that the operating history of firms proxies for both ex ante uncertainty and investor optimism. Ritter (1991) shows that the older the IPO firm, the lower the initial return and the higher the long-run performance. That is, operating history is negatively related with initial returns but positively related with long-run performance. Further, Garfinkel (1993) finds that the operating history of IPO firms is positively, though insignificantly, related with the likelihood of a SEO. Accordingly, it is important to control for IPO firms' operating history.

Table 4.12 presents summary statistics on the operating history of IPO firms. The average operating history of IPO firms is 7 years and the median is 2 years. The majority of sample firms have an operating history of less than a year, represented by 42% of the firms. The point we underline here is that our sample of IPO firms is characterised by an unusually high degree of information asymmetry at precisely the time at which the promoters of the firm would wish to adopt measures to reduce the asymmetry. The extent to which they elect to adopt governance measures, such as, the appointment of independent directors to reduce the cost of information asymmetry is therefore a valid test of the net value of the measures.

Table 4.12 Operating history of sample IPO firms

Number of years since incorporation	1994		1995		1996		1997		1998		1999		1994-1999	
	No. of firms	%	No. of firms	%	No. of firms	%	No. of firms	%	No. of firms	%	No. of firms	%	No. of firms	%
0	16	23.2	1	4.5	8	16.7	14	26.9	6	24.0	24	23.3	69	21.6
1	15	21.7	10	45.5	9	18.8	14	26.9	3	12.0	13	12.6	64	20.1
2-5	11	15.9	4	18.2	18	37.5	11	21.2	8	32.0	28	27.2	80	25.1
6-10	13	18.8	3	13.6	5	10.4	4	7.7	5	20.0	15	14.6	45	14.1
11-20	5	7.2	2	9.1	5	10.4	3	5.8	3	12.0	20	19.4	38	11.9
21-30	6	8.7	1	4.5	1	2.1	3	5.8	0	0.0	1	1.0	12	3.8
>30	3	4.3	1	4.5	2	4.2	3	5.8	0	0.0	2	1.9	11	3.4
Total	**69**	**100**	**22***	**100**	**48**	**100**	**52**	**100**	**25**	**100**	**103**	**100**	**319**	**100**

Summary statistics:	1994	1995	1996	1997	1998	1999	1994-1999
Mean	8.0	7.6	7.2	7.3	4.1	5.6	6.7
Median	2	2	2	1	4	3	2
Mode	0	1	1	0 , 1**	0	0	0
Minimum	0	0	0	0	0	0	0
Maximum	80[a]	75[b]	111[c]	96[d]	14[e]	46[f]	111
Standard Deviation	13.5	16.2	16.8	15.6	4.0	7.1	12.5

* The total number of firms in 1995 for this analysis is reduced by one because the information on the date of incorporation is not available for David Jones Limited. ** An equal number of firms is found to have operating history of 0 and 1 year.
[a] MMI Ltd; [b] Qantas Airways Ltd; [c] Coates Hire Ltd; [d] Telstra Corporation Ltd; [e] Cuppa Cup Vineyards Ltd; [f] Nonferral Recyclers Ltd.

Firm size (LnFSIZE)

Firm size is measured by the natural logarithm of the book value of total assets immediately before the initial public offering. It is controlled for because larger IPO firms are associated with a higher survival rate in the aftermarket (Jain & Kini, 1999) and better sharemarket performance [Megginson and Weiss (1991); Mikkelson, Partch and Shah (1997)].

The ASX best practice recommendations make no explicit allowance for company size. This may reflect an assumption that ASX companies, in general, fall within a sufficiently narrow size range that makes it unnecessary to have differential recommendations based on firm size. The wide dispersion in firm size for our sample of IPOs does not obviously support this assumption. As shown in Table 4.13 which

presents the distribution of the size of sample firms[24], the size of IPO firms ranges from a low of $3 (sic)[25] in total assets (Norwest Energy NL) to a high of $26 billion (Telstra Corporation Ltd). Across the sample period from 1994-1999, more than half of the firms have total assets less than $10 million, represented by 61.7% of the firms. This suggests that if the corporate governance guidelines impose disproportionately high costs on smaller companies, they will affect the majority of firms undertaking IPOs. The median firm size across the sample is $5.8 million while the average is $228 million, which reduces to $44 million when the four largest firms in the whole sample (Bank of Western Australian Ltd [$10,012 million], Qantas [$8,407 million], Telstra Corporation Ltd [$25,858 million], and Cable & Wireless Optus [$6,146 million]) are excluded.

To compare the size of IPO firms with the size of publicly listed companies, Table 4.14 shows the size of firms listed on the ASX in 1999 and the size of sample IPO firms. The size decile groups are formed first by ranking firms based on the book value of total assets and dividing them into deciles. The median firm size for each decile is then reported. In the case of sample IPO firms, the total assets are measured immediately prior to IPOs. The Table shows the relative smallness of IPO firms compared with other listed companies.

While it could be argued that the relatively small size of IPO firms at the time of listing is a downward-biased estimate of typical firm size and they are expected to grow after listing, we investigate this point and find that more than 400 out of approximately 1,250 firms listed as actively trading on ASX in Aspect Financial database as at June 2003 each have total assets worth less than $10 million. The median total assets value

[24] Note that a total of 46 firms (including 18 firms in the 1994 sample, 2 firms in 1995 and 1996, 7 firms in 1997, 3 firms in 1998 and 14 firms in 1999) are excluded from this analysis as the required accounting information is not available in their prospectuses.

[25] Note that this figure is not a typographical error and was obtained from the company's prospectus.

of the 400 firms is just under $4 million. In short, the relatively small size of our sample of IPO firms is an accurate indicator of the small size of many ASX listed firms. The Business Council of Australia's concern that "some of the provisions [in the ASX's recommendations] may be overly onerous on small business" (Buffini, 2003a) is therefore founded on a valid perception that ASX listed firms span a wide size range.

Table 4.13 Size of sample IPO firms

Total assets as at the date of prospectus ($m)	1994		1995		1996		1997		1998		1999		1994-1999	
	No. of firms	%	No. of firms	%	No. of firms	%	No. of firms	%	No. of firms	%	No. of firms	%	No. of firms	%
< 1	14	27.5	5	23.8	14	30.4	14	31.1	4	18.2	16	18.0	67	24.5
1 to < 10	15	29.4	7	33.3	18	39.1	12	26.7	8	36.4	42	47.2	102	37.2
10 to <20	5	9.8	2	9.5	4	8.7	3	6.7	2	9.1	9	10.1	25	9.1
20 to < 30	4	7.8	1	4.8	0	0.0	3	6.7	2	9.1	5	5.6	15	5.5
30 to < 40	3	5.9	0	0.0	2	4.3	1	2.2	2	9.1	5	5.6	13	4.7
40 to < 50	1	2.0	0	0.0	2	4.3	2	4.4	0	0.0	4	4.5	9	3.3
50 to < 100	2	3.9	1	4.8	3	6.5	4	8.9	1	4.5	6	6.7	17	6.2
>= 100	7	13.7	5	23.8	3	6.5	6	13.3	3	13.6	2	2.2	26	9.5
Total*	**51**	**100**	**21**	**100**	**46**	**100**	**45**	**100**	**22**	**100**	**89**	**100**	**274**	**100**

Summary statistics ($m):	1994	1995	1996	1997	1998	1999	1994-1999
Mean	99.3	953.4 (i)	21.8	614.4 (ii)	325.2 (iii)	17.1	227.8 (iv)
Median	7.9	2.3	3.0	6.4	9.2	4.9	5.8
Minimum	0.026[a]	0.008[c]	0.002[e]	0.000[g]	0.000[i]	0.175[k]	0.000
Maximum	2,762.0[b]	10,012.0[d]	229.7[f]	25,858.0[h]	6,146.0[j]	228.4[l]	25,858.0
Standard Deviation	395.9	2,762.7	43.6	3,849.5	1,306.1	31.3	1,788.5

* The sample size is reduced by 18 in 1994, 2 in 1995 and 1996, 7 in 1997, 3 in 1998 and 14 in 1999 because the required accounting information, total assets, is not declared in these companies' prospectuses.

[a] Panorama Resources NL; [b] MMI Ltd; [c] Eastern Copper Mines NL; [d] Bank of Western Australia Ltd; [e] Caledonian Pacific Minerals NL; [f] Australian Hospital Care Limited; [g] Norwest Energy NL, which has total assets of $3 at the date of prospectus; [h] Telstra Corporation Limited; [i] Queste Communications Ltd, which has total assets of $20 at the date of prospectus; [j] Cable & Wireless Optus; [k] Techstar Ltd; [l] Austar United Communications Ltd.

(i) The mean in 1995 reduces to $84.4 million when Bank of Western Australia and Qantas Airways Limited are excluded.
(ii) The mean in 1997 reduces to $40.7 million when Telstra Corporation Ltd is excluded.
(iii) The mean in 1998 reduces to $48 million when Cable & Wireless Optus is excluded.
(iv) The overall sample mean is reduced to $43.8 million when the aforementioned four firms are excluded.

Table 4.14 Size of sample IPO firms (1994-1999) and ASX listed firms in 1999

Size decile	Median total assets* of sample IPO firms** ($million)	Median total assets*** of all ASX listed firms in 1999 ($ million)
1	0.10	0.77
2	0.40	3.70
3	1.07	6.54
4	2.22	11.39
5	4.02	19.61
6	7.51	35.43
7	12.91	68.16
8	24.97	149.43
9	51.02	438.99
10	229.24	2,411.73

* All sample IPO firms from 1994-1999 are ranked by total assets, measured immediately prior to listing. ** The IPO sample size for this analysis is reduced to 274 because the required accounting information, total assets, is not declared in some prospectuses. *** All firms listed on the ASX in 1999 are ranked by total assets.

Offer size (LnOFFER)

Offer size is measured by the natural log of total capitalisation at the offer price. That is, the product of offer price and total number of shares offered in the prospectus. The reason for controlling for the size of the offer is that small IPOs are argued to face greater information asymmetry than large IPOs (Jain, 1995) and have been found to underprice more (Michaely & Shaw, 1994). In addition, Ritter (1991) shows that smaller issues have a grater tendency of experiencing not only high adjusted initial returns but also poor aftermarket performance. Garfinkel (1993) further suggests that larger issues are likely to be associated with greater chances of reissuing equity as they are often made by larger firms.

Table 4.15 reports the distribution of the value of total shares offered. Between 1994 and 1999, the size of the issue ranges from a minimum of $1 million by Card Technologies Australia Ltd and One.Tel Ltd to a maximum of $14 billion by Telstra Corporation Ltd, with the mean value being $91 million. Pertinently, most firms raise less than $10 million. Most of the smallest issues are conducted by telecommunications firms. For example, in 1995, Enterprise Solutions Asia Pacific Ltd issued $2 million, in 1996, Mobile Communication Holdings Ltd issued $1 million and

One.Tel Ltd issued $1 million, and in 1998, Pracom Ltd issued $1.5 million. On the other hand, the largest issues are often privatisations; for example, in 1994, TABCORP issued $675 million, Qantas issued $1,500 million in 1995 and Telstra issued $14,153 million in 1997.

Table 4.15 Value of IPO offerings

Value of IPO offerings* ($m)	1994		1995		1996		1997		1998		1999		1994-1999	
	No. of firms	%	No. of firms	%	No. of firms	%	No. of firms	%	No. of firms	%	No. of firms	%	No. of firms	%
<5	19	27.5	6	26.1	17	35.4	17	32.7	10	40.0	14	13.6	83	25.9
5 to <10	17	24.6	6	26.1	16	33.3	15	28.8	6	24.0	35	34.0	95	29.7
10 to <20	10	14.5	2	8.7	6	12.5	8	15.4	2	8.0	20	19.4	48	15.0
20 to <40	7	10.1	3	13.0	2	4.2	4	7.7	3	12.0	16	15.5	35	10.9
40 to <60	4	5.8	0	0.0	2	4.2	1	1.9	1	4.0	8	7.8	16	5.0
60 to <80	3	4.3	0	0.0	3	6.3	2	3.8	0	0.0	1	1.0	9	2.8
>=80	9	13.0	6	26.1	2	4.2	5	9.6	3	12.0	9	8.7	34	10.6
Total	**69**	**100**	**23**	**100**	**48**	**100**	**52**	**100**	**25**	**100**	**103**	**100**	**320**	**100**

Summary statistics ($m):	1994	1995	1996	1997	1998	1999	1994-1999
Mean	46.7 (i)	145.1 (ii)	16.8	292.4 (iii)	137.9 (iv)	31.1	91.3 (v)
Median	9.0	8.0	5.5	6.8	6.0	10.0	8.0
Minimum	1.1[a]	2.0[c]	1.0[e]	1.0[g]	1.5[i]	2.5[k]	1.0
Maximum	675.0[b]	1,500.0[d]	136.0[f]	14,153.3[h]	1,899.8[j]	423.0[l]	14,153.3
Total value of IPO offerings	3,221.8	3,337.1	804.7	15,207.3	3,447.3	3,201.6	29,219.9
Standard Deviation	105.5	348.5	28.1	1,960.1	414.9	60.1	805.4

* The value of IPO offerings is based on the total capital proposed to be offered in prospectuses (excluding any provisions for oversubscriptions).
[a] Australasian Capital Ltd; [b] TABCORP Holdings Ltd; [c] Eastern Copper Mines NL and Enterprise Solutions Asia Pacific Limited; [d] Qantas Airways Limited; [e] CDS Technologies Limited and Mobile Communication Holdings Limited; [f] Coates Hire Limited; [g] Card Technologies Australia Limited and One.Tel Limited; [h] Telstra Corporation Limited; [i] Pracom Ltd; [j] Cable & Wireless Optus; [k] Techstar Ltd; [l] Austar United Communications Ltd.

(i) The mean in 1994 reduces to $37.5 million when TABCORP Holdings Ltd is excluded.
(ii) The mean in 1995 reduces to $83.5 million when Qantas Airways Limited is excluded.
(iii) The mean in 1997 reduces to $20.7 million when Telstra Corporation Limited is excluded.
(iv) The mean in 1998 reduces to $64.5 million when Cable & Wireless Optus is excluded.
(v) The overall sample mean is reduced to $34 million when the aforementioned four firms are excluded.

Tech industry (TECH)

Tech industry is measured by a binary variable and is coded as 1 if the IPO firm belongs to one of the high-tech industries and 0 otherwise. There has been no consensus in previous research as to which industry codes represent high-tech industries. The study by Mathiesen (2001) classifies technology IPOs using the

definition in *The Technology IPO Yearbook* of Morgan Stanley Dean Witter, which includes internet, software, services, semiconductors, telecommunications, hardware / peripherals, electronics, and networking. This study follows Certo et al.'s (2001a) classifications[26] and considers the following ASX industry sectors as high-tech industries: network operator (ASX sector 181), cables (sector 182), equipment & services (sector 183), other telecommunications (sector 184), pharmaceuticals (sector 211), biotechnology (sector 212), computer & office services (sector 226), and high technology (sector 228). Using this classification scheme, 24% of the sample firms (or 77 firms) are considered high-tech.

A dummy variable for high-tech firms is included in the analysis because previous IPO research have documented strong industry effects on IPO outcomes [e.g. Gompers (1996); Hoffmann-Burchardi (2001)]. Booth and Chua (1996), for example, find that IPO clustering in a particular industry is associated with the positive information spill-over effects. IPO firms in the technology-based industries had attracted a lot of public attention in the 1990s and experienced significant price appreciations upon listing [e.g. Certo et al. (2001a); Koretz (2000)]. Ritter and Welch (2002) report that between 1995 and 1998, 37% of the IPOs are technology-related[27] and the percentage increases sharply to 72% during 1999 and 2000, the internet bubble years. Koretz (2000) also notes that the median first day return for technology IPOs is 63.1% while the median return for all IPOs is only 30.4%. These findings thus suggest the importance of controlling for high-tech IPOs.

[26] In Certo, Covin, Daily, and Dalton's (2001a) study, they consider the following 2-digit SIC codes as representing high-tech industries: computer hardware (SIC 35), computer software (SIC 73), semiconductors and printed circuits (SIC 36), biotechnology (SIC 28), telecommunications (SIC 48), pharmaceuticals (SIC 28), specialty chemicals (SIC 28), and aerospace (SIC 37).

[27] In Ritter and Welch (2002), tech IPOs are defined to include companies in the following sectors: internet, computer software and hardware, communications equipment, electronics, navigation equipment, measuring and controlling devices, medical instruments, telephone equipment, and communications services.

Time delay (TDELAY)

Time delay measures the number of days from the date the prospectus was lodged with ASX and the listing date. Because of the existence of both informed and uninformed traders in the market (Rock, 1986), following Lee et al. (1996a), this variable proxies for the degree of informed demand. Both the studies by Lee et al. (1996a) and How, Izan and Monroe (1995) have reported a significant negative relationship between the time delay in listing and the level of underpricing.

Change in board leadership (CH_LEADER_U and CH_LEADER_D)

Change in board leadership is classified into three categories – firms that change from dual to unitary leadership, firms that change from unitary to dual leadership and firms that do not change their leadership structures. Thus, this variable requires two dummies.

Change in director ownership (CH_DIROWN)

Change in director ownership is measured by subtracting director ownership at the time of IPO from the director ownership five years thereafter.

Immediate aftermarket returns (CAR)

Immediate aftermarket return is measured by cumulative abnormal returns over a thirty trading day period immediately after the IPO, excluding the offer day of the IPO. This variable is included in the test of the likelihood of a SEO as a control variable because previous studies [e.g. Levis (1995); Garfinkel (1993); Jegadeesh et al. (1993)] have found a positive relationship between immediate aftermarket returns and the likelihood of issuing seasoned equity.

Specifically, for any new issue *i*, the daily abnormal return is defined as:

$$ar_i = r_{it} - r_{mt}$$

where r_{it} is the realised return in day t and r_{mt} is the return to market, proxied by ASX All Ordinaries Accumulation Index, for the corresponding trading day. The cumulative abnormal return (CAR) from day 1 to day 30 after listing is therefore the summation of the abnormal returns:

$$CAR_i = \sum_{t=1}^{30} ar_{it}$$

Table 4.16 reports the descriptive statistics for the 30-day cumulative abnormal returns immediately after the IPO. The average CAR is 1% and the median is –3.8%. The latter result is similar to that reported in Lee (2003). Lee (2003) finds that the median thirty day cumulative abnormal return from the day of listing is –3.2% for IPOs between 1976 and 1995.

Table 4.16 Descriptive statistics for immediate aftermarket returns

CAR	Mean	Median	Min	Max	SD
n=319	1.0%	-3.8%	-74.6%	192.0%	28.6%

CAR is the cumulative abnormal return from day 1 to day 30 after listing.

4.5 Additional descriptive statistics of the sample

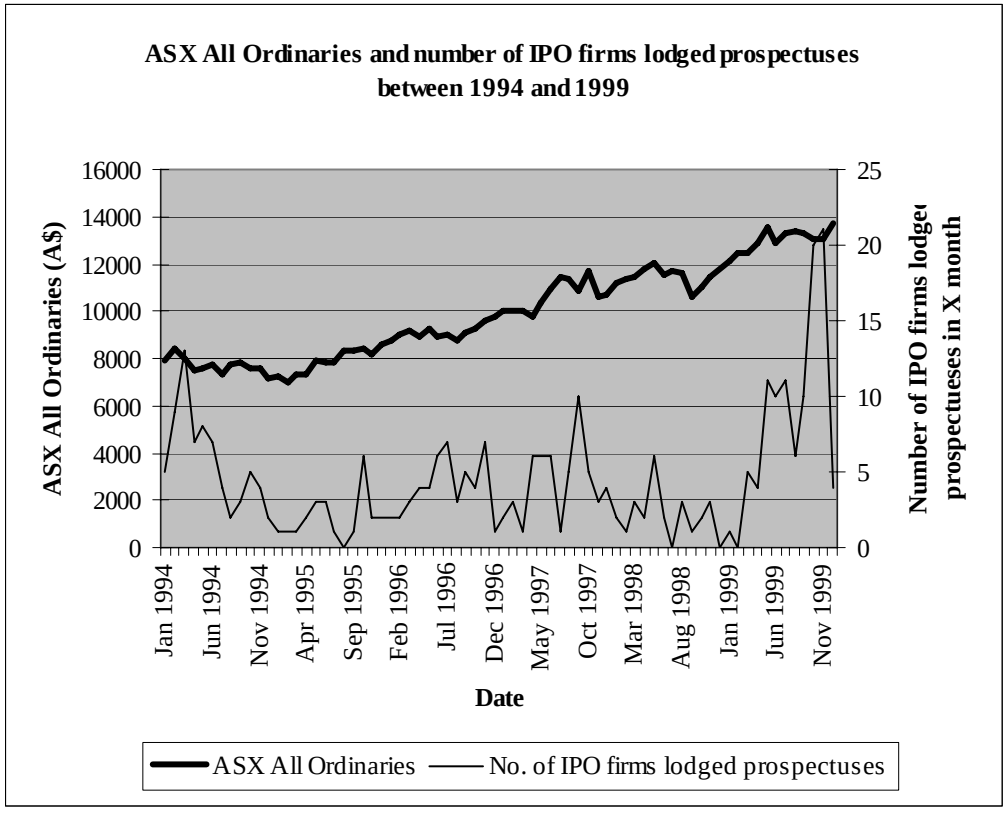
The distribution of IPO firms across the ASX industry sectors is shown in Table 4.17. Across sample years, the miscellaneous sector has the highest concentration of IPO firms (23% of firms), followed by the telecommunications sector (11%) and the gold sector (8%). Between 1994 and 1996, a large number of IPOs are concentrated in the gold sector, represented by 13% of IPO firms in 1994, 17% in 1995 and 21% in 1996. In 1997, 17% of IPO firms are from the energy sector, which has the second highest concentration of IPOs. In 1998 and 1999, there is a dramatic increase in the number of IPOs from the telecommunications sector, represented by 24% of the sample firms in 1998 and 13% in 1999. In 1999, there is also a high concentration of IPOs (or 13% of sample firms) in the media sector. Overall, the Table shows high representations of sample firms from resources, telecommunications, and healthcare & biotech industries.

Table 4.17 Industry classifications of sample IPO firms

ASX sector	1994		1995		1996		1997		1998		1999		1994-1999	
	No. of firms	%	No. of firms.	%	No. of firms	%	No. of firms	%	No. of firms	%	No. of firms	%	No. of firms	%
01 Gold	9	13.0	4	17.4	10	20.8	3	5.8	0	0.0	1	1.0	27	8.4
02 Other Metals	7	10.1	3	13.0	4	8.3	5	9.6	1	4.0	3	2.9	23	7.2
03 Diversified Resources	1	1.4	0	0.0	1	2.1	0	0.0	0	0.0	0	0.0	2	0.6
04 Energy	3	4.3	1	4.3	2	4.2	9	17.3	1	4.0	1	1.0	17	5.3
05 Infrastructure & Utilities	0	0.0	1	4.3	0	0.0	2	3.8	0	0.0	1	1.0	4	1.3
06 Developers & Contractors	4	5.8	0	0.0	2	4.2	1	1.9	1	4.0	0	0.0	8	2.5
07 Building Materials	1	1.4	0	0.0	0	0.0	1	1.9	0	0.0	1	1.0	3	0.9
08 Alcohol & Tobacco	2	2.9	0	0.0	0	0.0	2	3.8	1	4.0	1	1.0	6	1.9
09 Food & Household Goods	0	0.0	1	4.3	0	0.0	1	1.9	0	0.0	4	3.9	6	1.9
10 Chemicals	1	1.4	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	1	0.3
11 Engineering	3	4.3	1	4.3	0	0.0	1	1.9	0	0.0	0	0.0	5	1.6
12 Paper & Packaging	1	1.4	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	1	0.3
13 Retail	2	2.9	2	8.7	2	4.2	2	3.8	2	8.0	8	7.8	18	5.6
14 Transport	2	2.9	1	4.3	0	0.0	1	1.9	0	0.0	1	1.0	5	1.6
15 Media	3	4.3	1	4.3	1	2.1	2	3.8	1	4.0	13	12.6	21	6.6
16 Banks & Finance	0	0.0	1	4.3	1	2.1	0	0.0	0	0.0	0	0.0	2	0.6
17 Insurance	2	2.9	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	2	0.6
18 Telecommunications	4	5.8	2	8.7	5	10.4	4	7.7	6	24.0	13	12.6	34	10.6
19 Invest & Financial Service	6	8.7	1	4.3	3	6.3	2	3.8	0	0.0	10	9.7	22	6.9
20 Property Trusts	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
21 Healthcare & Biotech	5	7.2	2	8.7	4	8.3	3	5.8	3	12.0	8	7.8	25	7.8
22 Miscellaneous Industries	11	15.9	1	4.3	10	20.8	12	23.1	8	32.0	33	32.0	75	23.4
23 Diversified Industrials	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
24 Tourism & Leisure	2	2.9	1	4.3	3	6.3	1	1.9	1	4.0	5	4.9	13	4.1
Total	**69**	**100**	**23**	**100**	**48**	**100**	**52**	**100**	**25**	**100**	**103**	**100**	**320**	**100**

Figure 1 plots the ASX All Ordinaries Index and the number of IPO firms that lodged prospectuses during the sample period. The graph shows that when the ASX All Ordinaries index value increases (or decreases), the number of IPOs also increases (or decreases), except that there are larger fluctuations in the trend for the number of IPOs and that there is an abnormally large peak in IPOs in October and November 1999. Overall, the figure shows that the volume of IPO activities generally corresponds to the movements in the market, proxied by the ASX All Ordinaries Index.

Figure 4.1 ASX All Ordinaries and number of IPOs between 1994 and 1999



The total revenue of IPO firms in the first year following listing is presented in Table 4.18. The total revenue is defined to include operating revenue and other revenue but exclude the interest revenue. Across the sample period, the average total revenue is $185 million while the median is only $8 million. In each sample year, about 50% of the firms have total revenue of less than $10 million in the first year following public listing, while about 30% of the firms have total revenue greater than $50 million except for 1996. In 1996, there is a relatively smaller proportion of firms concentrating on the high-end of total revenue; only 17% of the 1996 sample firms have total revenue greater than $50 million in the first year following public listing.

Moreover, compared with other sample years, the 1996 sample has the highest proportion of firms (35%) that make no revenue apart from the interest received from other corporations in the first year after initial listing. In contrast, the 1994 sample has the lowest percentage of IPO firms (2%) that make no revenue (excluding interest revenue) in the first year post-IPO. Across the sample period, firms that make zero or negative revenue in the first year after initial listing account for 10% of the total sample. As total revenue is sometimes used in other studies to control for firm size, overall the Table shows that IPO firms tend to be smaller firms.

Table 4.18 Total revenue of IPO firms in the first year after listing

Post IPO revenue* ($m)	1994		1995		1996		1997		1998		1999		1994-1999	
	No. of firms	%	No. of firms	%	No. of firms	%	No. of firms	%	No. of firms	%	No. of firms	%	No. of firms	%
< = 0	1	1.5	1	4.3	17	35.4	3	6.0	4	16.7	5	5.1	31	10.0
> 0 and < 1	23	33.8	7	30.4	7	14.6	15	30.0	3	12.5	9	9.2	64	20.6
1 to < 10	9	13.0	4	17.4	5	10.4	11	21.2	3	12.0	33	32.0	65	20.3
10 to < 20	4	5.8	1	4.3	7	14.6	3	5.8	2	8.0	12	11.7	29	9.1
20 to < 30	4	5.8	2	8.7	3	6.3	2	3.8	1	4.0	3	2.9	15	4.7
30 to < 40	2	2.9	1	4.3	1	2.1	1	1.9	2	8.0	2	1.9	9	2.8
40 to < 50	3	4.3	0	0.0	0	0.0	1	1.9	2	8.0	5	4.9	11	3.4
50 to < 100	8	11.6	1	4.3	1	2.1	6	11.5	1	4.0	12	11.7	29	9.1
> = 100	14	20.3	6	26.1	7	14.6	8	15.4	6	24.0	17	16.5	58	18.1
Total**	**68**	**100**	**23**	**100**	**48**	**100**	**50**	**100**	**24**	**100**	**98**	**100**	**311**	**100**

Summary statistics ($m):	1994	1995	1996	1997	1998	1999		1994-1999
Mean	103.3	496.0	33.1	555.7	190.7	53.0		185.1
Median	10.5	7.1	0.9	6.3	20.9	13.8		8.1
Minimum	0.0	0.0	0.0	0.0	0.0	-1.5	***	-1.5
Maximum	3,313.7	8,048.9	331.0	17,239.0	2,483.1	477.5		17,239.0
Standard Deviation	405.9	1,685.0	69.2	2,669.5	522.2	91.9		1,194.6

* Post IPO revenue is measured by the total revenue (excluding interest revenue) in the first year following public listing.
** The total sample size for this analysis is reduced by nine (1 firm in 1994, 2 firms in 1997, 1 firm in 1998 and 5 firms in 1999) because of missing accounting information. Three of these firms are delisted in the first year following listing and they are Blackwood Industries Ltd in the 1994 sample, Cuppa Cup Vineyards Ltd in 1998 and HotCopper Ltd in 1999.
*** The Annual Report 2000 of Consolidated Gaming Corporation Ltd shows that the company is making operating losses on its wagering operation, causing the total revenue to become negative.

4.6 Summary

This chapter described the sample and data sources used in this thesis. Variables were also defined. Additionally, this chapter presented the descriptive statistics of sample IPO firms and found that most sample IPO firms were younger and smaller firms. Most sample firms had less than a year of operating history, were typically smaller than publicly listed firms and were mostly from resources, telecommunications and health & biotech industries. Also, IPO firms were found to raise only a modest amount of capital (with median offer size of $8 million), suggesting that the Australian equity market does not have high barriers to entry, which arguably is a good thing.

In the next chapter, descriptive analyses on the initial board structures of IPO firms, including board size, leadership structures, board composition, and director characteristics are provided and are compared against the ASX best practice recommendations to assess the appropriateness of the new corporate governance guidelines.

Chapter 5

IPO Board Structures and ASX Best Practice Recommendations

5.1 Introduction

In this chapter we address our first research question on whether initial board structures of IPO firms conform to the ASX best practice recommendations. At the time of listing, IPO firms arguably would adopt the "optimal" board structure to maximise their appeal to outside investors. The approach we take in this chapter is that we first analyse the board and director characteristics of IPO firms at the time of listing. Then, we compare them against the ASX best practice recommendations to determine if the majority of IPO firms show conformity with or deviations from the recommendations. We also provide comparisons of sample IPO firms' board characteristics with the findings of other Australian studies on IPO firms and publicly listed companies to see if the board structures observed here are similar to or different from that of other Australian samples. The final section summarises the findings from this chapter.

5.2 Analysis of board structures at IPO

This section presents the descriptive statistics of IPO firms' board characteristics, including board size, board leadership and board composition, at the time of listing and compare them against the ASX best practice recommendations.

5.2.1 Board size

While the recommendations do not stipulate board size, the various recommendations implicitly require that boards comprise at least six members. Table 5.1 reports the board size distribution of sample IPO firms. The IPO boards typically range from three

to six members. Across the sample, 83% of IPO firms have six or fewer board members. The average and median board size for the sample is five, and more than one-third of IPOs (37% across the sample period) have fewer than five. Only a handful of IPOs have more than seven board members. Thus, in comparison with the board size implicit in ASX's best practice recommendations, the boards of IPO firms appear to fall short of 1 to 2 directors on average.

These figures provide an accurate pointer to our other findings. At a time when board composition may be expected to be crucial to companies' success in raising capital from the market, the vast majority of IPO firms choose not to have a sufficient number of directors to allow them to structure their board committees in a way that conforms with what the ASX recommendations indicate is best practice. We contend our findings are clearly consistent with the proposition that the managers and vendors of most IPO firms will find the ASX recommendations unduly costly.

Further, Table 5.1 shows that consistently across sample years, the smallest board size is three, except for the year 1998, which has a minimum board size of four. Between 1995 and 1998, there are one or two incidences each year where companies adopt a rather large board (with more than ten board members) compared to the average IPO firms' board. For instance, in 1995, two companies have a board size greater than 10 and they are Qantas Airways Limited which has 14 members and Bank of Western Australia Ltd which has 11. In 1996, Australian Hospital Care Limited has a board size of 10. In 1997, Telstra Corporation Limited has a board size of 11 and in 1998, Ten Network Holdings Ltd has a board size of 12. Most of the aforementioned companies are well-established firms with long operating history; for example, Qantas had been incorporated for 75 years prior to its IPO and Telstra had been incorporated for 96 years. Their IPOs were also privatisations by the government.

Table 5.1 Board size distribution

No. of directors	1994		1995		1996		1997		1998		1999		1994-1999	
	No. of firms	%	No. of firms	%	No. of firms	%	No. of firms	%	No. of firms	%	No. of firms	%	No. of firms	%
3	9	13%	3	13%	6	13%	5	10%	0	0%	10	10%	33	10%
4	16	23%	3	13%	20	42%	15	29%	7	28%	26	25%	87	27%
5	22	32%	7	30%	14	29%	17	33%	6	24%	25	24%	91	28%
6	13	19%	4	17%	4	8%	9	17%	5	20%	24	23%	59	18%
7	3	4%	2	9%	2	4%	3	6%	2	8%	12	12%	24	8%
8	4	6%	2	9%	1	2%	2	4%	3	12%	5	5%	17	5%
9	2	3%	0	0%	0	0%	0	0%	1	4%	1	1%	4	1%
10	0	0%	0	0%	1	2%	0	0%	0	0%	0	0%	1	0%
11	0	0%	1	4%	0	0%	1	2%	0	0%	0	0%	2	1%
12	0	0%	0	0%	0	0%	0	0%	1	4%	0	0%	1	0%
13	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%
14	0	0%	1	4%	0	0%	0	0%	0	0%	0	0%	1	0%
Total	**69**	**100%**	**23**	**100%**	**48**	**100%**	**52**	**100%**	**25**	**100%**	**103**	**100%**	**320**	**100%**

Summary statistics:	1994	1995	1996	1997	1998	1999	1994-1999
Mean	5.06	5.87	4.67	5.02	5.88	5.20	5.17
Median	5.00	5.00	4.00	5.00	5.00	5.00	5
Mode	5	5	4	5	4	4	5
Minimum	3	3	3	3	4	3	3
Maximum	9	14	10	11	12	9	14
Standard Deviation	1.5	2.6	1.3	1.5	2.0	1.4	1.6

Board size is measured by the total number of directors on the board.

In an earlier study on Australian IPOs conducted over the period between 1976 and 1993, Balatbat et al. (2004) report an average board size of five for IPO firms, which is the same as what we have found. Shekhar and Stapledon (2005) examine IPOs during the period between 1993 and 2001 that overlaps with this study's sample period and again report an average board size of five for IPO firms. Together, these findings suggest that the board size of Australian IPO firms has, on average, remained relatively stable at five over time and that the board size of six members implicit in the best practice recommendations may in fact *not* the "best practice".

When we compare the board size of IPO firms with that of other Australian listed companies, we find that while the average board size for IPO firms is five, the average board size for a random sample of ASX listed firms is 5.6, as reported in Arthur (2001).

This shows that the average board size of IPO firms does not differ greatly from the average board size of listed companies despite the fact that IPO firms are typically smaller and younger than publicly listed firms. Further, board size appears to be positively related with firm size. Kiel and Nicholson (2003) find that the average board size for the top 500 ASX listed companies in 1996 is 6.6, and a larger average board size of 9 members is reported for the top 100 ASX listed companies in 2000 by Stapledon and Fickling (2001).

5.2.2 Board leadership

An important function of the board is to oversee the CEO. Given that the chairperson of the board usually exerts a powerful influence on board deliberations and decisions, separation of the two roles is arguably crucial for maintaining effective oversight. Recommendation 2.3 of the ASX best practice recommendations is that the roles of chairperson and chief executive officer should be performed by different individuals; that is, firms should adopt a dual leadership structure as opposed to a unitary leadership structure where the same person holds both positions.

Table 5.2 shows the percentage of firms that have the same person as the chairperson and the CEO and the percentage of firms that adopt a dual leadership structure, where different individuals perform the roles of chairperson and CEO. The most common leadership structure among IPO firms across the sample period is dual leadership, represented by 90% of firms. The year 1994 has the highest percentage of firms (94%) with a dual leadership structure, whereas the year 1998 has the lowest percentage of 80%. Overall, IPO firms show an overwhelming conformance with Recommendation 2.3 of ASX's corporate governance guidelines.

Table 5.2 Role of chairperson

Leadership structure	1994		1995		1996		1997		1998		1999		1994-1999	
	No. of firms	%	No. of firms	%	No. of firms	%	No. of firms	%	No. of firms	%	No. of firms	%	No. of firms	%
Unitary leadership	4	6	3	14	6	13	5	10	5	20	10	10	33	10
Dual leadership	65	94	19	86	42	88	47	90	20	80	93	90	286	90
Total	**69**	**100**	**22***	**100**	**48**	**100**	**52**	**100**	**25**	**100**	**103**	**100**	**319**	**100**

Unitary leadership is where the same person holds the positions of the chairperson and CEO; dual leadership is where different people perform the roles of chairperson and CEO. * The total number of firms in 1995 for this analysis is reduced by one because Leo Shield Exploration NL has joint chairpersons, one being executive and the other being non-executive. Therefore, it cannot be classified as either unitary or dual leadership.

Interestingly, the percentage of firms that separate the roles of chairperson and the CEO is significantly lower in Balatbat et al.'s (2004) study (55% of firms) for IPOs between 1976-1993 compared with this study (90% of firms). The difference in the sample periods studied is likely to be the main contributing factor for the observed difference in findings. The move to a dual leadership structure is one of the more dramatic changes in the IPO board structure observed in the late 1990's. The change can be attributed to the demands placed on companies by shareholder activists and governance reformers for the adoption of a dual leadership structure.

Further, compared with the IPO sample, the proportion of top 500 firms in 1996 with dual leadership is much lower, only at 23% (Kiel & Nicholson, 2003). This shows that dual leadership recommended in ASX's new corporate governance guidelines is likely to be value-adding since IPO firms arguably have the most incentive to adopt a value-maximising board structure to increase their appeal to external investors and to minimise or avoid loss to original shareholders [Boone et al. (2004); Gertner and Kaplan (1996)].

Complementing Table 5.2 which provides an analysis on the independence of chairpersons on the firm level, Table 5.3 investigates the independence of chairpersons at the individual level whereby the directorships held by chairpersons are classified into three categories according to their degree of independence with the company, including independent, grey and executive directorships. In this thesis, independent directors are defined to include those who are not current or past employees of the corporation, and do not have substantial or potential business or family ties with management. Grey directors refer to those who are either former employees of the firm or are affiliated with managers. Inside directors are full-time employees of the firm.

Recommendation 2.2 is that the chairperson be an independent director. Compliance with 2.2 would normally ensure compliance with 2.3 although not *vice versa* and so one might expect Recommendation 2.3 to have preceded Recommendation 2.2. Table 5.3 shows that in each sample year, approximately 50% of the chairpersons are independent directors. The overall percentage of independent chairpersons across the sample period is 53%. The Table also shows that the proportion of chairpersons holding executive directorships during the sample period ranges from a low of 13% in 1997 to a high of 23% in 1995. This suggests that the majority of chairpersons are non-executives, representing 83% of chairpersons across the sample period.

Table 5.3 Independence of chairperson

Number and proportion of chairpersons holding …	1994		1995		1996		1997		1998		1999		1994-1999	
	No. of firms	%	No. of firms	%	No. of firms	%	No. of firms	%	No. of firms	%	No. of firms	%	No. of firms	%
Independent directorship	30	43%	10	45%	24	50%	29	56%	17	68%	58	56%	168	53%
Grey directorship	29	42%	7	32%	15	31%	16	31%	3	12%	28	27%	98	31%
Non-exe directorship	**59**	**86%**	**17**	**77%**	**39**	**81%**	**45**	**87%**	**20**	**80%**	**86**	**83%**	**266**	**83%**
Executive directorship	10	14%	5	23%	9	19%	7	13%	5	20%	17	17%	53	17%
Total	**69**	**100%**	**22***	**100%**	**48**	**100%**	**52**	**100%**	**25**	**100%**	**103**	**100%**	**319**	**100%**

An independent director is a director who is not a current or past employee of the corporation, does not have substantial business or family ties with management, nor does he/she have potential business ties with the firm. A grey director is a director who is either a former employee of the firm or is affiliated with managers through current or potential future business or family ties (e.g. employees of banks, law and consulting firms). An executive director refers to a director who is a full-time employee of the firm.
* The total number of firms in 1995 for this analysis is reduced by one because Leo Shield Exploration NL has joint chairpersons, one being executive and the other being non-executive.

In sum, this study finds that while the roles of chairperson and chief executive officer in IPO firms are separated in most cases, there is only an even split between appointing an independent or non-independent director as the chairman. The ASX best practice recommendations suggest an independent chair. Thus, while some of the ASX recommendations reflect widespread contemporary practice, others entail significant departures. We may assume that firms have weighed the advantages and disadvantages of appointing an independent director as chairperson in arriving at their decision. The question is whether it is fair and reasonable to require an explanation only from firms that have opted to appoint a non-independent chairperson.

5.2.3 Board composition

The fact that most IPO firms choose to have boards with fewer than the ASX recommendations' implicit minimum of six members is arguably related to their relatively small firm size. It may be that while they "economise" on board size, the deficit is at least partially compensated by close adherence to the principle of independence in the selection of directors that are appointed. Our analysis below on the independence of directors in our IPO firms, based on the definitions of "independence" contained in the recommendations and executive/non-executive directors, does not

support the proposition that IPO firms make up the governance "shortfall" in having small boards by ensuring greater independence among the directors they appoint.

Specifically, Table 5.4 reports the average proportion of directors on the board by their level of independence with the companies. We find that the average proportion of executive directors on the board is consistently higher than the average proportion of independent directors in each sample year. On average, only 33% of the sample meets the definition of “independence” and executive directors hold an average of 38% of the board seats across the sample period. While this suggests that on average non-executive directors (including both independent and grey directors) dominate the board, independent directors do not hold the majority of board seats in IPO firms. This shows that there are still large deviations by IPO firms from Recommendation 2.1 that there should be a majority of independent directors on the board.

Arthur (2001) reports that the average proportion of independent directors[28] for a random sample of ASX listed companies in 1989 is 46%. While this percentage is higher than that based on the IPO sample (33%), it appears that the average Australian company also does not conform to the best practice recommendations. When comparing the proportion of non-executive directors, which by definition include both independent and grey directors, in the top 500 companies and IPO firms, the percentage is about the same for both groups, with the top 500 companies having an average of 69% non-executive directors on the board, as reported by Kiel and Nicholson (2003), and the IPO firms having 62%.

[28] Arthur (2001) defines an independent director as a director who is not a full-time employee of the firm; is not related to management; does not have business ties with the firm (e.g. supplier, consultant); is not a retiree; does not owe money to the company; and is not a current or former employee of the firm's legal counsel or auditor.

However, for the top 100 companies, the percentage of non-executive directors is higher at 78%, as reported by Stapledon and Fickling (2001), compared with IPO firms. One explanation for the slightly lower representation of non-executive directors on IPO boards is that while IPO firms raise only modest amounts from initial issues (with a median of $8 million over the sample period), it is costly to have a majority of independent directors on the board. The Boardroom Report of the Australian Institute of Company Directors reports that the average annual remuneration for non-executive directors in 2002/03 is $33,213 and $54,605 for non-executive chairmen (KPMG, 2004).

Table 5.4 Overall proportion of directors on the board

	1994	1995	1996	1997	1998	1999	1994-1999
Type of directors	**Average proportion across firms**						
Independent directors	31.25%	33.62%	26.15%	34.51%	30.59%	37.05%	33.00%
Grey directors	33.36%	31.77%	31.41%	28.23%	29.62%	24.63%	29.02%
Executive directors	35.69%	34.61%	42.44%	37.75%	39.22%	38.18%	38.04%

An independent director is a director who is not a current or past employee of the corporation, does not have substantial business or family ties with management, nor does he/she have potential business ties with the firm. A grey director is a director who is either a former employee of the firm or is affiliated with managers through current or potential future business or family ties (e.g. employees of banks, law and consulting firms). An executive director refers to a director who is a full-time employee of the firm.

In Table 5.5, we report the proportion of independent directors on IPO boards. The requirement that a majority of board members be "independent" is met by only 29% of sample firms across the sample period, and 16% of the firms do not have any independent directors. Most of the IPO firms, represented by 23% of the firms, have the percentage of independent directors in the range of 20-29%. This shows that Recommendation 2.1 that requires a majority of independent board members is not a widely adopted practice among IPO firms.

Clearly, while there may be substantial benefits to appointing independent directors in a less regulated environment, the promoters of IPO firms did not perceive that the benefits outweighed the costs. In this regard we note that directors with close ties to the IPO firm are more likely to be familiar with its business operations and hence be better informed when reviewing strategic decisions than directors who fit the ASX recommendations' definition of independent directors. This perspective is consistent with that of Sir Rod Carnegie, founder of McKinsey Consulting in Australia and former CEO of CRA Ltd, who notes that "it's extraordinarily hard to be a non-executive director. You have to know what customers want, what the competitors are doing and what the profit economics are. You also have to understand the rhythm of the business and do all that in the light of what the owners want" (Gluyas 2003).

Table 5.5 Proportion of independent directors on the board

% of indep directors per board	1994		1995		1996		1997		1998		1999		1994-1999	
	No. of firms	%	No. of firms	%	No. of firms	%	No. of firms	%	No. of firms	%	No. of firms	%	No. of firms	%
0%	12	17	2	9	14	29	10	19	3	12	11	11	52	16
1-9%	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10-19%	3	4	1	4	0	0	4	8	3	12	6	6	17	5
20-29%	17	25	5	22	14	29	10	19	7	28	21	20	74	23
30-39%	9	13	6	26	6	13	6	12	2	8	16	16	45	14
40-49%	12	17	5	22	5	10	6	12	3	12	11	11	42	13
50-59%	8	12	2	9	4	8	3	6	6	24	21	20	44	14
60-69%	6	9	2	9	3	6	7	13	1	4	12	12	31	10
70-79%	1	1	0	0	2	4	3	6	0	0	2	2	8	3
80-89%	1	1	0	0	0	0	2	4	0	0	3	3	6	2
90-99%	0	0	0	0	0	0	1	2	0	0	0	0	1	0
100%	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	**69**	**100**	**23**	**100**	**48**	**100**	**52**	**100**	**25**	**100**	**103**	**100**	**320**	**100**

Summary statistics:	1994	1995	1996	1997	1998	1999	1994-1999
Mean	31.25%	33.62%	26.15%	34.51%	30.59%	37.05%	33.00%
Median	33.33%	33.33%	25.00%	33.33%	28.57%	33.33%	33.33%
Minimum	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Maximum	80.00%	66.67%	75.00%	90.91%	60.00%	87.50%	90.91%
Standard Deviation	20.46%	16.31%	21.60%	25.53%	17.39%	20.78%	21.34%

An independent director is a director who is not a current or past employee of the corporation, does not have substantial business or family ties with management, nor does he/she have potential business ties with the firm.

Table 5.6 analyses the percentage of executive directors on IPO boards and shows that in some years (e.g. in 1994, 1996, and 1998), an insider-dominated board is the most common board structure adopted by sample IPO firms. Specifically, 23% of the IPO firms in 1994 and 1996 and 28% in 1998 are found to have executive directors holding between 50-59% of board seats. Moreover, there is one case during the sample period, Adelaide Resources NL in 1996, whose board consists entirely of executive directors and the firm has a small board of just three directors. Overall, the proportion of executive directors has remained relatively stable at about 38% on average over the sample period and the median percentage of executive directors per board is 40%.

Table 5.6 Proportion of executive directors on the board

% of executive directors per board	1994		1995		1996		1997		1998		1999		1994-1999	
	No. of firms	%	No. of firms	%	No. of firms	%	No. of firms	%	No. of firms	%	No. of firms	%	No. of firms	%
0%	6	9	2	9	1	2	1	2	0	0	0	0	10	3
1-9%	0	0	0	0	0	0	1	2	1	4	0	0	2	1
10-19%	6	9	3	13	3	6	3	6	3	12	9	9	27	8
20-29%	14	20	4	17	11	23	16	31	5	20	25	24	75	23
30-39%	8	12	2	9	3	6	6	12	1	4	20	19	40	13
40-49%	11	16	6	26	9	19	9	17	5	20	13	13	53	17
50-59%	16	23	3	13	11	23	7	13	7	28	24	23	68	21
60-69%	5	7	3	13	5	10	5	10	0	0	10	10	28	9
70-79%	1	1	0	0	3	6	4	8	3	12	2	2	13	4
80-89%	2	3	0	0	1	2	0	0	0	0	0	0	3	1
90-99%	0	0	0	0	0	0	0	0	0	0	0	0	0	0
100%	0	0	0	0	1	2	0	0	0	0	0	0	1	0
Total	**69**	**100**	**23**	**100**	**48**	**100**	**52**	**100**	**25**	**100**	**103**	**100**	**320**	**100**

Summary statistics:	1994	1995	1996	1997	1998	1999	1994-1999
Mean	35.69%	34.61%	42.44%	37.75%	39.22%	38.18%	38.04%
Median	40.00%	40.00%	40.00%	33.33%	40.00%	33.33%	40.00%
Minimum	0.00%	0.00%	0.00%	0.00%	8.33%	12.50%	0.00%
Maximum	80.00%	66.67%	100.00%	75.00%	75.00%	75.00%	100.00%
Standard Deviation	19.61%	18.31%	20.59%	19.24%	19.15%	14.98%	18.20%

An executive director refers to a director who is a full-time employee of the firm.

The importance of director independence as a governance variable affecting shareholder interests may differ among industries. For instance, in high-tech industries, directors' familiarity with their firms' operations may be more important in safeguarding shareholder value than the requirement that they be independent. Thus, in Table 5.7 we review the prevalence of independent directors in each industry group. The results reinforce our earlier observation that director independence is not a prevalent board characteristic among IPO firms, and this is true for all industries. Independent directors on average hold less than half of the board seats. Hence, while there are reasons to believe that monitoring costs differ across industries (e.g. high-tech firms are likely to have higher monitoring costs due to the requirement of firm-specific knowledge to monitor effectively), these differences do not appear to be significant enough to warrant appointments of more independent directors in industries with higher monitoring costs.

In Table 5.8, we examine the number and percentage of IPO firms with board size that is greater or smaller than the overall median board size of five by industry groups. Resources industries, including gold and other metals sectors, are found to have relatively more firms with smaller boards; specifically, 37 out of the total 50 firms in these two sectors have less than five directors on their boards. Firms in these sectors also have relatively short operating history with the median of 1 year and are smaller in size with a median of less than $1 million in total assets at the prospectus date. It is likely that because resources firms are often newly established and they go public for funds to conduct explorations, they require specialised skills in early days and rely on directors with more specialised knowledge, such as engineering and geology, on the boards. Thus, these firms tend to have a smaller board at the time of IPO.

On the other hand, retail, media, and tourism & leisure sectors have relatively more firms with larger boards. Firms in these industries also tend to be larger and have longer operating history. This finding is consistent with Coles, Daniel and Naveen (2005) that larger firms with above-median sales have bigger boards compared with smaller firms with below-median sales. In addition, firms in the retail, media, and tourism & leisure sectors have more stakeholders involved and face higher political costs that are likely to lead them to adopt slightly larger boards than the average IPO firm's board in order to be more consistent with the governance practices suggested by corporate governance reformers. For example, Lipton and Lorsch (1992) suggest that a board size of 8 to 9 members is likely to be most effective and Jensen (1993) argues that the boards should not exceed 7 to 8 members if they are to function effectively.

Overall, we have observed variations in IPO firms' board size across industries, suggesting that one board size does *not* fit all. The optimal board size varies from company to company and from industry to industry and is influenced by firm-specific and industry factors. Thus, the approach adopted by the ASX best practice recommendations, that is, without setting a specific number of directors for all company boards, is preferred over those exchange listing requirements or mandates from institutional investors that set a rigid uniform standard and restrictions on the number of board members.

Table 5.7 Prevalence of independent directors and average board size by industry groups

ASX Sector	1994			1995			1996			1997			1998			1999			1994-1999		
	Average no. of indep dir	Average board size	Sample size	Average no. of indep dir	Average board size	Sample size	Average no. of indep dir	Average board size	Sample size	Average no. of indep dir	Average board size	Sample size	Average no. of indep dir	Average board size	Sample size	Average no. of indep dir	Average board size	Sample size	Average no. of indep dir	Average board size	Sample size
01 Gold	1.0	3.9	9	0.8	3.5	4	0.9	4.0	10	0.7	4.3	3			0	2.0	4.0	1	1.0	3.9	27
02 Other Metals	0.9	4.0	7	1.7	4.3	3	1.5	4.8	4	1	4.4	5	2.0	4.0	1	2.0	4.7	3	1.3	4.3	23
03 Diversified Resources	1.0	4.0	1			0	3	8.0	1			0			0			0	2.0	6.0	2
04 Energy	2.7	4.0	3	1.0	5.0	1	0.5	4.0	2	1.8	4.3	9	3.0	6.0	1	3.0	9.0	1	1.9	4.6	17
05 Infrastructure & Utilities			0	2.0	7.0	1			0	2.5	4.5	2			0	2.0	5.0	1	2.3	5.3	4
06 Developers & Contractors	1.5	4.8	4			0	1.5	4.5	2	2.0	8.0	1	2.0	7.0	1			0	1.6	5.4	8
07 Building Materials	2.0	5.0	1			0			0	2.0	5.0	1			0	4.0	6.0	1	2.7	5.3	3
08 Alcohol & Tobacco	1.5	4.5	2			0			0	2.5	6.0	2	1.0	5.0	1	0.0	4.0	1	1.5	5.0	6
09 Food & Household Goods			0	3.0	5.0	1			0	3.0	7.0	1			0	3.0	5.5	4	3	5.7	6
10 Chemicals	1.0	5.0	1			0			0			0			0			0	1.0	5.0	1
11 Engineering	2.0	6.0	3	2.0	5.0	1			0	0	5.0	1			0			0	1.6	5.6	5
12 Paper & Packaging	0.0	4.0	1			0			0			0			0			0	0.0	4.0	1
13 Retail	3.0	7.0	2	2.0	8.0	2	1.5	5.0	2	2	4.0	2	2.0	7.0	2	2.4	6.4	8	2.2	6.3	18
14 Transport	2.5	5.5	2	5.0	14.0	1			0	2	6.0	1			0	3.0	5.0	1	3.0	7.2	5
15 Media	1.3	6.0	3	2.0	5.0	1	0	5.0	1	1.5	5.0	2	6.0	12.0	1	2.2	5.6	13	2.0	5.9	21
16 Banks & Finance			0	5.0	11.0	1	0	6.0	1			0			0			0	2.5	8.5	2
17 Insurance	2.5	8.0	2			0			0			0			0			0	2.5	8.0	2
18 Telecommunications	2.0	6.3	4	1.5	5.0	2	1.8	4.8	5	3.5	7.0	4	1.8	6.0	6	2.0	5.1	13	2.1	5.6	34
19 Invest & Fin Services	1.3	5.0	6	2.0	7.0	1	0.7	4.0	3	1.5	3.5	2			0	1.4	5.1	10	1.3	4.9	22
20 Property Trusts			0			0			0			0			0			0			0
21 Healthcare & Biotech	2.4	5.8	5	2.5	6.0	2	2.5	6.0	4	0.7	5.3	3	1.7	5.0	3	1.8	5.0	8	1.9	5.4	25
22 Miscellaneous Industries	1.6	5.2	11	2.0	5.0	1	1.1	4.2	10	1.8	5.2	12	1.0	5.0	8	1.7	4.7	33	1.6	4.8	75
23 Diversified Industrials			0			0			0			0			0			0			0
24 Tourism & Leisure	2.0	5.5	2	2.0	6.0	1	1.7	5.7	3	4	5.0	1	4.0	8.0	1	2.4	6.2	5	2.4	6.0	13
Average / Total	**1.6**	**5.1**	**69**	**2.0**	**5.9**	**23**	**1.3**	**4.7**	**48**	**1.8**	**5.0**	**52**	**1.8**	**5.9**	**25**	**2.0**	**5.2**	**103**	**2.1**	**5.2**	**320**

Board size is measured by the total number of directors on the board. **Indep dir** is a director who is not a current or past employee of the corporation, does not have substantial business or family ties with management, nor does he/she have potential business ties with the firm.

Table 5.8 Number and percentage of firms with board size greater and smaller than the median board size of five by industry groups

ASX Sector	No. of firms in the industry	Larger board		Smaller board		Firm characteristics at IPO			
		No. of firms with board size > 5 members	% of firms with board size > 5 members	No. of firms with board size < 5 members	% of firms with board size < 5 members	Average operating history	Median operating history	Average firm size ($m)	Median firm size ($m)
01 Gold	27	0	0.0%	21	17.5%	2.7	1.0	1.8	0.5
02 Other Metals	23	4	3.7%	16	13.3%	4.0	1.0	4.6	0.7
03 Diversified Resources	2	1	0.9%	1	0.8%	7.5	7.5	8.2	8.2
04 Energy	17	3	2.8%	9	7.5%	3.6	2.0	5.1	0.7
05 Infrastructure & Utilities	4	1	0.9%	1	0.8%	2.5	1.5	59.7	4.1
06 Developers & Contractors	8	3	2.8%	2	1.7%	10.3	7.0	87.3	30.8
07 Building Materials	3	1	0.9%	0	0.0%	14.3	11.0	51.0	51.0
08 Alcohol & Tobacco	6	2	1.8%	2	1.7%	9.7	7.0	37.0	28.3
09 Food & Household Goods	6	3	2.8%	1	0.8%	8.3	11.5	23.1	20.9
10 Chemicals	1	0	0.0%	0	0.0%	34.0	34.0	61.7	61.7
11 Engineering	5	1	0.9%	0	0.0%	13.4	8.0	42.4	39.2
12 Paper & Packaging	1	0	0.0%	1	0.8%	4.0	4.0	NA	NA
13 Retail	18	12	11.0%	2	1.7%	9.2	5.0	104.7	17.3
14 Transport	5	3	2.8%	0	0.0%	15.8	1.0	2,176.4	138.7
15 Media	21	11	10.1%	3	2.5%	5.3	1.0	66.7	7.1
16 Banks & Finance	2	2	1.8%	0	0.0%	8.0	8.0	5,056.5	5,056.5
17 Insurance	2	2	1.8%	0	0.0%	41.0	41.0	1,401.8	1,401.8
18 Telecommunications	34	13	11.9%	8	6.7%	7.0	2.0	1,086.9	6.4
19 Investment & Financial Services	22	7	6.4%	10	8.3%	3.9	1.5	29.5	6.5
20 Property Trusts	0	0	0.0%	0	0.0%				
21 Healthcare & Biotechnology	25	12	11.0%	9	7.5%	5.8	4.0	56.0	5.8
22 Miscellaneous Industries	75	20	18.3%	33	27.5%	7.7	3.0	11.7	7.0
23 Diversified Industrials	0	0	0.0%	0	0.0%				
24 Tourism & Leisure	13	8	7.3%	1	0.8%	4.1	2.0	91.2	20.9
Average / Total	**320**	**109**	**100%**	**120**	**100%**	**6.7**	**2.0**	**227.8**	**5.8**

Board size is measured by the total number of directors on the board. **Operating history** is measured by the number of years the IPO firm has been incorporated prior to the IPO. **Firm size** is measured by total assets at the prospectus date. **NA** means the information is not available in the prospectuses.

Table 5.9 compares board and firm characteristics, including board leadership, board composition, directors' interests, operating history, firm size and post-listing revenue, of IPO firms that adopt a large board (i.e., greater than the median board size of five) and a small board (i.e., smaller than the median board size of five). Results from Wilcoxon Rank-Sum Test that tests for any significant differences in median values of these variables (except for board leadership) between these two groups are also presented. In terms of the differences in board characteristics, IPO firms with larger boards are found to have significantly higher proportion of independent directors and less executive directors on the board compared with IPO firms with smaller boards. The former also have significantly longer operating history, larger firm size and higher revenue in the first year following listing, suggesting that their abilities to adopt larger boards and appointing more independent directors to the board are backed by good firm performance and pre-IPO operating experience. In terms of board leadership, both groups of firms have similar percentage of firms adopting dual leadership, specifically, 88.1% of firms in the larger board group and 86.7% in the smaller board group.

Overall, the results show that the board structures of IPO firms with larger boards are more in line with ASX's best practice recommendations. The median board size for this group of firms is six, consistent what is implicit in the best practice recommendations. Also, firms with larger boards have more independent directors with an average of 36.5% on the board while firms with smaller boards have a lower average of 28.1% of independent directors. However, even for firms with larger boards, the majority of board members are not represented by independent directors. Thus, consistent with the previous conclusion made on board independence, the conformance by IPO firms is still a long way from best practice recommendations.

Table 5.9 Descriptive statistics and univariate tests of differences in board and firm characteristics between firms with larger boards and firms with smaller boards

			Board characteristics					Firm characteristics		
		n	Board Size	Dual Leadership	% of Indep Dir	% of Exe Dir	DIRs' interests	Operating History	Firm Size	1st Yr Revenue
IPO firms with ….				(No. of firms)				(Years)	($m)	($m)
Larger board	mean	109	6.90	96	0.365	0.353	0.27	8.89	612.55	412.55
	median		6.00		0.333	0.333	0.22	4.50	19.25	43.65
Smaller board	mean	120	3.73	104	0.281	0.415	0.25	4.34	6.05	13.35
	median		4.00		0.250	0.417	0.22	1.00	1.49	0.46
Total		**229**								
Wilcoxon Rank-Sum Test between firms with a larger board and firms with a smaller board										
Z			13.592		3.027	-2.255	0.156	3.748	7.635	7.980
Sig.			0.000		0.002	0.024	0.876	0.000	0.000	0.000
			***		***	**		***	***	***

Larger board means that the board size is greater than the median of five members; **smaller board** means that the board size is smaller than the median of five members. **Board size** is measured by the total number of directors on the board. **Dual leadership** is when different people hold the positions of chairperson and CEO. **% of Indep Dir** measures the percentage of independent directors on the board. **% of Exe Dir** measures the percentage of executive directors on the board. **DIR's interests** is measured by the total number of shares held directly, indirectly, or beneficially by directors and/or director-related entities as a proportion of total shares outstanding at the time of IPO. **Operating History** is measured by the number of years the IPO firm has been incorporated prior to the IPO. **Firm size** is measured by total assets an issuing firm has immediately prior to the IPO. **1st Yr Revenue** is measured by the total revenue (excluding interest revenue) in the first year following listing.
*** Significant at 1% level. ** Significant at 5% level. * Significant at 10% level.

5.3 Characteristics of the board of directors at IPO

In this section, we analyse the characteristics of directors at the time of IPO, including their age and share ownership.

5.3.1 Age of directors

Most companies disclose the age of their directors in prospectuses. However, there is an increasing trend in the proportion of companies that do not disclose this information, from 25% in 1994 to 45% in 1999. Table 5.10 presents the age distribution of directors. Across the sample period, directors' age range from 25 to 76 years of age and the average age is 50. In 1994, 1995, 1998 and 1999, the majority of directors are 50 years old or just over. However, the mode of directors' age is slightly younger in 1996 and 1997, at 47 and 45 years of age, respectively.

Table 5.10 Age distribution of directors

Age	1994		1995		1996		1997		1998		1999		1994-1999	
	No. of dir	%	No. of dir	%	No. of dir	%	No. of dir	%	No. of dir	%	No. of dir	%	No. of dir	%
21-25	0	0.0	0	0.0	0	0.0	1	0.5	0	0.0	0	0.0	1	0.1
26-30	3	1.1	0	0.0	2	1.2	1	0.5	1	0.7	9	2.9	16	1.4
31-35	7	2.5	3	2.8	5	3.1	6	3.3	11	8.0	13	4.1	45	3.8
36-40	25	9.0	10	9.2	23	14.1	19	10.4	13	9.5	39	12.4	129	10.9
41-45	46	16.5	15	13.8	23	14.1	38	20.9	23	16.8	63	20.1	208	17.6
46-50	74	26.5	22	20.2	39	23.9	29	15.9	26	19.0	60	19.1	250	21.1
51-55	49	17.6	30	27.5	27	16.6	35	19.2	35	25.5	64	20.4	240	20.3
56-60	28	10.0	14	12.8	23	14.1	22	12.1	14	10.2	35	11.1	136	11.5
61-65	28	10.0	12	11.0	13	8.0	18	9.9	8	5.8	22	7.0	101	8.5
66-70	16	5.7	3	2.8	6	3.7	11	6.0	4	2.9	6	1.9	46	3.9
71-75	3	1.1	0	0.0	2	1.2	2	1.1	1	0.7	3	1.0	11	0.9
76 - 80	0	0.0	0	0.0	0	0.0	0	0.0	1	0.7	0	0.0	1	0.1
Total	**279**	**100**	**109**	**100**	**163**	**100**	**182**	**100**	**137**	**100**	**314**	**100**	**1,184**	**100**
No. of dir without age info	71		26		74		80		29		223		503	
Total board positions	**350**		**135**		**237**		**262**		**166**		**537**		**1,687**	

Summary statistics:	**1994**	**1995**	**1996**	**1997**	**1998**	**1999**	**1994-1999**
Mean	51	51	50	50	49	48	50
Median	50	51	49	50	49	48	49
Mode	50	54	47	45	51	52	52
Minimum	29	32	29	25	28	26	25
Maximum	73	70	74	71	76	73	76
Standard Deviation	9.0	8.2	9.0	9.6	9.1	9.1	9.1

No. and % of companies without director age info:	**1994**	**1995**	**1996**	**1997**	**1998**	**1999**	**1994-1999**
No. of companies without age information	17	5	16	17	6	46	107
% of companies without age information	24.6%	21.7%	33.3%	32.7%	24.0%	44.7%	33.4%

Table 5.11 shows the average age of executive, independent and grey directors. In each sample year except in 1998, the average age of independent directors is older than grey directors' average age, which is older than the executive directors'. In 1998, the average age of grey directors is younger than that of executive directors. Overall, independent directors are on average about 8 years older than executive directors. One explanation for this observation is that independent directors are typically hired because of their experience. Thus, they are likely to be older than executive and grey directors.

Table 5.11 Average age of executive, independent and grey directors

Type of Directors	1994		1995		1996		1997		1998		1999		1994-1999	
	Mean age	No. of dir	Mean age	No. of dir	Mean age	No. of dir	Mean age	No. of dir	Mean age	No. of dir	Mean age	No. of dir	Mean age	No. of dir
Executive dir	46.4	102	46.2	36	46.0	60	45.5	61	48.0	54	44.3	113	45.8	426
Non-exe dir:														
Indep dir	54.0	95	54.1	37	54.0	40	54.9	68	53.1	41	52.2	122	53.5	403
Grey dir	51.6	82	52.3	36	51.0	63	50.4	53	45.7	42	48.1	79	49.9	355
Overall	**50.5**	**279**	**50.9**	**109**	**49.9**	**163**	**50.4**	**182**	**48.8**	**137**	**48.3**	**314**	**49.7**	**1,184**

5.3.2 Director ownership

Table 5.12 presents the distribution of director ownership at the time of IPO where director ownership is measured by the total number of shares held directly, indirectly, or beneficially by directors and/or director-related entities as a proportion of total shares outstanding at the time of IPO. Across the sample, the median percentage of ownership held by directors is 23% and the mean is 27%, with 33% of IPO firms having directors owning less than 10% of the firms' shares.

Noticeably, a large number of IPO firms' directors in 1994 and 1995 do not hold any shares in the IPO firm at the time of offering. The median director ownership for the 1995 sample is only 3%. There is however an increasing trend in director ownership over the sample period. The median director ownership for the 1998 and 1999 sample has both increased to 36%. One explanation for the rise is the increasing public interest in corporate governance issues. Having directors holdings shares in the issuing firms can arguably send positive signals to outside investors as directors themselves have an interest in the firm which they will want to protect.

Table 5.12 Distribution of director share ownership at the time of IPO

Director ownership* (%)	1994		1995		1996		1997		1998		1999		1994-1999	
	No. of firms	%	No. of firms	%	No. of firms	%	No. of firms	%	No. of firms	%	No. of firms	%	No. of firms	%
0%	14	21.5	7	30.4	4	8.5	8	15.4	2	8.0	9	8.8	44	14.0
1-9%	12	18.5	8	34.8	9	19.1	13	25.0	5	20.0	14	13.7	61	19.4
10-19%	12	18.5	0	0.0	6	12.8	5	9.6	1	4.0	10	9.8	34	10.8
20-29%	9	13.8	3	13.0	14	29.8	11	21.2	1	4.0	13	12.7	51	16.2
30-39%	6	9.2	2	8.7	4	8.5	2	3.8	6	24.0	10	9.8	30	9.6
40-49%	5	7.7	1	4.3	4	8.5	3	5.8	3	12.0	12	11.8	28	8.9
50-59%	4	6.2	0	0.0	2	4.3	5	9.6	1	4.0	17	16.7	29	9.2
60-69%	3	4.6	1	4.3	2	4.3	3	5.8	5	20.0	11	10.8	25	8.0
70-79%	0	0.0	1	4.3	1	2.1	1	1.9	1	4.0	4	3.9	8	2.5
80-89%	0	0.0	0	0.0	1	2.1	0	0.0	0	0.0	2	2.0	3	1.0
90-99%	0	0.0	0	0.0	0	0.0	1	1.9	0	0.0	0	0.0	1	0.3
100%	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Total**	**65**	**100**	**23**	**100**	**47**	**100**	**52**	**100**	**25**	**100**	**102**	**100**	**314**	**100**

Summary statistics:	1994	1995	1996	1997	1998	1999	1994-1999
Mean	19.24%	15.37%	15.37%	23.41%	33.83%	34.46%	26.72%
Median	17.11%	3.16%	23.03%	19.75%	36.16%	36.46%	23.09%
Minimum	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Maximum	66.00%	76.33%	76.33%	99.50%	70.42%	84.96%	99.50%
Standard Deviation	19.65%	22.32%	22.32%	24.10%	23.61%	24.40%	23.50%

* Director ownership is measured by the total number of shares held directly, indirectly, or beneficially by directors and/or director-related entities as a proportion of total shares outstanding at the time of IPO as disclosed in prospectuses.
** The total number of IPO firms for this analysis is reduced in some sample years (1994 by 4 firms, 1996 by 1 firm and 1999 by 1 firm) because directors' shareholdings were not disclosed in these firms' prospectuses.

5.4 Summary

In this Chapter, we provided descriptive analyses on the board and director characteristics of IPO firms and assessed the conformance by IPO firms with the best practice recommendations. IPO firms that arguably had the strongest incentive to maximise their appeal to investors were found to adopt board structures that diverged substantially from the ASX recommendations on corporate governance, particularly on Recommendation 2.1 and 2.2 that a majority of the board should be independent directors and the chairperson should be an independent director. Specifically, the following findings have been documented:

- 90% of IPO firms had separated the roles of chairperson and CEO;
- for most IPO firms, the number of directors on the board was five, which was one person less than that implied in the ASX best practice recommendations;

- just over 50% of IPO firms had an independent chairperson; and
- on average, only about one-third of the directors on the board were independent directors.

Thus, apart from board leadership where an overwhelming conformance was observed, large deviations from the best practice recommendations were observed on other aspects of IPO board structures. As discussed elsewhere, the best practice recommendations suggest an implicit board size of six directors. With IPO firms raising on average only a modest amount from the public, these recommendations would be unduly costly for most IPO firms.

Moreover, given that investors would be unwilling to invest in a company unless they felt that their interests were protected, IPOs provided a good setting for identifying the type of board structures that investors preferred. Our findings thus suggested that having an independent board might not be as value-adding as claimed by regulators and corporate governance reformers since the majority of IPOs did not have an independent board and exhibited large divergences from the best practice recommendations. In fact, this suggested that ASX's recommendations might not be optimal and could be distorting the market-driven outcomes.

In the next chapter, we present the analyses and results for the testable hypotheses on initial board structures and firm outcomes developed in Chapter 3. Specifically, we assess if deviations from the best practice recommendations are associated with worse outcomes, including larger underpricing, poorer long-run performance and a lower likelihood of SEOs.

Chapter 6

IPO Board Structures and Issuing Firm Outcomes

6.1 Introduction

In the previous chapter, we provided evidence that IPO firms' governance structures are still a long way from the ASX best practice recommendations. Since the objectives of the recommendations are to promote investor confidence and to enable shareholders to make informed investment decisions (ASX, 2003), in this chapter we focus on the choices that investors actually make. As investors' interests are at stake, they are usually best placed to assess the appropriateness of best practice recommendations. Thus, we test whether investors exhibit preferences for the "best practice" promoted by examining the sharemarket performance and reissuing decisions of IPO firms. Specifically, we test whether IPO firms that conform to the best practice recommendations have better firm outcomes, which is our second research question.

Thus, we explore the relationship between IPO underpricing and initial board structures in Section 6.2, the relationship between post-IPO long-run performance and initial board structures in Section 6.3, and the relationship between the likelihood of SEOs and initial board structures in Section 6.4. We test if conformity with the best practice recommendations is associated with lower IPO underpricing, better long-run performance and a higher likelihood of a SEO and we present both univariate and multivariate analyses. The final section summarises the findings from in this chapter.

6.2 Test of IPO underpricing and initial board structures

In this section, we test if IPO firms with better governed boards are associated with less wealth loss to vendors at the time of IPO. Thus, ***IPO underpricing***, measured by market adjusted initial returns, is used as the dependent variable in the multivariate regression. We use board characteristics, including board size, leadership structure, board composition, and director ownership, to proxy for the quality of board governance. Based on the recommendations by ASX, we posit that IPO firms whose board structures are more in line with the best practice recommendations (i.e., have larger boards, dual leadership, higher proportions of independent directors, and higher director ownership) have lower underpricing (or lower initial returns).

Following Lee, Taylor and Walter (1996b), we include ***operating history***, ***firm size***, and ***offer size***, in the multivariate regression to proxy for the ex ante uncertainty about market value, which has been suggested by Beatty and Ritter (1986) as related to the level of underpricing. Older and larger IPO firms have lower ex ante uncertainty because more information about these firms is available in the market. Thus, they are expected to have lower underpricing. Firms with larger issues are also expected to have lower ex ante uncertainty and thereby a lower level of underpricing.

The ***time delay*** between the date the prospectus was lodged with ASX and the listing date is used to proxy for the degree of informed demand [(Lee et al., 1996a); (Lee et al., 1996b)]. Since there are both informed and uninformed investors in the market (Rock, 1986), when the former realise that an issue is underpriced, they will quickly be attracted to the issue, resulting in a shorter time delay between lodging date and listing date. Therefore, a negative relationship is expected between time delay and the level of underpricing. That is, the more an issue is underpriced, the shorter the time delay. This study finds that Australian IPOs between 1994 and 1999 have an average (or median)

time delay of 60 days (or 51 days). This is consistent with what has been noted in Lee et al. (1996a) that after lodging prospectuses Australian IPO firms typically take an average of seven to eight weeks before commencing the public trading.

Finally, the ***tech industry*** variable is included to control for a possible tech industry effect. Brown (1999) suggests that the performance of information technology related IPOs varies from the performance of IPOs in other industries. Brown (1999, p. 2-3) further argues that "information technology related IPOs experience initial returns far in excess of those in any other industry sector but then drastically underperform the rest of their own industry sector during the subsequent three years". Given that technology-based companies had attracted a lot of investors' attention during the sample period investigated, this tech industry dummy is expected to have an effect on initial listing day returns.

To test how the board structures adopted by issuing firms at the time of IPO affects the level of underpricing, we follow the approach taken by Certo et al. (2001b) and Filatotchev and Bishop (2002) and use the hierarchical multiple regression analysis. **Model 1** is based on the findings reported in earlier studies and includes only the control variables, including proxies for ex ante uncertainty, the degree of informed demand, and industry effects. In **Model 2**, we include additional board governance variables and report the results of the main effects, including both the control variables and the test variables of interest (i.e., measures of board size, board leadership, proportion of independent directors, and director ownership).

The following shows the regression model of Model 2:

$$UPRICE_{it} = \beta_0 + \beta_1.BSIZE_{it} + \beta_2.LEADER_{it} + \beta_3.INDEPDIR_{it} + \beta_4.DIROWN_{it} + \beta_5.OPHIST_{it} + \beta_6.LnFSIZE_{it} + \beta_7.LnOFFER_{it} + \beta_8.TDELAY_{it} + \beta_9.TECH_{it} + \varepsilon_{it}$$

Variable	**Definition**
UPRICE	The market adjusted initial return is measured by the raw initial return adjusted for return to the ASX All Ordinaries Accumulation Index
BSIZE	Total number of directors on the board
LEADER	1 if different people hold the positions of chairperson and CEO, and 0 otherwise
INDEPDIR	Proportion of independent directors on the board
DIROWN	Percentage of shares held directly, indirectly, or beneficially by directors and/or director-related entities relative to the total number of shares outstanding at the time of IPO
OPHIST	Number of years the IPO firm has been incorporated prior to the IPO
LnFSIZE	Natural log of the total assets an issuing firm has immediately prior to the IPO
LnOFFER	Natural log of the product of offer price and total number of shares offered in the prospectus
TDELAY	Number of days between the date the prospectus was lodged with ASX and the listing date
TECH	1 if the IPO firm belongs to one of the high-tech industries, including network operator (ASX sector 181), cables (sector 182), equipment & services (sector 183), other telecommunications (sector 184), pharmaceuticals (sector 211), biotechnology (sector 212), computer & office services (sector 226), and high technology (sector 228), and 0 otherwise

Models 3-6 are robustness tests. **Model 3** includes an additional squared term of director ownership to capture any non-linearity between insider ownership and firm performance identified by McConnell and Servaes (1990). **Model 4** excludes the operating history variable, **Model 5** excludes firm size and **Model 6** excludes board size, due to the possible multicollinarity between these variables.

Descriptive statistics and correlation matrix for variables used in this test are reported in Table 6.1. A point emerging from earlier chapters is that the ASX recommendations are most costly for smaller, younger firms. One implication is that larger firms with a longer operating history are more likely to have structured their boards in a manner consistent with the ASX recommendations. The Pearson correlations on the upper half of Table 6.1 show that larger firms, measured by total assets, are associated with a higher proportion of independent directors and larger boards. This result adds weight to

the proposition that the ASX should consider ways in which small firms may be exempted from the recommendations without requiring explicit explanations that may convey the impression that they have adopted something less than best practice.

Further, the Pearson correlations show that IPO underpricing is significantly and positively related to director ownership at the 5% level while negatively related to the size of the offer at the 5% level. Board size is significantly positively associated with the proportion of independent directors on the board, operating history, firm size and offer size and negatively related to time delay; all significant at the 1% level. IPO firms that have higher proportion of independent directors are also found to raise larger amounts of equity capital from the public, suggesting the greater costs of conformance with Recommendation 2.1, which states that a majority of the board be independent directors. Moreover, the correlation matrix shows that older firms tend to be larger in size and have larger issues, and consistent with expectation, time delay is significantly negatively related with firm size and offer size. The results are largely unchanged for Spearman rank order correlations.

Table 6.1 Descriptive statistics and correlations for IPO underpricing regression variables

N=263	Mean	Median	Min	Max	SD	1		2		3		4		5		6		7		8		9	
1. IPO underpricing	0.17	0.08	-1.02	5.46	0.44	1.00		-.019		-0.00		0.14	**	0.13	**	-0.03		-0.07		-0.13	**	-0.04	
2. Board size	5.19	5.00	3.00	14.00	1.62	**0.03**		1.00		0.16	***	0.01		0.07		0.31	***	0.52	***	0.64	***	-0.18	***
3. % of Indep Dir	0.32	0.33	0.00	0.91	0.21	**0.00**		**0.15**	**	1.00		-0.11		-0.07		0.09		0.13	**	0.19	***	-0.04	
4. Dir ownership	0.27	0.23	0.00	1.00	0.23	**0.15**	**	**0.00**		**-0.15**	**	1.00		0.94	***	-0.02		0.02		-0.20	***	-0.08	
5. Dir ownership squared	0.13	25.00	9.00	196.00	0.17	**0.15**	**	**0.00**		**-0.15**	**	**1.00**	***	1.00		0.01		0.09		-0.12	**	-0.12	**
6. Operating history	6.70	3.00	0.00	111.00	10.87	**0.04**		**0.19**	***	**-0.00**		**0.06**		**0.06**		1.00		0.39	***	0.37	***	-0.07	
7. Firm size (ln)	15.39	15.65	1.10	23.98	2.76	**0.06**		**0.54**	***	**0.10**		**-0.01**		**-0.01**		**0.34**	***	1.00		0.60	***	-0.22	***
8. Offer size (ln)	16.25	15.89	13.82	23.37	1.40	**-0.03**		**0.55**	***	**0.14**	**	**-0.16**	**	**-0.16**	**	**0.25**	***	**0.60**	***	1.00		-0.27	***
9. Time delay	58.16	51.00	25.00	342.00	28.74	**-0.20**	***	**-0.25**	***	**-0.03**		**-0.03**		**-0.03**		**-0.10**		**-0.29**	***	**-0.38**	***	1.00	

*** Correlation is significant at the 1% level (2-tailed). ** Correlation is significant at the 5% level (2-tailed).

Pearson correlations for the upper triangular half of the table and Spearman rank order correlations for the lower triangular half of the table.

IPO underpricing is measured by the market adjusted initial returns; that is, the raw initial returns adjusted for returns to the ASX All Ordinaries Accumulation Index. **Board size** is measured by the total number of directors on the board. **% of Indep Dir** measures the percentage of independent directors on the board. **Dir ownership** is measured by the total number of shares (excluding options) held directly, indirectly, or beneficially by directors and/or director-related entities as a proportion of total shares outstanding at the time of IPO. **Dir ownership squared** is the square of director ownership. **Operating history** is measured by the number of years the IPO firm has been incorporated prior to the IPO. **Firm size** is measured by the natural logarithm of total assets that an issuing firm has immediately prior to the IPO. **Offer size** is measured by the natural log of the product of offer price and total number of shares offered in the prospectus. **Time delay** measures the number of days from the date the prospectus was lodged with ASX and the listing date.

6.2.1 Univariate results: IPO underpricing and initial board structures

Table 6.2 compares the board structures and firm characteristics between two groups of IPO firms, one group with positive market adjusted initial returns and the other with negative market adjusted initial returns, using Wilcoxon Rank-Sum Test, which tests for the differences in median values between two independent sample groups. Firms with positive market adjusted initial returns (i.e., firms whose shares were underpriced at IPOs) are found to have larger median firm size and higher director ownership, both statistically significant at the 10% level. These firms are also found to have shorter time delay between prospectus date and the listing date, significant at the 1% level, compared with firms that were overpriced (i.e., with negative market adjusted initial returns).

Table 6.2 Univariate tests of differences in board structures and firm characteristics between firms with positive and negative market adjusted initial returns

	N	Uprice	BSize	IndepDir	DirOwn	OpHist	FSize $m	OfferSize $m	TDelay
Positive initial return	203								
Mean		0.494	5.158	0.322	0.291	7.094	132.431	39.607	56.187
Median		0.207	5.000	0.333	0.250	3.000	7.025	8.000	50.000
Negative initial return	117								
Mean		-0.177	5.188	0.343	0.225	5.931	407.481[a]	181.022[b]	68.231
Median		-0.113	5.000	0.333	0.204	2.000	3.200	8.000	55.000
Sample differences									
Wilcoxon Z		14.899	-0.278	-0.856	1.945	1.002	1.872	-0.018	-2.468
Asymp. Sig.		(0.000)	(0.781)	(0.292)	(0.052)	(0.216)	(0.061)	(0.985)	(0.001)
		***			*		*		***

*** Significant at 1% level (2-tailed). * Significant at 10% level.

Uprice is measured by market adjusted initial returns; that is, the raw initial returns adjusted for returns to the ASX All Ordinaries Accumulation Index. **BSize** is measured by the total number of directors on the board. **IndepDir** measures the percentage of independent directors on the board. **DirOwn** is the director ownership, measured by the total number of shares (excluding options) held directly, indirectly, or beneficially by directors and/or director-related entities as a proportion of total shares outstanding at the time of IPO. **OpHist** is measured by the number of years the IPO firm has been incorporated prior to the IPO. **FSize** is measured by the total assets an issuing firm has immediately prior to the IPO. **OfferSize** is measured by the product of offer price and total number of shares offered in the prospectus. **TDelay** measures the number of days from the date the prospectus was lodged with ASX to the listing date. Sample differences are tested using Wilcoxon Rank-Sum Test for any significant differences between median values.

[a] The average firm size falls to $136.731 million after excluding Telstra Corporation Limited.

[b] The average offer size falls to $60.572 million after excluding Telstra Corporation Limited.

6.2.2 Multivariate results: IPO underpricing and initial board structures

Table 6.3 reports the hierarchical regression results, together with the expected sign for each coefficient. **Model 1** replicates earlier studies and regresses market adjusted initial returns on all control variables in this study. The regression has an adjusted R-squared of 4.4% and F-statistic of 3.433, which is significant at the 1% level. We find some consistent results with previous studies. The coefficient estimate for the offer size is significantly negative at the 10% level, suggesting that larger issues have lower ex ante uncertainty and less underpricing. Also, the coefficient estimate for the tech industry dummy variable is positive and significant at the 1% level. This suggests that high-tech firms tend to underprice more, consistent with previous research findings [e.g. Certo et al. (2001a); Koretz (2000)].

Model 2 regresses market adjusted initial returns on all board characteristics under investigation and the control variables. The adjusted R-squared is 4.2% and the F-statistic is 2.285, significant at the 5% level. We expect that better governed firms, proxied by board size, leadership structure, proportion of independent directors and director ownership, have lower underpricing. This is based on the argument that better governed firms can more credibly convey the intrinsic value of the firm to outside investors and therefore are more likely to price the issue fairly to reduce the loss to vendors. However, contrary to the hypotheses, our results show that for all board characteristics examined, none have any significant effect on the level of underpricing. The tech industry dummy is the only variable that is statistically significant and is positively related with IPO underpricing.

Model 3 is based on Model 2 but includes an additional variable, director ownership squared, to test for the possible curvilinear relationship between director ownership and firm performance that has been suggested by Morck et al. (1988) and McConnell

and Servaes (1990). Model 3 has an adjusted R-squared of 4.1% and F-statistic of 2.115, significant at the 5% level. The results are largely unchanged from Model 2. The coefficient estimate for the tech industry variable is still positive and significant at the 1% level while none of the variables on board characteristics are statistically significant. The estimated coefficient for director ownership squared is insignificant, thus providing no support for a non-linear relationship between director ownership and IPO underpricing.

As indicated in the correlation matrix, there are high correlations between operating history, firm size and board size. Thus, Models 4-6 re-estimate the regression (based on Model 2) by excluding these variables one at a time. **Model 4** excludes the operating history variable and has an adjusted R-squared of 4.6% and F-statistic of 2.58, significant at the 5% level. Again only the tech industry variable is significant in explaining IPO underpricing. **Model 5** excludes the firm size variable. The tech industry variable is still statistically significant at the 1% level while offer size becomes marginally significant and is negatively related with underpricing. That is, the larger the issue, the lower the level of underpricing, consistent with expectation. Model 5 has an adjusted R-squared of 4.6% and F-statistic of 2.563, significant at the 5% level. **Model 6** excludes the board size variable and has an adjusted R-squared of 4.3% and F-statistic of 2.471, significant at the 5% level. Again, only the tech industry dummy is significant (at the 1% level) in explaining IPO underpricing.

Table 6.3 Pooled OLS regression of initial board structures and IPO firm characteristics on the level of IPO underpricing

Variable	Exp sign	Models 1		2		3		4		5		6	
Op history	–	0.001		0.000		0.000				0.000		0.000	
		(0.339)		(0.144)		(0.144)				(0.016)		(0.230)	
Firm size (ln)	–	0.000		-0.005		-0.004		-0.004				-0.003	
		(0.030)		(-0.346)		(-0.286)		(-0.337)				(-0.205)	
Offer size (ln)	–	-0.042	*	-0.044		-0.042		-0.044		-0.048	*	-0.031	
		(-1.830)		(-1.622)		(-1.557)		(-1.632)		(-1.730)		(-1.211)	
Time delay	–	-0.001		-0.001		-0.001		-0.001		-0.001		-0.001	
		(-0.636)		(-0.545)		(-0.576)		(-0.544)		(-0.532)		(-0.525)	
Tech industry	+	0.207	***	0.197	***	0.204	***	0.197	***	0.197	***	0.198	***
		(2.868)		(2.707)		(2.804)		(2.715)		(2.716)		(2.716)	
Board size	–			0.020		0.021		0.020		0.019			
				(0.856)		(0.861)		(0.864)		(0.853)			
Leadership	–			-0.038		-0.032		-0.038		-0.039		-0.035	
				(-0.368)		(-0.310)		(-0.373)		(-0.376)		(-0.348)	
Indep Dir	–			0.020		0.024		0.020		0.019		0.026	
				(0.182)		(0.218)		(0.185)		(0.176)		(0.242)	
Dir own	–			0.167		0.440		0.167		0.161		0.186	
				(1.475)		(1.297)		(1.476)		(1.449)		(1.590)	
Dir own squared						-0.399							
						(-0.919)							
Constant		0.856	**	0.839	*	0.765	*	0.830	*	0.840	*	0.694	*
		(2.291)		(1.871)		(1.668)		(1.928)		(1.866)		(1.679)	
Adjusted R^2		0.044		0.042		0.041		0.046		0.046		0.043	
F-stat		3.433	***	2.285	**	2.115	**	2.580	**	2.563	**	2.471	**
N=263[#]													

The dependent variable is the **IPO underpricing** measured by market adjusted initial returns; that is, the raw initial returns adjusted for returns to the ASX All Ordinaries Accumulation Index. **Op history** is measured by the number of years the IPO firm has been incorporated prior to the IPO. **Firm size** is measured by the natural logarithm of total assets an issuing firm has immediately prior to the IPO. **Offer size** is measured by the natural log of the product of offer price and total number of shares offered in the prospectus. **Time delay** measures the number of days from the date the prospectus was lodged with ASX and the listing date. **Tech industry** is coded as 1 if the IPO firm belongs to one of the high-tech industries and 0 otherwise. **Board size** is measured by the total number of directors on the board. **Leadership** is coded as 1 if different people hold the positions of chairperson and CEO and 0 otherwise. **Indep Dir** measures the percentage of independent directors on the board. **Dir own** is measured by the total number of shares (excluding options) held directly, indirectly, or beneficially by directors and/or director-related entities as a proportion of total shares outstanding at the time of IPO. **Dir own squared** is the square of director ownership.

*** Significant at 1% level. ** Significant at 5% level. * Significant at 10% level. Numbers in parentheses are *t*-statistics. The analysis uses heteroscedasticity-consistent covariance matrix.

Ten firms have market adjusted initial returns that is greater than three standard deviation from the mean; therefore they are considered as outliers and removed from the analysis. 47 firms are also excluded from the analysis because they have missing board or firm characteristic information.

In summary, the regression results on IPO underpricing show that board governance variables lack any significant explanatory power and that the tech industry dummy is the most important explanatory variable for the level of IPO underpricing. While the board of directors has been suggested to play an important governance role in monitoring management (Fama & Jensen, 1983) and has been heavily emphasised in corporate governance guidelines, our findings suggest that board governance system does not play a strategic role in influencing IPO firms' initial performance. Thus, despite the anticipation that better governance by having quality boards will lower the uncertainty at the IPO and reduce information asymmetry between firms and outside investors, whether firms conform to the best practice recommendations or not do not appear to have any impact on the level of underpricing or vendors' wealth at the time of listing. However, we note that the potential two-way relationship (i.e., joint endogeneity problem) between board characteristics and firm performance suggested by previous research, including Hermalin and Weisbach (2003) and Bhagat and Black (2002), is not totally solved in this study and may be the reason for not observing any significant relationship between board characteristics and firm performance.

6.3 Test of post-IPO long-run performance and initial board structures

In this section, we test whether the long-run performance of IPO firms is influenced by the nature of the board structure. If a firm's board structure is an important part of corporate governance system, board governance variables, including board size, dual leadership, proportions of independent directors and director ownership, are expected to be associated with post-IPO long-run performance. In particular, IPO firms that conform to ASX best practice recommendations are hypothesised to have better long-run performance.

Earlier studies have used other variables to test the determinants of post-IPO long-run performance. In the following, we summarise what these variables are and include them as control variables:

- ***IPO underpricing.*** Shiller (1990) suggests that the long-run performance of IPOs is negatively related to the level of IPO underpricing. Ritter (1991), using US IPO firms as the sample, finds that there is a tendency for firms with high initial returns to be the worst performers in the long-run. Studies from Brazil (Aggarwal et al., 1993) and Korea (Kim et al., 1995) also report similar evidence. Hence, a negative coefficient on IPO underpricing is expected.

  As Rajan and Servaes (1993) suggest that the relationship between initial day returns and post-IPO long-run performance may be non-linear, an additional variable, ***underpricing squared***, is also tested. The study by Lee et al. (1996a) has found supportive evidence of a curvilinear association between initial and the following one- and two-year returns.

- ***Ex ante uncertainty.*** In this study, we include *offer size*, *operating history*, and *firm size* as proxies for the degree of ex ante uncertainty. Miller (1977) predicts that long-run performance and ex ante uncertainty are negatively related. Studies by Ritter (1991) in the US and Levis (1993) in the UK have found supporting evidence that smaller issues are associated with poorer aftermarket performance. Hence, post-IPO long-run performance is expected to be better for larger issues. In addition, as larger and older firms are generally more established and have more public information available about them, they are arguably less risky and are expected to have better long-run performance.

- ***Time delay.*** The time delay between prospectus date and listing date, as a proxy for the (initial) level of informed demand, is controlled for. Given that informed investors will arguably subscribe to good issues only, a short time delay for an

IPO is likely to be associated with better long-run performance. Hence, a negative relationship between time delay and long-run performance is expected.

- ***Tech industry.*** To control for industry effects, we employ a tech industry dummy variable. Levis (1993) documents that there are marked differences in the average three-year holding period return among different industries. Given that firms in the tech industry tend to experience more underpricing, these firms are expected to have lower post-IPO long-run performance.

To examine if the board structures at the time of IPO influences the post-IPO long-run performance, multivariate regression analyses are conducted to examine cross-sectional determinants of the aftermarket performance. Models 1-5 regress on the adjusted returns over the event-window [+1,+36], defined in months relative to the listing month and Models 6-10 regress on the adjusted returns over the event-window [+1,+48].

Model 1 and 6 report the results of main effects and the regression model used is as follows:

$$LRRETURN_{it} = \beta_0 + \beta_1.BSIZE_{it} + \beta_2.LEADER_{it} + \beta_3.INDEPDIR_{it} + \beta_4.DIROWN_{it} + \beta_5.UPRICE_{it} + \beta_6.OPHIST_{it} + \beta_7.LnFSIZE_{it} + \beta_8.LnOFFER_{it} + \beta_9.TDELAY_{it} + \beta_{10}.TECH_{it} + \varepsilon_{it}$$

Variable	**Definition**
LRRETURN	The long-run performance of IPOs is measured by decile (or market) adjusted buy-and-hold returns (BHRs) for the three year aftermarket period (excluding the initial return period) for Models 1-5 and for the four year aftermarket period for Models 6-10. Decile adjusted BHR is defined as the difference between the BHRs to sample IPO firms and the BHRs to the decile to which sample firms belong. Market adjusted BHR adjusts for the returns to the market portfolio, which includes all firms that have the share price available for calculating the BHRs over the given event-window. Equal-weighted returns are used in all analyses in this study as Brown and Warner (1980) suggest that an equal-weighted benchmark is more powerful than a value-weighted benchmark in detecting abnormal performance
BSIZE	Total number of directors on the board
LEADER	1 if different people hold the positions of chairperson and CEO, and 0 otherwise
INDEPDIR	Proportion of independent directors on the board
DIROWN	Percentage of shares held directly, indirectly, or beneficially by directors and/or director-related entities relative to the total number of shares outstanding at the time of IPO
UPRICE	The market adjusted initial return is measured by raw initial return adjusted for return to the ASX All Ordinaries Accumulation Index
OPHIST	Number of years the IPO firm has been incorporated prior to the IPO
LnFSIZE	Natural log of total assets that an issuing firm has immediately prior to the IPO
LnOFFER	Natural log of the product of offer price and total number of shares offered in the prospectus
TDELAY	Number of days between the date the prospectus was lodged with ASX and the listing date
TECH	1 if the IPO firm belongs to one of the high-tech industries, including network operator (ASX sector 181), cables (sector 182), equipment & services (sector 183), other telecommunications (sector 184), pharmaceuticals (sector 211), biotechnology (sector 212), computer & office services, (sector 226) and high technology (sector 228), and 0 otherwise

Table 6.4 presents the descriptive statistics and correlation matrix for variables used in the multivariable regression analysis of long-run performance. Focusing on the Pearson correlations, the upper half of the table show that decile adjusted returns are not significantly related with the board and firm characteristics considered. In terms of board characteristics, the Pearson correlation shows that board size is positively and significantly (at the 1% level) related with the proportion of independent directors on the board, operating history, firm size, time delay, and offer size. The proportion of independent director is positively related with offer size at the 1% level and with firm size at the 5% level. Director ownership is negatively related with offer size at the 1% level, as for a given share capital, the larger the size of the offer, the smaller is the expected shares retained by directors.

The (upper half of) the correlation matrix also shows that operating history, firm size and offer size are all highly correlated. This result is not surprising given that these variables are all used to proxy for ex ante uncertainty. For this reason, later in the regression analysis, these variables are alternated in different models to remove the possible multicollinearity effect. The lower triangular half of the table presents Spearman rank order correlations. The results are qualitatively similar to Pearson correlations.

Table 6.4 Descriptive statistics and correlations for post-IPO long-run performance regression variables

N=203	Mean	Median	Min	Max	SD	1	2	3	4	5	6	7	8	9	10	11
1. EqDec3	0.17	-0.50	-1.71	21.97	2.54	1.00	0.63 ***	-0.04	-0.02	-0.03	-0.03	-0.01	0.03	-0.07	-0.09	-0.04
2. EqDec4	0.11	-0.54	-1.65	29.12	2.69	**0.78** ***	1.00	-0.05	0.01	0.00	0.03	0.03	0.04	-0.05	-0.03	-0.05
3. Uprice	0.21	0.07	-0.76	4.59	0.66	**-0.01**	**-0.05**	1.00	-0.03	0.02	0.12	-0.06	-0.07	0.09	-0.16 **	0.87 ***
4. BSize	5.24	5.00	3.00	14.00	1.75	**0.17** **	**0.21** ***	**0.03**	1.00	0.20 ***	0.01	0.43 ***	0.52 ***	-0.22 ***	0.66 ***	-0.02
5. IndepDir	0.32	0.33	0.00	0.91	0.22	**-0.02**	**0.03**	**-0.01**	**0.20** ***	1.00	-0.13	0.12	0.16 **	-0.02	0.22 ***	0.02
6. DirOwn	0.26	0.22	0.00	0.85	0.24	**-0.09**	**-0.12**	**0.10**	**-0.02**	**-0.17** **	1.00	-0.09	0.02	-0.06	-0.20 ***	0.11
7. OpHist	6.96	3.00	0.00	96.00	12.32	**0.04**	**0.06**	**0.02**	**0.24** ***	**0.01**	**0.04**	1.00	0.43 ***	-0.09	0.46 ***	-0.06
8. LnFSize	15.43	15.72	1.10	23.98	2.94	**0.18** ***	**0.16** **	**0.09**	**0.55** ***	**0.14** **	**-0.03**	**0.34** ***	1.00	-0.24 ***	0.61 ***	-0.07
9. TDelay	59.92	52.00	26.00	263.00	30.79	**-0.11**	**-0.11**	**-0.14** **	**-0.27** ***	**-0.04**	**-0.01**	**-0.15** **	**-0.36** ***	1.00	-0.31 ***	0.09
10. LnOffer	16.33	15.89	13.82	23.37	1.49	**0.14** **	**0.13**	**-0.05**	**0.55** ***	**0.18** ***	**-0.18** ***	**0.31** ***	**0.63** ***	**-0.40** ***	1.00	0.15 **
11. Uprice2	0.47	0.03	0.00	21.03	2.09	**-0.13**	**-0.13**	**0.45** ***	**-0.02**	**-0.06**	**0.11**	**-0.04**	**-0.12**	**0.17** **	**0.08**	1.00

*** Correlation is significant at the 1% level (2-tailed). ** Correlation is significant at the 5% level (2-tailed).

Pearson correlations for the upper triangular half of the table and Spearman rank order correlations for the lower triangular half of the table.

EqDec3 is the (equal-weighted) decile adjusted returns over the event-window [+1,+36], defined in months relative to the listing month. **EqDec4** is the (equal-weighted) decile adjusted returns for event-window [+1,+48]. **Uprice** is the IPO underpricing measured by market adjusted initial returns; that is, the raw initial returns adjusted for returns to the ASX All Ordinaries Accumulation Index. **BSize** is measured by the total number of directors on the board. **IndepDir** measures the percentage of independent directors on the board. **DirOwn** is measured by the total number of shares (excluding options) held directly, indirectly, or beneficially by directors and/or director-related entities as a proportion of total shares outstanding at the time of IPO. **OpHist** is measured by the number of years the IPO firm has been incorporated prior to the IPO. **LnFSize** is measured by the natural logarithm of total assets that an issuing firm has immediately prior to the IPO. **TDelay** measures the number of days from the date the prospectus was lodged with ASX to the listing date. **LnOffer** is measured by the natural log of the product of offer price and total number of shares offered in the prospectus. **Uprice2** is the square of IPO underpricing.

6.3.1 Univariate results: Post-IPO long-run performance and initial board structures

Table 6.5 compares the board structures and firm characteristics between firms with positive and negative long-run returns, measured by decile adjusted returns, using Wilcoxon Rank-Sum Test. Panel A divides IPO firms into two groups based on decile adjusted returns over a three-year holding period while Panel B divides the firms using the returns over a four-year holding period. More significant differences between the two groups of firms are observed over a longer holding period, that is, in Panel B. Both Panels show that IPO firms with positive long-run returns have significantly larger boards and larger firm size compared with firms that performed more poorly in the long-run. In addition, Panel B shows that IPO firms with positive long-run returns over a four-year holding period have been in operation for a longer period of time prior to the IPO and have a shorter time delay between prospectus date and listing date compared to firms with negative long-run returns. Overall, the results indicate that IPO firms with positive long-run returns tend to be larger and older, and have larger boards.

Table 6.5 Univariate tests of differences in board structures and firm characteristics between firms with positive and negative long-run returns

Panel A: [+1,+36]	**N**	**DecAdjR**	**BSize**	**IndepDir**	**DirOwn**	**Uprice**	**OpHist**	**FSize $m**	**OfferSize $m**	**TDelay**
Positive LR return	61									
Mean		2.187	5.590	0.306	0.278	0.209	8.590	668.086	271.006	57.689
Median		0.683	5.000	0.286	0.224	0.070	4.000	9.249	8.632	51.000
Negative LR return	185									
Mean		-0.649	5.108	0.329	0.271	0.292	5.951	78.744	43.286	58.654
Median		-0.687	5.000	0.333	0.229	0.093	2.000	3.497	7.650	0.000
Sample differences										
Wilcoxon Z		11.707	2.259	-1.005	-0.122	-0.601	1.267	2.266	0.728	0.062
Asymp. Sig.		(0.000)	(0.024)	(0.215)	(0.894)	(0.548)	(0.205)	(0.018)	(0.461)	(0.950)
		***	**					**		

Panel B: [+1,+48]	**N**	**DecAdjR**	**BSize**	**IndepDir**	**DirOwn**	**Uprice**	**OpHist**	**FSize $m**	**OfferSize $m**	**TDelay**
Positive LR return	47									
Mean		2.699	5.979	0.346	0.258	0.070	11.660	1041.655	376.203	51.362
Median		0.996	5.000	0.333	0.219	0.027	5.000	9.249	10.000	50.000
Negative LR return	156									
Mean		-0.676	5.019	0.333	0.265	0.252	5.535	38.159	39.265	62.500
Median		-0.685	5.000	0.333	0.224	0.075	2.000	5.168	7.890	52.000
Sample differences										
Wilcoxon Z		10.284	2.087	-0.955	-0.551	-1.054	2.274	2.122	1.272	-1.784
Asymp. Sig.		(0.000)	(0.002)	(0.229)	(0.582)	(0.292)	(0.018)	(0.024)	(0.170)	(0.074)
		***	***				**	**		*

*** Significant at 1% level (2-tailed). ** Significant at 5% level. * Significant at 10% level.

Panel A divides sample firms into two groups based on (equal-weighted) decile adjusted returns (denoted as **DecAdjR**) over the even-window [+1,+36]. **Panel B** divides sample firms into two groups based on (equal-weighted) decile adjusted returns over the even-window [+1,+48]. **BSize** is measured by the total number of directors on the board. **IndepDir** measures the percentage of independent directors on the board. **DirOwn** is the director ownership, measured by the total number of shares (excluding options) held directly, indirectly, or beneficially by directors and/or director-related entities as a proportion of total shares outstanding at the time of IPO. **Uprice** is the market adjusted initial returns; that is, the raw initial returns adjusted for returns to the ASX All Ordinaries Accumulation Index. **OpHist** is measured by the number of years the IPO firm has been incorporated prior to the IPO. **FSize** is measured by the total assets an issuing firm has immediately prior to the IPO. **OfferSize** is measured by the product of offer price and total number of shares offered in the prospectus. **TDelay** measures the number of days from the date the prospectus was lodged with ASX to the listing date. Sample differences are tested using Wilcoxon Rank-Sum Test for any significant differences between median values.

6.3.2 Multivariate results: Post-IPO long-run performance and initial board structures

Results of multivariate regression tests are presented in Table 6.6. Two measures of long-run performance are used; Panel A uses the equal-weighted decile adjusted returns, and Panel B uses the equal-weighted market adjusted returns. Two different holding periods are also tested. Models 1-5 report results over a three-year holding period, and Models 6-10 report results for a four-year holding period.

Models 1 and 6 estimate the model with all test variables of interest and control variables included. Due to the high correlation between operating history, firm size and board size variables as reported in the correlation matrix (Table 6.4), Models 2-4 and Models 7-9 are also estimated with one of these variables excluded at a time. Moreover, to capture the possible non-linearity relationship between IPO underpricing and long-run performance that has been documented by Lee et al. (1996a), Models 5 and 10 include an additional term, underpricing squared.

Some consistent results have been observed across models and for different holding periods. The following thus discusses the results from Panel A.

Test variables

The size of the board at the time of IPO is found to be significantly positively associated with post-IPO long-run performance, suggesting that IPO firms with larger boards perform better in the long-run. This result is not driven by the firm size effect as Models 4 and 9 shows that when the board size variable is omitted from the regression model, the firm size variable does not become statistically significant. Other board governance variables are, however, never significant.

Control variables

The coefficient estimate for time delay between prospectus date and listing date is significantly negative. Assuming that time delay is an appropriate proxy for the degree of informed demand at IPO, Lee et al. (1996a, p. 1206) argue that because issues that fill and list more quickly have better long-run performance, one can infer that "informed investors are able to distinguish underpriced issues relative to their 'true value'". In Lee et al.'s (1996a) study, they report a weak relationship between time delay and one-year post-listing returns when univariate regressions are used. However, when multivariate regressions are estimated, they find that the time delay variable loses explanatory power.

An inverse relationship is also observed between long-run performance of IPOs and IPO underpricing, consistent with the findings of Ritter (1991) and Levis (1993). Although this relationship is significant only for decile adjusted returns over a three-year holding period, it provides some support for the fads hypothesis. The fads hypothesis suggests that initial underpricing and long-run underperformance are due to the over-optimism on the part of investors that cause a temporary overvaluation of initial issues, leading to a downward price adjustment later on. The results from Models 5 and 10 show that in contrast to the finding of Lee et al. (1996a), this study does not find a curvilinear relationship between the level of underpricing and post-IPO long-run returns over both event-windows. The variable, underpricing squared, is never significant.

One thing to note from Panel A is that the explanatory power of each regression model is relatively low, similar to that reported in Lee et al.'s (1996a) study on cross-sectional variation of long-run returns for a holding period of one, two and three years. The adjusted R-squared for all models tested ranges between 1% and 3% except for Model 9, which excludes the board size variable and has an adjusted R-squared of less than 1%. Lee et al. (1996a) argue that "we did not expect that these [long-run returns] models would have high explanatory power (and economic significance) because this implies that long-run sharemarket performance could be predicted at the IPO date" (Lee et al., 1996a, p. 1207).

Table 6.6 Pooled OLS regression of initial board structures and IPO firm characteristics on post-IPO long-run performance

Panel A: Dependent variable: (equal-weighted) decile adjusted returns

		[+1,+36]									[+1,+48]									
Variable	**Exp sign**	**1**		**2**		**3**		**4**		**5**	**6**		**7**		**8**		**9**		**10**	
BSize	+	0.097	**	0.100	**	0.108	**			0.097	**	0.185	***	0.189	***	0.186	***			0.184	***
		(2.120)		(2.162)		(2.240)				(2.114)		(2.766)		(2.822)		(2.808)				(2.727)	
Leader	+	-0.195		-0.199		-0.165		-0.194		-0.192		0.310		0.309		0.312		0.327		0.312	
		(-0.607)		(-0.611)		(-0.512)		(-0.596)		(-0.603)		(1.316)		(1.313)		(1.333)		(1.329)		(1.338)	
IndepDir	+	-0.293		-0.289		-0.302		-0.255		-0.307		-0.323		-0.324		-0.323		-0.244		-0.330	
		(-0.920)		(-0.914)		(-0.930)		(-0.798)		(-0.962)		(-0.820)		(-0.822)		(-0.818)		(-0.606)		(-0.838)	
DirOwn	+	0.107		0.097		0.193		0.195		0.120		0.214		0.199		0.222		0.358		0.209	
		(0.358)		(0.325)		(0.680)		(0.659)		(0.394)		(0.479)		(0.448)		(0.510)		(0.755)		(0.466)	
Uprice	–	-0.150	*	-0.151	*	-0.151	*	-0.144		-0.307		-0.143		-0.144		-0.143		-0.115		-0.258	
		(-1.693)		(-1.697)		(-1.706)		(-1.593)		(-1.037)		(-1.514)		(-1.519)		(-1.499)		(-1.207)		(-0.778)	
Uprice2	Non-linear									0.059										0.041	
										(0.704)										(0.454)	
OpHist	+	0.003				0.005		0.005		0.004		0.003				0.003		0.006		0.003	
		(0.654)				(1.100)		(0.951)		(0.692)		(0.484)				(0.548)		(1.030)		(0.491)	
LnFSize	+	0.045		0.048				0.053		0.045		0.004		0.007				0.017		0.004	
		(1.391)		(1.553)				(1.624)		(1.392)		(0.103)		(0.195)				(0.494)		(0.129)	
LnOffer	+	-0.116		-0.111		-0.079		-0.055		-0.119		-0.127		-0.123		-0.124		-0.009		-0.129	
		(-1.403)		(-1.369)		(-1.047)		(-0.807)		(-1.438)		(-1.544)		(-1.513)		(-1.516)		(-0.133)		(-1.559)	
TDelay	–	-0.004	*	-0.004	*	-0.004	*	-0.004	*	-0.004	*	-0.005	**	-0.005	**	-0.005	**	-0.005	**	-0.005	**
		(-1.765)		(-1.746)		(-1.764)		(-1.700)		(-1.676)		(-2.209)		(-2.203)		(-2.203)		(-2.221)		(-2.139)	
Tech	–	0.028		0.034		0.014		0.029		0.046		-0.304		-0.298		-0.305		-0.278		-0.282	
		(0.161)		(0.193)		(0.084)		(0.164)		(0.273)		(-1.561)		(-1.530)		(-1.564)		(-1.385)		(-1.397)	
Constant		0.945		0.813		0.902		0.273		1.001		1.039		0.919		1.034		-0.230		1.064	
		(0.762)		(0.709)		(0.726)		(0.247)		(0.810)		(0.818)		(0.769)		(0.810)		(-0.192)		(0.834)	
Adj R^2		0.018		0.022		0.014		0.010		0.017		0.029		0.034		0.034		0.003		0.025	
F-stat		1.447		1.586		1.390		1.263		1.383		1.596		1.770	*	1.782	*	1.055		1.463	
N		241		241		241		241		241		200		200		200		200		200	

Panel B: Dependent variable: (equal-weighted) market adjusted returns

		[+1,+36]					[+1,+48]				
Variable	**Exp sign**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
BSize	+	0.096 **	0.099 **	0.105 **		0.096 **	0.182 ***	0.189 ***	0.182 ***		0.180 ***
		(2.057)	(2.095)	(2.130)		(2.054)	(2.686)	(2.772)	(2.723)		(2.638)
Leader	+	-0.174	-0.177	-0.150	-0.172	-0.170	0.330	0.329	0.329	0.347	0.333
		(-0.544)	(-0.548)	(-0.466)	(-0.534)	(-0.539)	(1.299)	(1.294)	(1.299)	(1.334)	(1.326)
IndepDir	+	-0.348	-0.344	-0.355	-0.310	-0.363	-0.364	-0.365	-0.365	-0.287	-0.376
		(-1.072)	(-1.067)	(-1.078)	(-0.951)	(-1.117)	(-0.912)	(-0.918)	(-0.912)	(-0.701)	(-0.939)
DirOwn	+	0.030	0.019	0.097	0.116	0.044	0.184	0.159	0.181	0.325	0.176
		(0.098)	(0.064)	(0.340)	(0.390)	(0.144)	(0.412)	(0.358)	(0.416)	(0.689)	(0.393)
Uprice	–	-0.179 **	-0.180 **	-0.180 **	-0.173 *	-0.355	-0.192 *	-0.193 *	-0.192 *	-0.165 *	-0.367
		(-2.001)	(-2.003)	(-2.015)	(-1.905)	(-1.171)	(-1.925)	(-1.930)	(-1.906)	(-1.657)	(-1.072)
Uprice2	Non-linear					0.066					0.062
						(0.766)					(0.672)
OpHist	+	0.003		0.005	0.005	0.003	0.005		0.005	0.008	0.005
		(0.651)		(1.020)	(0.940)	(0.693)	(0.802)		(0.859)	(1.316)	(0.810)
LnFSize	+	0.035	0.038		0.043	0.035	-0.002	0.003		0.012	0.000
		(0.995)	(1.123)		(1.229)	(1.002)	(-0.039)	(0.091)		(0.308)	(-0.006)
LnOffer	+	-0.107	-0.102	-0.077	-0.046	-0.109	-0.124	-0.116	-0.125	-0.008	-0.126
		(-1.249)	(-1.216)	(-1.012)	(-0.651)	(-1.286)	(-1.468)	(-1.394)	(-1.489)	(-0.110)	(-1.487)
TDelay	–	-0.004 *	-0.004 *	-0.004 *	-0.004 *	-0.004 *	-0.005 **	-0.004 **	-0.005 **	-0.005 **	-0.005 **
		(-1.857)	(-1.834)	(-1.868)	(-1.787)	(-1.759)	(-2.259)	(-2.225)	(-2.244)	(-2.273)	(-2.202)
Tech	–	0.026	0.032	0.015	0.027	0.046	-0.290	-0.280	-0.289	-0.264	-0.257
		(0.148)	(0.178)	(0.087)	(0.151)	(0.271)	(-1.431)	(-1.377)	(-1.409)	(-1.269)	(-1.220)
Constant		0.939	0.812	0.905	0.274	1.002	1.025	0.822	1.027	-0.221	1.064
		(0.752)	(0.705)	(0.724)	(0.247)	(0.806)	(0.781)	(0.666)	(0.777)	(-0.180)	(0.806)
Adj R^2		0.015	0.018	0.014	0.006	0.014	0.030	0.033	0.035	0.005	0.027
F-stat		1.354	1.485	1.374	1.172	1.316	1.610	1.761 *	1.798 *	1.115	1.498
N		241	241	241	241	241	200	200	200	200	200

Models 1-5 use decile (or market) adjusted return over the event-window [+1,+36] as the dependent variable, and Models 6-10 use the decile (or market) adjusted return over the event-window [+1,+48] as the dependent variable. **BSize** measures the number of directors on the board. **Leader** is coded as 1 for dual leadership and 0 otherwise. **IndepDir** measures the percentage of independent directors on the board. **DirOwn** is the proportion of shares held directly, indirectly, or beneficially by directors and/or director-related entities at the time of IPO. **Uprice** is the market adjusted initial return. **Uprice2** is the square of underpricing. **OpHist** measures the number of years the IPO firm has been incorporated prior to the IPO. **LnFSize** is the natural log of total assets immediately prior to the IPO. **LnOffer** is the natural log of the product of offer price and total number of shares offered in the prospectus. **TDelay** measures the number of days from the prospectus date to the listing date. **Tech** is coded as 1 if the IPO firm belongs to high-tech industries and 0 otherwise. ***, **, and * indicate significance at 1%, 5% and 10% levels, respectively. Numbers in parentheses are the *t*-statistics, using heteroscedasticity-consistent covariance matrix.

As Ritter (1991) provides evidence that post-IPO long-run performance is sensitive to the market benchmark used, additional regressions are estimated using equal-weighted market adjusted returns as robustness tests. The results are reported in Panel B of Table 6.6. Qualitatively similar results are found. Board size (+)[29], IPO underpricing (–), and time delay (–) are significantly related with post-IPO long-run performance as in the case when long-run returns are measured by decile adjusted returns.

Overall, board size is the only board governance variable found to be significant in explaining post-IPO long-run performance. Larger boards at the IPO are associated with better long-run performance. While an independent board, including separating the roles of chairperson and CEO, having an independent chairperson and having a majority of independent directors on the board, is more heavily emphasised in best practice recommendations compared to the size of the board, it is surprising to find that none of the former proxies for governance quality are significant in explaining long-run performance across different performance measures and event-windows. Together, the findings from IPO underpricing and long-run performance suggest that whether IPO firms conform to the best practice recommendations on board structures do not have much impact on their performance; that is, neither conformance or deviations from the recommended best practice will lead to better or worse firm outcomes.

As for the control variables in the long-run performance analysis, we find that both the level of IPO underpricing and time delay are significantly associated with long-run returns; both are negatively related with long-run performance. These results are consistent with the findings of prior studies, in that larger underpricing at the IPO is associated with poorer long-run performance, and a shorter time delay is related to

[29] The positive or negative sign in the bracket indicates the direction of relation between explanatory variables and the long-run returns.

better long-run performance. As for other firm characteristics, they are found to have no significant relationship with the long-run returns, similar to the results reported by Firth (1997) on New Zealand IPOs.

6.4 Test of the likelihood of SEOs and initial board structures

In this section, we examine our third and final outcome, the likelihood of SEOs in the post-IPO period. The likelihood of a seasoned equity offering is hypothesised to be associated with the board structures adopted by IPO firms at the time of listing. The board of directors represents one of the internal governance mechanisms for monitoring management and has the duty to ensure that managers act in the interests of the shareholders. We expect existing shareholders or potential outside investors to evaluate firm quality, including the governance structure of the firm. Thus, a firm's board structure has the potential to influence investors' confidence in the firm and their willingness to invest in it. Accordingly, IPO firms with board attributes that are "best practice", namely having larger boards, dual leadership, higher proportions of independent directors on the board and higher director ownership, are expected to have a higher likelihood of making a SEO.

Previous studies have related the likelihood of a SEO to several variables and they are outlined briefly below. These variables are then included as control variables in the multivariate regression analyses.

- ***Underpricing.*** Underpricing has been suggested by previous research as being related to the likelihood of selling additional equity in the post-IPO period (Jegadeesh et al., 1993). The information momentum theory suggests that insiders do not aim to maximise IPOs' offering prices but rather to create information momentum by strategically setting low offering prices at the IPO and selling more shares at higher prices later at the SEO to recoup the costs of underpricing.

Additionally, the signalling models argue that IPO firms may deliberately underprice the issue to signal firm quality, thereby enabling the firm to increase the offering price in subsequent equity issues. Thus, firms that underpriced more at the IPO are expected to be more likely to return to the equity market after listing.

- ***Ex-ante uncertainty.*** Proxies for ex-ante uncertainty, including *operating history, firm size* and *offer size*, at the time of IPO are also controlled for in testing the likelihood of subsequent equity issuance. IPO firms that have been in operation for a longer period of time prior to the IPO and IPO firms that have larger firm size should have less uncertainty surrounding the IPOs and are expected to be more likely to issue additional equity after listing. This is because they are able to reduce the information asymmetry around the IPO, for example, by providing their prior performance data. They also have better access to investment capital and are more likely to be closely monitored by informed investors like venture capitalists. As larger IPO issues are often made by larger firms that are more likely to survive and issue equity in the future, a positive relationship is also expected between IPO offer size and the likelihood of raising additional equity (Garfinkel, 1993).
- ***Immediate aftermarket returns.*** Following previous studies on the likelihood of reissue [e.g. Lee (2003); Garfinkel (1993); Zhang (2005)], the immediate aftermarket return after the IPO is controlled for. Lucas and McDonald (1990) argue that IPO firms that experience an increase in share price after listing are more likely to issue equity again because firms that are undervalued by the market will wait to reissue until the share price reflects the firm's fair value. Thus, a run-up in share prices is expected prior to reissuance. The market feedback hypothesis, which states that issuing firms' response to investment opportunities are based on market reactions (Jegadeesh et al., 1993), also suggests a positive relationship between immediate aftermarket returns and the likelihood of a SEO.

- ***Tech industry.*** High-tech firms tend to have large R&D expenses. Thus, they may be more likely to issue additional equity to finance their projects compared with other firms. The study by Zhang (2005) has documented a significant relationship between the likelihood of issuing seasoned equity within three years after the IPO and the high-tech dummy variable.[30] Thus, the tech industry dummy variable is included in the regression as a control variable.

To test the relationship between board structures at the time of IPO and the likelihood of SEOs in the subsequent two years following listing, the sample is limited to firms that have survived over the entire two-year period to control for the delisting bias. Of the initial sample of 320 firms, 19 IPO firms were delisted within two years after listing[31], so they are excluded from the sample. The final sample size is 256 firms after also excluding IPO firms with incomplete information.

A logit model is used to examine if board structures at the time of IPO are related to the likelihood of SEO. The logit model is:

$$P_{it} = \frac{1}{(1 + e^{-\beta X_{it}})}$$

where P_{it} is the probability that firm i issues seasoned equity and X_{it} is the matrix of independent variables and β is the unknown parameter vector.

[30] Zhang's (2005) definition of a high-tech IPO is in accordance with Thomson Financial SDC Platinum new issues database's definition.

[31] Of the 19 firms delisted within two years after listing, one firm issued a SEO in the same year as the year of IPO and was delisted in the subsequent year. Six firms made SEOs in the year immediately following listing and were delisted in the second year post-IPO.

The dependent variable takes the value of 1 if an IPO firm subsequently issues a SEO within two years after listing, and zero otherwise. The four independent variables of primary interest are board size, leadership structure, proportion of independent directors, and director ownership. Other variables, including underpricing, immediate aftermarket performance, operating history, firm size, offer size, and tech industry dummy, that have a potential impact on the decision to issue seasoned equity are also included in the logit regression.

The logit regression is specified below:

$$SEO_{it} = \beta_0 + \beta_1.BSIZE_{it} + \beta_2.LEADER_{it} + \beta_3.INDEPDIR_{it} + \beta_4.DIROWN_{it} + \beta_5.UPRICE_{it} + \beta_6.CAR_{it} + \beta_7.OPHIST_{it} + \beta_8.LnFSIZE_{it} + \beta_9.LnOFFER_{it} + \beta_{10}.TECH_{it} + \varepsilon_{it}$$

Variable	**Definition**
SEO	1 if the IPO firm raises additional equity within two years after listing, and 0 otherwise
BSIZE	Total number of directors on the board
LEADER	1 if different people hold the positions of chairperson and CEO, and 0 otherwise
INDEPDIR	Proportion of independent directors on the board
DIROWN	Percentage of shares held directly, indirectly, or beneficially by directors and/or director-related entities relative to the total number of shares outstanding at the time of IPO
UPRICE	The market adjusted initial return is measured by raw initial return adjusted for return to the ASX All Ordinaries Accumulation Index
CAR	The 30-day cumulative abnormal return immediately after the IPO, excluding the offering day of the IPO
OPHIST	Number of years the IPO firm has been incorporated prior to the IPO
LnFSIZE	Natural log of the total assets that an issuing firm has immediately prior to the IPO
LnOFFER	Natural log of the product of offer price and total number of shares offered in the prospectus
TECH	1 if the IPO firm belongs to one of the high-tech industries, including network operator (ASX sector 181), cables (sector 182), equipment & services (sector 183), other telecommunications (sector 184), pharmaceuticals (sector 211), biotechnology (sector 212), computer & office services (sector 226), and high technology (sector 228), and 0 otherwise

Table 6.7 presents the descriptive statistics and correlation matrix of the variables used in the logit model for the likelihood of a SEO. The upper triangular half of the table is the Pearson correlations while the lower triangular half of the table reports Spearman rank order correlations. The Pearson correlations show that board size is significantly positively related to a number of variables, including the proportion of independent directors, operating history, firm size, and offer size, at the 1% level. The offer size is also significantly positively related with the proportion of independent directors, operating history and firm size, and is significantly negatively related with director ownership, at the 1% level. The results from Spearman rank order correlations are qualitatively similar. The purpose of examining the correlations matrix is to investigate if there is any collinearity between variables. To determine if multicollinearity affects the logit regression results, the logit regression is to be re-estimated by excluding some of the highly correlated variables.

Table 6.7 Descriptive statistics and correlations for the likelihood of a SEO logit regression variables

N=256	Mean	Median	Min	Max	SD	1		2		3		4		5		6		7		8	
1. Uprice	0.26	0.08	-0.86	4.59	0.70	1.00		0.08		-0.05		0.03		0.14	**	-0.06		-0.08		-0.14	**
								(0.21)		(0.43)		(0.67)		(0.02)		(0.36)		(0.20)		(0.03)	
2. CAR	0.02	-0.03	-0.72	1.92	0.30	**0.19**	***	1.00		0.00		0.08		0.09		0.04		-0.10		-0.04	
						(0.00)				(0.96)		(0.23)		(0.18)		(0.50)		(0.10)		(0.52)	
3. BSize	5.24	5.00	3.00	14.00	1.67	**0.00**		**-0.01**		1.00		0.17	***	0.01		0.39	***	0.51	***	0.65	***
						(1.00)		**(0.89)**				(0.01)		(0.83)		(0.00)		(0.00)		(0.00)	
4. IndepDir	0.33	0.33	0.00	0.91	0.21	**0.02**		**0.07**		**0.16**	***	1.00		-0.15	**	0.12		0.14	**	0.19	***
						(0.79)		**(0.24)**		**(0.01)**				(0.02)		(0.07)		(0.03)		(0.00)	
5. DirOwn	0.27	0.23	0.00	1.00	0.24	**0.16**	***	**0.02**		**-0.01**		**-0.18**	***	1.00		-0.07		0.00		-0.23	***
						(0.01)		**(0.77)**		**(0.91)**		**(0.00)**				(0.28)		(0.99)		(0.00)	
6. OpHist	6.56	3.00	0.00	96.00	11.36	**0.03**		**0.14**	**	**0.22**	***	**0.02**		0.01		1.00		0.40	***	0.43	***
						(0.68)		**(0.02)**		**(0.00)**		**(0.75)**		(0.87)				(0.00)		(0.00)	
7. LnFSize	15.39	15.55	1.10	23.98	2.81	**0.03**		**0.03**		**0.53**	***	**0.11**		-0.04		**0.32**	***	1.00		0.61	***
						(0.62)		**(0.65)**		**(0.00)**		**(0.08)**		(0.52)		**(0.00)**				(0.00)	
8. LnOffer	16.30	15.89	13.82	23.37	1.45	**-0.04**		**0.03**		**0.56**	***	**0.14**	**	-0.20	***	**0.30**	***	**0.60**	***	1.00	
						(0.48)		**(0.62)**		**(0.00)**		**(0.02)**		(0.00)		**(0.00)**		**(0.00)**			

*** Correlation is significant at the 1% level (2-tailed). ** Correlation is significant at the 5% level (2-tailed). Numbers in parentheses are the p-values.

Pearson correlations for the upper triangular half of the table and Spearman rank order correlations for the lower triangular half of the table.

Uprice is the IPO underpricing measured by market adjusted initial returns; that is, the raw initial returns adjusted for returns to the ASX All Ordinaries Accumulation Index. **CAR** is the immediate aftermarket returns, measured by the 30-day cumulative abnormal return immediately after the IPO, excluding the offering day of the IPO. **BSize** is measured by the total number of directors on the board. **IndepDir** measures the percentage of independent directors on the board. **DirOwn** is measured by the total number of shares (excluding options) held directly, indirectly, or beneficially by directors and/or director-related entities as a proportion of total shares outstanding at the time of IPO. **OpHist** is measured by the number of years the IPO firm has been incorporated prior to the IPO. **LnFSize** is the natural logarithm of total assets that an issuing firm has immediately prior to the IPO. **LnOffer** is measured by the natural log of the product of offer price and total number of shares offered in the prospectus.

6.4.1 Univariate results: Likelihood of a SEO and initial board structures

Using Wilcoxon Rank-Sum Test, Table 6.8 compares the initial board structures, firm characteristics and sharemarket performance of IPO firms that have issued additional equity within two years after going public with those that do not return to the equity capital market. Just over half of the sample firms (or 52% of the total 256 firms) are involved in equity reissuance during the first two years subsequent to the IPO. The Wilcoxon Z statistics shows that the median board size and director ownership are significantly different between the two groups, at the 1% and 10% level, respectively. Specifically, IPO firms that return to the equity market have smaller boards and higher director ownership at the time of listing compared to firms that do not issue SEOs (i.e., the non-SEO sample).

Also, consistent with the findings of previous studies, IPO firms that return to the equity market have higher immediate aftermarket returns, significant at the 1% level. Studies, including Levis (1995), Jegadeesh et al. (1993) and Garfinkel (1993), document that firms that perform well after listing are more likely to issue equity again. While the median immediate market return is significantly different between two sample groups, IPO underpricing is found to be insignificant. The later finding is inconsistent with the signalling models, which predict that firms that underprice more at the time of IPO are more likely to return to the equity market to recoup the initial costs of underpricing.

Moreover, Table 6.8 shows that the median IPO offer size of the SEO sample group is significantly smaller (at the 5% level) than that of the non-SEO sample group. The result thus suggests that firms that make a smaller issue at the time of IPO are more likely to issue equity again.

Table 6.8 Univariate tests of differences in board structures, firm characteristics and IPO performance between firms that have undertaken SEOs within 2 years after listing and that have not

	N	BSize	IndepDir	DirOwn	Uprice	CAR	OpHist	FSize $m	Offer $m
SEO sample	134								
Mean		5.015	0.309	0.289	0.300	0.077	6.701	292.666[a]	151.343[b]
Median		5.000	0.333	0.249	0.090	0.008	3.000	3.826	6.550
Non-SEO sample	122								
Mean		5.484	0.349	0.244	0.223	-0.038	6.397	187.588	52.482
Median		5.000	0.333	0.190	0.072	-0.046	3.000	8.621	10.000
Sample differences									
Wilcoxon Z		-2.930	-1.094	1.732	0.379	2.922	0.013	-1.227	-2.400
Asymp. Sig.		(0.003)	(0.274)	(0.083)	(0.705)	(0.003)	(0.990)	(0.220)	(0.016)
		***		*		***			**

*** Significant at 1% level (2-tailed). ** Significant at 5% level. * Significant at 10% level.
[a] The average firm size reduces to $100.446 million when Telstra Corporation Ltd is excluded.
[b] The average offer size reduces to $46.065 million when Telstra Corporation Ltd is excluded.
BSize measures the number of directors on the board. **IndepDir** measures the percentage of independent directors on the board. **DirOwn** is the proportion of shares held directly, indirectly, or beneficially by directors and/or director-related entities at the time of IPO. **Uprice** is the market adjusted initial return. **CAR** measures the 30-day cumulative abnormal return immediately after the IPO, excluding the offering day of the IPO. **OpHist** measures the number of years the IPO firm has been incorporated prior to the IPO. **FSize** measures by the amount of total assets immediately prior to the IPO. **Offer** is the product of offer price and total number of shares offered in the prospectus. Sample differences are tested using Wilcoxon Rank-Sum Test for any significant differences between median values.

6.4.2 Univariate results: Likelihood of a SEO and changes in board structures

To examine whether the likelihood of a SEO within five years after listing is related to how board structures change from the time of IPO to five years thereafter, cross-tabulation and Pearson Chi-Square tests are conducted and the results are presented in Table 6.9.[32] Panel A shows the cross-tabulation of the likelihood of a SEO and changes in board size. No significant relation is found based on the Pearson Chi-Square test. The result shows that 54 IPO firms that later increase the board size issue a SEO within five years after listing while 38 IPO firms that later decrease the board size issue a SEO within five years. Panel B shows the cross-tabulation of the likelihood of a SEO and changes in leadership structure. Again, no significant relationship is found between the two variables based on the Pearson Chi-Square test.

[32] Note that due to the finish date of the database at the time of data collection, the sample for this analysis only covers IPOs between 1994 and1998 and the sample excludes non-surviving firms over the five-year period after listing.

Additionally, only a small difference is observed between the number of IPO firms that change to unitary leadership and return to the equity market within five years of listing (18 firms) and the number of firms that change to dual leadership and make a SEO during the first five years after the IPO (13 firms).

Panel C reports the cross-tabulation of the likelihood of a SEO and changes in the proportion of independent directors. The Pearson Chi-Square shows that the two variables are significantly related at the 10% level. A total of 95 IPO firms that increase the proportion of independent directors on the board are found to issue a SEO within five years after listing while only 31 IPO firms that decrease the proportion of independent directors return to the equity market within five years. It is thus apparent that firms that conform to the best practice recommendations by having a greater representation of independent directors on the board are more likely to reissue.

Finally, Panel D reports the cross-tabulation of the likelihood of a SEO and changes in director ownership. The Pearson Chi-Square shows that the two variables are significantly related at the 10% level. In fact, a greater number of firms that decrease the director ownership (80 firms) are found to reissue equity within five years after listing compared with the number of firms (56 firms) that increase the director ownership. One explanation for the finding is that after five years of public trading, the shares held by directors are usually released from the escrow already, which typically requires a holding of 12 months. Thus, we are most likely to observe a fall in director ownership after listing for five years.

Table 6.9 Cross-tabulation on the likelihood of a SEO and changes in board structures after listing for five years

Panel A

Cross-tabulation on the likelihood of a SEO within 5 years after listing and changes in board size from the time of IPO to 5 years thereafter

			Changes in board size (Ch_BSize)			Total
			No change	Decrease	Increase	
SEO in 5 years	No	Count	15	19	11	45
		% within Ch_BSize	25.0%	33.3%	16.9%	24.7%
	Yes	Count	45	38	54	137
		% within Ch_BSize	75.0%	66.7%	83.1%	75.3%
Total		Count	60	57	65	182
		% within Ch_BSize	100.0%	100.0%	100.0%	100.0%
Pearson Chi-Square		4.398				
Asymp. Sig. (2-sided)		(0.111)				

Ch_BSize is the change in the number of directors on the board from the time of listing to five years later.

Panel B

Cross-tabulation on the likelihood of a SEO within 5 years after listing and changes in leadership structure from the time of IPO to 5 years thereafter

			Changes in board leadership (Ch_Leader)			Total
			No change	Change to unitary	Change to dual	
SEO in 5 years	No	Count	41	3	1	45
		% within Ch_Leader	27.9%	14.3%	7.1%	24.7%
	Yes	Count	106	18	13	137
		% within Ch_Leader	72.1%	85.7%	92.9%	75.3%
Total		Count	147	21	14	182
		% within Ch_Leader	100.0%	100.0%	100.0%	100.0%
Pearson Chi-Square		4.347				
Asymp. Sig. (2-sided)		(0.114)				

Ch_Leader measures if leadership structure changes from the time of listing to 5 years later and is classified into 3 categories – no change, change to unitary leadership and change to dual leadership.

Panel C

Cross-tabulation on the likelihood of a SEO within 5 years after listing and changes in the proportion of independent directors from the time of IPO to 5 years later

			Changes in % of indep dirs (Ch_IndepDir)			Total
			No change	Decrease	Increase	
SEO in 5 years	No	Count	9	10	26	45
		% within Ch_IndepDir	45.0%	24.4%	21.5%	24.7%
	Yes	Count	11	31	95	137
		% within Ch_IndepDir	55.0%	75.6%	78.5%	75.3%
Total		Count	20	41	121	182
		% within Ch_IndepDir	100.0%	100.0%	100.0%	100.0%
Pearson Chi-Square		5.101*				
Asymp. Sig. (2-sided)		(0.078)				

Ch_IndepDir measures the change in the percentage of independent directors on the board from the time of listing to five years later. * Significant at the 10% level.

Panel D

Cross-tabulation on the likelihood of a SEO within 5 years after listing and changes in director ownership from the time of IPO to 5 years later

			Changes in director ownership (Ch_DirOwn)		Total
			Decrease	Increase	
SEO in 5 years	No	Count	18	25	43
		% within Ch_DirOwn	18.4%	30.9%	24.0%
	Yes	Count	80	56	136
		% within Ch_DirOwn	81.6%	69.1%	76.0%
Total		Count	98	81	179
		% within Ch_DirOwn	100.0%	100.0%	100.0%
Pearson Chi-Square		3.795*			
Asymp. Sig. (2-sided)		(0.051)			

Ch_DirOwn is the change in the proportion of shares (excluding options) held directly, indirectly, or beneficially by directors and/or director-related entities from the time of listing to five years later. * Significant at the 10% level.

6.4.3 Multivariate results: Likelihood of a SEO and initial board structures

The logit regression results on the likelihood of IPO firms conducting a SEO in the post-IPO period are reported in Table 6.10. Model 1 estimates the model with all variables included. Due to the high positive correlation between firm size, offer size, and board size, Models 2-4 re-estimate the logit regressions by including one of the aforementioned variables at a time. Panel A uses the likelihood of a SEO within *two* years after listing as the dependent variable while Panel B reports the results when the dependent variable is the likelihood of a SEO within *five* years after listing.[33]

Model 1 of Panel A shows that board size is significantly but negatively related to the likelihood of a SEO within two years after listing, contrary to expectation. Results from Model 2, which excludes firm size and offer size variables, also show that IPO firms with smaller boards are more likely to reissue equity. Among the re-estimated Models 2-4, Model 2 is found to have the highest McFadden R^2 of 6.1%.

Model 3 shows that when board size and offer size are both excluded from the regression, the proportion of independent directors on the board become marginally

[33] Due to the finish date of the database at the time of data collection, only IPOs between 1994 and1998 are included in the analysis on the likelihood of a SEO within five years after going public.

significant. Interestingly, the coefficient estimate carries a negative sign that is inconsistent with expectation. The result from Model 3 suggests that IPO firms that have lower proportions of independent directors on the board are more likely to issue equity again within two years after listing. In addition, we find that the ownership by directors at the time of IPO is insignificant in all models considered. This is in contrast to Lee's (2003) finding that shows a strong positive relationship between retained ownership and the likelihood of a SEO.

Overall, the results from board governance variables show little explanatory power for predicting whether a firm will reissue equity or not in the post-IPO period, except for board size, which is however highly correlated with firm size and offer size. Model 3 and 4 of Panel B on the likelihood of a SEO within five years after listing show that firm size and offer size become significant, respectively, when other size variables are excluded. Panel B shows that both variables are negatively related with the likelihood of a SEO. The results thus indicate that smaller firms with smaller boards are more likely to return to the equity market.

The negative sign for the offer size variable also suggests that some issuers may raise only a portion of the required fund in the IPO with the intention to return to the market later. Similar findings have been reported in by Levis (1995), Lee et al. (2003) and Zhang (2005). Levis (1995, p. 135) argues that the negative relation found between offer size and likelihood of a SEO is consistent with the implications of the signalling models; specifically, "high quality firms raise only a part of their capital requirements through the IPO and return to the market for additional funding".

As for other firm characteristics, immediate aftermarket returns are consistently significant (at the 1% level) across all models in Panel A with the expected positive

sign, showing that IPO firms with higher immediate aftermarket returns are more likely to reissue. However, immediate aftermarket returns are insignificant for all models in Panel B, which extends the post-IPO period to five years. Thus, we only find some support for the market feedback hypothesis, which argues that firms are more likely to issue a SEO if they observe a positive reaction from the market. The result also suggests that immediate aftermarket returns are not able to predict whether a firm will return to the equity market after a long period of time post-IPO.

Table 6.10 Logit regression of initial board structures, IPO firm characteristics and IPO performance on the likelihood of a SEO

Panel A

Likelihood of a SEO within 2 years after listing

		Model							
Variable	**Exp sign**	**1**		**2**		**3**		**4**	
BSize	+	-0.235	**	-0.205	**				
		(-2.080)		(-2.246)					
Leader	+	0.257		0.297		0.260		0.255	
		(0.562)		(0.653)		(0.579)		(0.564)	
IndepDir	+	-1.015		-0.974		-1.220	*	-1.053	
		(-1.517)		(-1.475)		(-1.877)		(-1.608)	
DirOwn	+	0.356		0.595		0.473		0.356	
		(0.580)		(1.028)		(0.824)		(0.612)	
Uprice	+	0.073		0.070		0.093		0.062	
		(0.372)		(0.364)		(0.484)		(0.322)	
CAR	+	1.554	***	1.418	***	1.468	***	1.444	***
		(2.932)		(2.671)		(2.771)		(2.679)	
OpHist	+	0.012		0.016		0.001		0.012	
		(0.869)		(1.280)		(0.113)		(0.940)	
LnFSize	+	0.131	**			0.032			
		(1.967)				(0.615)			
LnOffer	+	-0.129						-0.148	
		(-0.894)						(-1.421)	
Tech	+	0.347		0.327		0.365		0.333	
		(1.116)		(1.063)		(1.193)		(1.083)	
Constant		1.203		0.834		-0.504		2.334	
		(0.627)		(1.345)		(-0.574)		(1.340)	
N=256									
Likelihood ratio		25.857	***	21.745	***	16.807	**	18.479	**
McFadden R^2		0.073		0.061		0.047		0.052	

Panel B

Likelihood of a SEO within 5 years after listing

		Model							
Variable	**Exp sign**	**1**		**2**		**3**		**4**	
BSize	+	-0.325	**	-0.400	***				
		(-1.961)		(-3.018)					
Leader	+	-0.262		-0.273		-0.223		-0.279	
		(-0.360)		(-0.371)		(-0.316)		(-0.387)	
IndepDir	+	-0.267		-0.364		-0.632		-0.367	
		(-0.263)		(-0.366)		(-0.659)		(-0.372)	
DirOwn	+	0.166		0.257		0.216		-0.389	
		(0.166)		(0.269)		(0.232)		(-0.411)	
Uprice	+	-0.131		-0.083		-0.079		-0.202	
		(-0.372)		(-0.242)		(-0.224)		(-0.570)	
CAR	+	-0.364		-0.229		-0.695		-0.465	
		(-0.399)		(-0.264)		(-0.749)		(-0.537)	
OpHist	+	0.025		0.019		0.010		0.016	
		(1.292)		(1.073)		(0.616)		(0.911)	
LnFSize	+	-0.040				-0.163	*		
		(-0.452)				(-1.936)			
LnOffer	+	-0.098						-0.394	
		(-0.455)						(-2.482)	**
Tech	+	0.750		0.862		0.685		0.640	
		(1.175)		(1.371)		(1.112)		(1.024)	
Constant		5.190	*	3.405	***	3.920	***	7.931	***
		(1.741)		(3.368)		(2.713)		(2.957)	
N=153[#]									
Likelihood ratio		14.758		14.113	*	7.894		10.077	
McFadden R^2		0.090		0.085		0.048		0.061	

The dependent variable (**SEO**) for Panel A (or Panel B) is equal to 1 if the IPO firm has conducted a SEO within 2 years (or 5 years) after listing and 0 otherwise. **BSize** measures the number of directors on the board. **Leader** is coded as 1 for dual leadership and 0 otherwise. **IndepDir** measures the percentage of independent directors on the board. **DirOwn** is the proportion of shares held directly, indirectly, or beneficially by directors and/or director-related entities at the time of IPO. **Uprice** is the market adjusted initial return. **CAR** measures the 30-day cumulative abnormal return immediately after the IPO, excluding the offering day of the IPO. **OpHist** measures the number of years the IPO firm has been incorporated prior to the IPO. **LnFSize** is the natural log of total assets immediately prior to the IPO. **LnOffer** is the natural log of the product of offer price and total number of shares offered in the prospectus. **Tech** is coded as 1 if the IPO firm belongs to high-tech industries and 0 otherwise. The Likelihood ratio statistic is computed as 2*(log likelihood at convergence – log likelihood with constant term only). McFadden R^2 is calculated as 1 – (log likelihood at convergence / log likelihood with constant term only). # Due to the finish date of the database at the time of data collection, Panel B covers only from 1994-1998. *** Significant at 1% level. ** Significant at 5% level. * Significant at 10% level. Numbers in parentheses are the *t*-statistics.

In summary, this study finds that smaller firms with smaller boards are more likely to return to the equity market after listing. Board governance has little explanatory power in determining the likelihood of a SEO in the post-IPO period. There is some evidence that firms with less independent directors on the board are more likely to reissue, suggesting that IPO firms that deviate from rather than conform to the best practice recommendations are more likely to reissue. Future research can investigate if board governance quality at the time of IPO is associated with the return at the SEO announcement.

Further, we find that IPO firms with better immediate aftermarket returns are more likely to conduct SEOs within two years after listing, consistent with previous findings of Jegadeesh et al. (1993) and Garfinkel (1993). Finally, this study finds no support for the signalling hypothesis. IPO underpricing appears to have no significant effect on the likelihood of reissue, which has been similarly documented in Garfinkel (1993) and Levis (1995).

6.5 Summary

This chapter tested if better governed firms (i.e., firms that conform to best practice recommendations) were associated with better outcomes, including lower IPO underpricing, better post-IPO long-run performance, and higher likelihood of a SEO, and we found that:

- With relation to ***IPO underpricing***, board characteristics appeared to have no explanatory power for the level of IPO underpricing; that is, hypotheses H1a, H2a, H3a and H4a lacked any supportive evidence.
- With regard to ***post-IPO long-run performance***, while no evidence was found to support hypotheses H1b, H2b and H4b on board composition, board leadership, and director ownership respectively, a significant positive relationship was found

between board size and post-IPO long-run performance, providing support for hypothesis H3b.

- Tests on the ***likelihood of a SEO*** showed that board size (hypothesis H7) was significant in explaining the likelihood of a SEO but the direction of relationship was contrary to expectation; that is, the smaller the board at the time of IPO, the more likely the firm would reissue equity. There was also some evidence that a lower proportion of independent directors on the board was associated with a higher likelihood of a SEO, contrary to hypothesis H5. Tests of hypotheses H6 and H8 on board leadership and director ownership, respectively, did not find supportive evidence.

Overall, we did not find strong evidence that firms that conformed to best practice recommendations at the time of listing had better outcomes. The results led us to question if independence of the board was truly valued by investors. It might be that investors used other governance factors such as management quality to judge the governance quality of a firm.

In fact, the study by Chemmanur and Paeglis (2005) found that higher management quality and reputation was associated with lower underpricing, showing a credible certification role of firm quality by managers. Specifically, they found that proxies for management quality and reputation, including the percentage of management team members who were partners in law or accounting firms, the percentage of the management team who had prior experience as vice presidents or higher in other firms, and the average tenure of the management team in the issuing firm, were significantly negatively associated with the initial day returns at the 5%, 10% and 10% level, respectively.

Chapter 7

Post-IPO Changes in Board Structures and Long-Run Performance

7.1 Introduction

In this chapter, we address our final two research questions: whether the board structures of IPO firms conform to ASX best practice recommendations five years after listing, and whether post-IPO changes in board structures are related to long-run aftermarket performance. IPO firms have been documented to experience significant underperformance in the long-run. Since recent corporate governance reformers have suggested a positive link between governance quality and firm performance, we test if long-run underperformance will not be as pronounced for IPO firms that change their board structures to become more in line with the best practice recommendations.

Given that IPO firms mature over time and that the best practice recommendations was introduced in 2003, we expect to observe some changes in board structures after listing for five years (that is, covering years between 1999 and 2004). Thus, in Section 7.2, we discuss how board structures change from the time of listing to five years later. We also compare our findings with that of Balatbat et al. (2004) who examine Australian IPOs in an earlier sample period (1976-1993). The comparison analyses not only enable us to determine if the boards of Australian IPO firms have evolved over time but also see if the call for governance reforms has resulted in some changes in board structures.

In Section 7.3, the board structures of surviving and delisted IPO firms are compared to test if surviving firms are better governed, in terms of having board structures that are more consistent with the best practice recommendations. In Section 7.4, we test the relationship between post-IPO long-run performance and the changes in board

structures after listing. The final section then summarises the findings from this chapter.

7.2 Analysis of board structures and director ownership five years after listing for surviving firms

In order to analyse changes in board structures five years after IPOs, only firms that have survived for the entire five-year period are included in the post-IPO analysis, thereby reducing the sample size from the initial 320 firms to 272 firms. In the next section, we then compare the initial board structures of IPO firms that have survived and that did not to see if there are any significant differences that could be related to the probability of survival.

Table 7.1 reports the number of sample IPO firms that remain listed five years after IPO by listing year and the year prospectuses were lodged with ASX. The Table shows that of the total 272 firms that survived, 36 firms (or 13%) were not listed in the same year as the year the prospectuses were lodged. The reason is that the prospectuses of these firms were lodged just prior to the start of the year. Table 7.1 shows that there are 9 firms that lodged prospectuses in 1999 and became listed in 2000. The five-year post- listing period for these firms ends in 2005 but the data for this study were collected in 2004. Therefore, the final sample size for the post-IPO analysis is reduced to 263 firms.

Table 7.1 Number of firms remains listed after trading for five years: by listing year and year lodged prospectuses

No. of firms remain listed five years after listing		Listing year							Total firms by prospectus year
		1994	1995	1996	1997	1998	1999	2000	
Prospectus year	**1994**	53	4						**57**
	1995		16	5					**21**
	1996			35	8				**43**
	1997				35	8			**43**
	1998					16	2		**18**
	1999						81	9	**90**
Total firms by listing year		**53**	**20**	**40**	**43**	**24**	**83**	**9**	**272**

The data for the post-IPO board structure and ownership analyses were collected at the financial year-end five years after the initial listing year[34]; that is, the post-IPO analysis covers the period 1999-2004. Board information (including directors' names, position on the board, profiles and share ownership) for the year 1999 was obtained from DataDisc (January 1999) produced by ASX Ltd and cross-checked with the companies' 1999 annual reports. Board information for the year 2000 was hand-collected from annual reports, accessed via the Connect 4 database and DatAnalysis database provided by Aspect Huntley. For the years 2001-2003, board information was purchased from Aspect Huntley, and for the year 2004, the board information was downloaded from Directors & Management and Directors' Interests sections of the DatAnalysis online database.

[34] Due to the vast amount of time required to hand-collect board of directors' details from annual reports, this study only collects data at the fifth year after the IPO. This should provide sufficient information for examining the changes in board structures after listing.

7.2.1 Board size

The board size distribution five years after listing and the changes in board size since the IPO are reported in Table 7.2. Panel A of Table 7.2 shows that the size of the board has remained relatively stable after listing, with most firms continuing to have 3 to 5 directors on the board. The maximum and minimum board sizes five years after the IPO are 14 and 3, respectively, which are the same as that at the time of the IPO. Also, the pooled mean and median board size five years after listing are both five, the same as the pooled mean and median at the IPO. Note that even after the release of the best practice recommendations in March 2003, there is no significant change in the size of the board. For IPO firms listed in 1998 and 1999, the median board size five years later (i.e., in 2003 and 2004, respectively) remain at five.

The relatively stable trend in board size over time is also documented by Balatbat et al. (2004), covering 313 Australian industrial IPOs between 1976 and 1993. While this study has a similar sample size of 320 IPO firms as Balatbat et al.'s, a shorter six-year sample period (1994-1999) is examined, indicating that there are more initial public offerings in the recent period compared to the earlier period. Moreover, over the sample period studied by this thesis, there has been more focus on improving corporate governance, particularly on the composition of the board. Balatbat et al. (2004) find that the median board size has remained at five during the first five-year post-listing period and the range for the size of the board stays constant at 3 to 12 members. The largest board size found in Balatbat et al. (2004) is only slightly smaller than that found in this study.

Taken together, the results from Balatbat et al. (2004) and this study show that despite the recent call for corporate board reforms and the movement towards specific board guidelines[35], the board size of Australian IPO companies has not changed significantly since 1976. The median board size remains at five, with most companies keeping the size of the board constant after listing. This is an interesting finding given that board size has been widely addressed in corporate governance guidelines and has been considered as an important factor to board governance.

Panel B reports the number and percentage of firms showing an increase, decrease or no change in board size from the time of IPO to five years later. We find that while for sample years 1994 and 1995, just below 50% of the firms do not change the size of their boards after five years of public trading, for sample years 1997-1999, most IPO firms show a decrease in board size after listing, represented by 42%, 50% and 39% for sample years 1997, 1998 and 1999, respectively. Only the 1996 sample has over 50% of the firms adopting bigger boards after listing. Overall, the results show that across the sample period, about one-third of the firms have increased the board size, one-third showing a decrease and one-third had no change in board size.

[35] For example, the "Principles of Good Corporate Governance and Best Practice Recommendation" was released by ASX's Corporate Governance Council in March 2003 (ASX, 2003).

Table 7.2 Post-IPO board size

Panel A

Board size distribution 5 years after listing

Prospectus year	1994		1995		1996		1997		1998		1999		1994-1999	
Post-IPO board size	No. of firms	%	No. of firms	%	No. of firms	%	No. of firms	%	No. of firms	%	No. of firms	%	No. of firms	%
3	9	16%	6	29%	6	14%	11	26%	4	22%	14	17%	50	19.0%
4	14	25%	2	10%	12	28%	11	26%	3	17%	22	27%	64	24.3%
5	11	19%	3	14%	13	30%	7	16%	5	28%	23	28%	62	23.6%
6	11	19%	3	14%	7	16%	5	12%	2	11%	12	15%	40	15.2%
7	5	9%	4	19%	3	7%	4	9%	2	11%	5	6%	23	8.7%
8	6	11%	1	5%	1	2%	2	5%	1	6%	3	4%	14	5.3%
9	0	0%	0	0%	1	2%	1	2%	0	0%	2	2%	4	1.5%
10	1	2%	0	0%	0	0%	1	2%	0	0%	0	0%	2	0.8%
11	0	0%	1	5%	0	0%	0	0%	0	0%	0	0%	1	0.4%
12	0	0%	0	0%	0	0%	1	2%	0	0%	0	0%	1	0.4%
13	0	0%	1	5%	0	0%	0	0%	0	0%	0	0%	1	0.4%
14	0	0%	0	0%	0	0%	0	0%	1	6%	0	0%	1	0.4%
Total	**57**	**100%**	**21**	**100%**	**43**	**100%**	**43**	**100%**	**18**	**100%**	**81**	**100%**	**263**	**100%**

Summary statistics:	1994	1995	1996	1997	1998	1999	1994-1999
Mean	5.21	5.67	4.91	5.05	5.39	4.86	5.08
Median	5.00	5.00	5.00	4.00	5.00	5.00	5
Mode	4	3	5	3	5	5	4
Minimum	3	3	3	3	3	3	3
Maximum	10	13	9	12	14	9	14
Standard Deviation	1.68	2.69	1.38	2.09	2.62	1.45	1.82

Panel B

Changes in board size from the time of IPO to five years later

Prospectus year	1994		1995		1996		1997		1998		1999		1994-1999	
Board size has …	No. of firms	%	No. of firms	%	No. of firms	%	No. of firms	%	No. of firms	%	No. of firms	%	No. of firms	%
Increased	20	35.1	3	14.3	22	51.2	16	37.2	4	22.2	21	25.9	86	32.7
Decreased	12	21.1	8	38.1	10	23.3	18	41.9	9	50.0	30	37.0	87	33.1
Not changed	25	43.9	10	47.6	11	25.6	9	20.9	5	27.8	30	37.0	90	34.2
Total	**57**	**100**	**21**	**100**	**43**	**100**	**43**	**100**	**18**	**100**	**81**	**100**	**263**	**100**

Panel C

Univariate test of changes in board size after listing

Variable		At IPO					5 years after IPO					Wilcoxon Signed Ranks Test	
	N	Mean	Median	SD	Min	Max	Mean	Median	SD	Min	Max	Z	Asymp. Sig.
Board Size	263	5.10	5.00	1.61	3.00	14.00	5.08	5.00	1.82	3.00	14.00	-0.200	0.841

Panel D

Comparison of board and firm characteristics between firms that increased, decreased or did not change the board size

			At IPO								Five years after IPO				
Board size has …		**n**	**Board Size**	**Dual Lead** (% firm)	**% of Indep Dir**	**% of Exe Dir**	**DIRs' interest**	**Op Hist** (Yrs)	**Firm Size** ($m)	**1st Yr Revenue** ($m)	**Board Size**	**Dual Lead** (% firm)	**% of Indep Dir**	**% of Exe Dir**	**DIRs' interest**
Increased	mean	86	4.73	0.895	0.306	0.420	0.278	6.85	379.56	263.90	6.35	0.895	0.482	0.316	0.233
	median		4.00		0.310	0.400	0.229	2.00	5.89	10.63	6.00		0.429	0.333	0.201
Decreased	mean	87	5.75	0.897	0.339	0.358	0.265	5.25	130.58	136.47	4.09	0.782	0.434	0.309	0.199
	median		5.00		0.333	0.375	0.239	2.00	3.63	4.72	4.00		0.429	0.308	0.137
Changed	mean	173	5.24	0.896	0.323	0.388	0.27	6.05	256.75	199.44	5.21	0.838	0.458	0.313	0.216
	median		5.00		0.333	0.400	0.24	2.00	5.06	7.07	5.00		0.429	0.333	0.160
No change	mean	90	4.81	0.867	0.347	0.377	0.243	6.98	179.56	104.58	4.81	0.911	0.447	0.352	0.238
	median		5.00		0.333	0.367	0.187	3.00	3.33	6.53	5.00		0.500	0.333	0.183
Total		**263**													
Wilcoxon Rank-Sum Test between firms that changed the board size and that did not change after listing															
Wilcoxon Z			2.310		-0.903	0.686	0.941	-0.637	0.022	0.535	1.417		-0.019	-1.508	-0.451
Sig.			0.021		0.366	0.493	0.347	0.524	0.982	0.593	0.157		0.985	0.132	0.652
			*												
Wilcoxon Rank-Sum Test between firms that increased and decreased the board size after listing															
Wilcoxon Z			-5.084		-1.397	1.992	-0.167	0.488	1.260	1.255	8.877		1.060	0.854	0.993
Sig.			0.000		0.162	0.046	0.867	0.626	0.208	0.209	0.000		0.289	0.393	0.321
			***			**					***				
ANOVA Test between the three groups of firms that show an increase, decrease or no change in board size															
F stats			11.553		0.874	2.547	0.489	0.530	0.342	0.430	47.095		0.992	1.148	0.890
Sig.			0.000		0.419	0.080	0.614	0.589	0.710	0.651	0.000		0.372	0.319	0.412
			***			*					***				

Board Size is measured by the total number of directors on the board. **Dual Lead** is when different people hold the positions of chairperson and CEO. **% of Indep Dir** measures the percentage of independent directors on the board. **% of Exe Dir** measures the percentage of executive directors on the board. **DIR's interest** is measured by the proportion of shares held directly, indirectly, or beneficially by directors and/or director-related entities. **Op Hist** (i.e., operating history) is measured by the number of years the IPO firm has been incorporated prior to the IPO. **Firm Size** is measured by the total assets that an issuing firm has immediately prior to the IPO. **1st Yr Revenue** is measured by the total revenue (excluding interest revenue) in the first year following listing. *** Significant at 1% level. ** Significant at 5% level. * Significant at 10% level.

Panel C of Table 7.2 reports the results from Wilcoxon Signed Ranks Test, which tests the median difference in board size between the two time periods – at the time of IPO and five years thereafter.[36] The test confirms our finding that there is no significant change in board size after five years of listing, suggesting that the board size of six members implicit in the best practice recommendations is not seen as optimal by these companies.

Previous US studies have also documented a relatively stable pattern in board size over time. Mikkelson et al. (1997) investigate how the board size changes in US IPO firms and find that five years after going public, the median board size has remained at six directors and has increased only by one to seven directors ten years after the IPO. Denis and Sarin (1999) examine the evolution of board size for a random sample of firms listed on the NYSE, Amex and Nasdaq over a ten-year period. By comparing the median board size at the first year and the last year firms enter the sample, Denis and Sarin (1999) find that board size remains fairly constant except for firms that begin with a large board which tend to shrink in the last sample year.

In Panel D, we compare the board and firm characteristics of firms that have increased, decreased or did not change the size of the board after listing. This comparison allows us to see if firms that later increase the board size add more independent directors to the board to be more consistent with the best practice recommendations. The Wilcoxon Rank-Sum Test shows that compared with firms that later decrease the board size, firms that increase their board size after listing have a significantly higher proportion of executive directors at the time of IPO. However, as the latter group of firms increase the size of the board after listing, they also increase the proportion of independent

[36] The null hypothesis is that there is no difference between the board size at the time of IPO and five years after; that is, there is no change in board size after listing.

directors from an average of 31% at the time of IPO to 48% five years later, and the proportion of executive directors on the board decreases from 40% to 33%. This trend is consistent with our expectation; companies that add more board members to the board also increase the independence of the board, in line with ASX's best practice recommendations.

Further, Panel D shows that compared with firms that decrease their board size, firms that later increase their board size are larger, measured by total assets at the time of IPO and the total revenue after one year of public trading, though the results are not statistically significant. This suggests that IPO firms that later increase the board size have more capital resources initially and are thus able to appoint more independent directors to the boards and increase the number of board members from a median of four directors (below the pooled median board size of five) to six directors (above the pooled median).

7.2.2 Board leadership

With the release of best practice recommendations in 2003, more IPO firms are likely to adopt a dual leadership structure. Thus, in Panel A of Table 7.3, we report the number and percentage of IPO firms with unitary and dual leadership after five years of public trading. Panel B then reports the changes in leadership structure from the time of IPO to five years after.

Panel A shows that over 80% of the firms in each sample year (except for the sample year 1998, which shows 78% of firms) have adopted a dual leadership structure five years after the initial listing. However, across the sample, there is a small decline of 4% in the proportion of firms adopting dual leadership structure, from 90% at the time of IPO to 86% five years after. Apart from the sample year 1995 which shows an increase

in dual leadership by 4%, and the sample year 1999 which shows no change, other sample years exhibit a slight decline in the proportion of firms with dual leadership after listing. Overall, the results indicate that five years after listing, the majority of IPO firms still adopt dual leadership, in accordance with the ASX best practice recommendations.

A prior Australian IPO study by Balatbat et al. (2004) finds that the proportion of IPO firms with dual leadership increases from 55% in the first year after the IPO to 63% five years later. Comparing the findings of this study with that of Balatbat et al. (2004), it is apparent that the percentage of firms with dual leadership both at the time of IPO and five years after is much lower in the earlier period (1976-1993) examined by Balatbat et al. (2004) than in the recent period (1994-1999). Specifically, at the time of IPO, Balatbat et al. (2004) report that only 55% of issuers adopt dual leadership while this study finds that 90% of sample IPO firms have dual leadership. Five years after listing, Balatbat et al. (2004) report that 63% of firms have dual leadership whereas this study reports a higher percentage of 86%. This shows that the focus on corporate governance reforms in recent years has led issuing firms to favour dual leadership both at the time of IPO and in the post-IPO period. Thus, in terms of the leadership structure, the majority of IPO firms conform to the ASX's recommendation on separating the roles of chairperson and chief executive officer even after listing for five years.

Table 7.3 Post-IPO leadership structure

Panel A

Role of chairperson 5 years after listing

Prospectus year	1994		1995		1996		1997		1998		1999		1994-1999	
Post-IPO leadership structure*	No. of firms	%	No. of firms	%	No. of firms	%	No. of firms	%	No. of firms	%	No. of firms	%	No. of firms	%
Unitary leadership	8	14	2	10	7	16	7	16	4	22	8	10	36	14
Dual leadership	49	86	19	90	36	84	36	84	14	78	73	90	227	86
Total	**57**	**100**	**21**	**100**	**43**	**100**	**43**	**100**	**18**	**100**	**81**	**100**	**263**	**100**
Change in % of firms adopting DUAL leadership, from the time of listing to 5 yrs later		-8%		+4%		-4%		-7%		-2%		0%		-3%

Unitary leadership is where the same person holds the positions of the chairperson and CEO. Dual leadership is where different people perform the roles of chairperson and CEO.

Panel B

Changes in leadership structure from the time of IPO to five years later

Prospectus year	1994		1995		1996		1997		1998		1999		1994-1999	
Leadership structure	No. of firms	%	No. of firms	%	No. of firms	%	No. of firms	%	No. of firms	%	No. of firms	%	No. of firms	%
Remain Unitary	1	2%	1	5%	2	5%	1	2%	2	11%	3	4%	10	4%
Remain Dual	48	84%	16	76%	32	74%	33	77%	11	61%	67	83%	207	79%
Total (No change)	**49**	**86%**	**17**	**81%**	**34**	**79%**	**34**	**79%**	**13**	**72%**	**70**	**86%**	**217**	**83%**
Change to Unitary	7	12%	1	5%	5	12%	6	14%	2	11%	5	6%	26	10%
Change to Dual	1	2%	3	14%	4	9%	3	7%	3	17%	6	7%	20	8%
Total (Change)	**8**	**14%**	**4**	**19%**	**9**	**21%**	**9**	**21%**	**5**	**28%**	**11**	**14%**	**46**	**17%**
Total	**57**	**100%**	**21**	**100%**	**43**	**100%**	**43**	**100%**	**18**	**100%**	**81**	**100%**	**263**	**100%**

Panel C

Comparison of board and firm characteristics between firms that changed or did not change their leadership structures

			At IPO							Five years after IPO			
Board leadership		**n**	**Board Size**	**% of Indep Dir**	**% of Exe Dir**	**DIRs' interest**	**Op Hist** (Yrs)	**Firm Size** ($m)	**1st Yr Revenue** ($m)	**Board Size**	**% of Indep Dir**	**% of Exe Dir**	**DIRs' interest**
Remain Unitary	mean	10	5.50	0.193	0.404	0.479	7.00	23.69	63.94	4.60	0.465	0.398	0.315
	median		5.00	0.171	0.400	0.468	5.00	17.39	4.40	4.00	0.500	0.333	0.346
Remain Dual	mean	207	5.13	0.350	0.364	0.252	6.84	284.46	200.13	5.17	0.479	0.298	0.225
	median		5.00	0.333	0.333	0.191	2.00	5.22	8.93	5.00	0.500	0.286	0.168
Total (No change)	mean	**217**	5.15	0.343	0.366	0.262	6.85	273.06	193.83	5.15	0.478	0.302	0.229
	median		5.00	0.333	0.333	0.210	2.00	5.55	8.35	5.00	0.500	0.333	0.176
Change to Unitary	mean	26	4.85	0.329	0.417	0.244	3.85	31.58	46.77	4.31	0.282	0.535	0.187
	median		5.00	0.333	0.400	0.225	1.50	2.10	0.45	4.00	0.333	0.500	0.119
Change to Dual	mean	20	4.85	0.208	0.546	0.275	4.45	36.59	31.73	5.30	0.417	0.310	0.213
	median		4.50	0.208	0.536	0.293	3.50	3.50	4.59	5.00	0.422	0.333	0.189
Total (Change)	mean	**46**	4.85	0.276	0.473	0.258	4.11	33.76	40.23	4.74	0.341	0.437	0.199
	median		5.00	0.268	0.500	0.242	2.00	2.39	1.25	4.00	0.333	0.400	0.162
Total		**263**											
Wilcoxon Rank-Sum Test between that firms changed and did not change leadership structures													
Wilcoxon Z			-1.209	-1.718	2.946	0.430	-1.262	-1.726	-2.380	-2.070	-3.153	3.25	-0.591
Sig.			0.227	0.086	0.003	0.667	0.207	0.084	0.017	0.038	0.002	0.001	0.554
				*	**			*	**	**	***	***	
Wilcoxon Rank-Sum Test between firms that kept dual leadership and that kept unitary leadership													
Wilcoxon Z			-0.757	2.289	-0.813	-2.982	-1.098	-0.833	1.032	1.113	0.049	-1.244	-1.996
Sig.			0.449	0.022	0.416	0.003	0.272	0.405	0.302	0.266	0.961	0.214	0.046
				**		***							**
Wilcoxon Rank-Sum Test between firms that changed to unitary and that changed to dual leadership													
Wilcoxon Z			0.392	1.787	-1.810	-0.678	-1.102	-1.020	-0.821	-2.638	-1.958	2.602	-1.086
Sig.			0.695	0.074	0.070	0.498	0.271	0.308	0.412	0.008	0.05	0.009	0.278
				*	*					***	**	***	
ANOVA Test between four groups of firms that remain unitary, remain dual, change to unitary or change to dual leadership													
F stats			0.602	4.159	6.615	3.108	0.633	0.207	0.249	2.108	6.063	12.824	0.903
Sig.			0.614	0.007	0.000	0.027	0.594	0.891	0.862	0.100	0.001	0.000	0.440
				***	***	**				*	***	***	

Dual (or Unitary) leadership is when different people (or the same person) hold the positions of chairperson and CEO. **Board Size** is measured by the total number of directors on the board. **% of Indep Dir** measures the percentage of independent directors on the board. **% of Exe Dir** measures the percentage of executive directors on the board. **DIR's interest** is measured by the proportion of shares held directly, indirectly, or beneficially by directors and/or director-related entities. **Op Hist** (i.e., operating history) is measured by the number of years the IPO firm has been incorporated prior to the IPO. **Firm Size** is measured by the total assets that an issuing firm has immediately prior to the IPO. **1st Yr Revenue** is measured by the total revenue (excluding interest revenue) in the first year following public listing. *** Significant at 1% level. ** Significant at 5% level. * Significant at 10% level.

Panel B shows the changes in leadership structure after listing for five years; 83% of the firms do not change their leadership structure, with 4% of the firms retaining unitary leadership and 79% retaining a dual leadership structure. Further, a slightly greater proportion of firms is observed to have changed from dual to unitary leadership (10% of firms across the sample) than from unitary to dual leadership (8% of firms).

Panel C then compares the board and firm characteristics of firms that changed or did not change their leadership structures. It shows that firms that move to have an executive chairman (i.e., unitary leadership) have a higher proportion of independent directors, a lower proportion of executive directors and a larger board at the time of IPO compared with firms that change to dual leadership. However, after five years of trading, those that move to have an executive chairman also have smaller boards, with significantly fewer independent directors. The result thus provides supporting evidence for the corporate governance reformers' argument that unitary leadership hampers the independence of board monitoring. Companies that move to unitary leadership become less independent from firms' management not only because of the executive chair but also because of a reduction in the number of independent directors.

Also, in Panel C, the Wilcoxon Rank-Sum Test shows that firms that continue to adopt a unitary leadership structure after five years of public trading have a lower proportion of independent directors on the board while having significantly higher director ownership compared with firms that continue to adopt dual leadership after listing. This suggests that when there is little independence of the board, high director ownership may serve to ensure the monitoring of management as directors' own wealth is linked to firm performance through their holdings in the firm.

7.2.3 Board composition

Recommendation 2.1 of the best practice recommendations states that there should be a majority of independent directors on the board, indicating the importance of board composition in influencing the governance quality of the board. If the recommended practices by the ASX are "best practice", we would expect to see a shift in the board composition of IPO firms towards the best practice recommendations after listing. Thus, in Table 7.4 we present the board composition five years after listing and the changes since IPO.

In Panels A, B and C, we focus on independent directors[37]. Panel A shows that the proportion of independent directors on the board five years after listing is concentrated in the range of 20-69%. The median proportion of independent directors on the board has increased from 33% at the time of IPO to 50% five years after across the sample. Panel A also shows that about half of the sample firms (51% of firms) have over fifty percent of board members represented by independent directors five years after listing. This is a substantial increase since the IPO, which at the time only has 29% of firms having a majority of independent directors on the board.

This finding is reinforced in Panel B that reports the number and percentage of firms showing an increase, decrease or no change in the proportion of independent directors on the board from the time of listing to five years later. Specifically, over half of the sample firms (65%) have experienced an increase in the proportion of independent directors.

[37] This study defines an independent director as a director who is not a current or past employee of the corporation, does not have substantial business or family ties with management, nor does he/she have potential business ties with the firm.

Overall, the results indicate that after five years of listing, the board composition of IPO firms on average becomes more in line with the best practice recommendations with a greater representation of independent directors on the board. However, there is still a large number of firms (or about 50% of firms) with executive boards that show deviations from the best practice recommendations.

Based on Wilcoxon Rank-Sum Test, Panel C shows that there is a significant difference between the board size of firms that increase the proportion of independent directors in the post-IPO period and that decrease later on. More specifically, firms that later adopt a more independent board appear to have a larger board five years after listing than firms that decrease the proportion of independent directors. However, the average board size of the former group has shown only a small increase from 5.2 at the time of IPO to 5.3 five years later while the later group of firms experience a decrease in average board size from 5 to 4.7. The result suggests that the increase in the proportion of independent directors is likely to have been occurred by opting out executive and/or grey directors from the board (as seen from only a small increase in the board size) while the decrease in the proportion of independent directors tends to be accompanied by a decrease in board size.

Table 7.4 Post-IPO board composition

Panel A

Proportion of independent directors on the board 5 years after listing

Prospectus yr	1994		1995		1996		1997		1998		1999		1994-1999	
% of indep dir[a] per board	No. of firms	%	No. of firms	%	No. of firms	%	No. of firms	%	No. of firms	%	No. of firms	%	No. of firms	%
0%	1	1.8	2	9.5	4	9.3	7	16.3	2	11.1	7	8.6	23	8.7
1-9%	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
10-19%	1	1.8	0	0.0	0	0.0	2	4.7	0	0.0	2	2.5	5	1.9
20-29%	9	15.8	3	14.3	6	14.0	3	7.0	1	5.6	11	13.6	33	12.5
30-39%	10	17.5	3	14.3	7	16.3	8	18.6	4	22.2	6	7.4	38	14.4
40-49%	6	10.5	3	14.3	6	14.0	2	4.7	3	16.7	10	12.3	30	11.4
50-59%	13	22.8	3	14.3	11	25.6	7	16.3	2	11.1	11	13.6	47	17.9
60-69%	9	15.8	5	23.8	5	11.6	5	11.6	2	11.1	24	29.6	50	19.0
70-79%	4	7.0	1	4.8	1	2.3	5	11.6	2	11.1	2	2.5	15	5.7
80-89%	2	3.5	1	4.8	3	7.0	4	9.3	2	11.1	5	6.2	17	6.5
90-99%	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
100%	2	3.5	0	0.0	0	0.0	0	0.0	0	0.0	3	3.7	5	1.9
Total	**57**	**100**	**21**	**100**	**43**	**100**	**43**	**100**	**18**	**100**	**81**	**100**	**263**	**100**

Summary statistics:	1994	1995	1996	1997	1998	1999	1994-1999
Mean	47.47%	45.56%	42.08%	42.21%	45.24%	47.44%	45.41%
Median	50.00%	42.86%	40.00%	40.00%	41.43%	50.00%	50.00%
Minimum	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Maximum	100.00%	83.33%	83.33%	85.71%	83.33%	100.00%	100.00%
Standard Deviation	20.09%	22.46%	21.26%	26.64%	24.41%	24.32%	23.15%

[a] An independent director is a director who is not a current or past employee of the corporation, does not have substantial business or family ties with management, nor does he/she have potential business ties with the firm.

Panel B

Changes in the proportion of independent directors on the board from the time of IPO to five years later

Prospectus yr	1994		1995		1996		1997		1998		1999		1994-1999	
% of Indep Dir has …	No. of firms	%	No. of firms	%	No. of firms	%	No. of firms	%	No. of firms	%	No. of firms	%	No. of firms	%
Increased	38	66.7%	14	66.7%	29	67.4%	25	58.1%	15	83.3%	51	63.0%	172	65.4%
Decreased	8	14.0%	5	23.8%	10	23.3%	15	34.9%	3	16.7%	18	22.2%	59	22.4%
Not changed	11	19.3%	2	9.5%	4	9.3%	3	7.0%	0	0.0%	12	14.8%	32	12.2%
Total	**57**	**100%**	**21**	**100%**	**43**	**100%**	**43**	**100%**	**18**	**100%**	**81**	**100%**	**263**	**100%**

Panel C

Comparison of board and firm characteristics between firms that increased, decreased or did not change the proportion of independent directors on the board

			At IPO								Five years after IPO				
		n	% of Indep Dir	Board Size	Dual Lead	% of Exe Dir	DIRs' interest	Op Hist	Firm Size	1st Yr Revenue	% of Indep Dir	Board Size	Dual Lead	% of Exe Dir	DIRs' interest
% of Indep Dir has ...					(% firm)			(Yrs)	($m)	($m)			(% firm)		
Increased	mean	172	0.267	5.23	0.86	0.406	0.267	5.79	157.39	107.96	0.539	5.29	0.87	0.284	0.216
	median		0.250	5.00		0.400	0.230	2.00	5.35	7.12	0.500	5.00		0.286	0.167
Decreased	mean	59	0.491	4.95	0.93	0.328	0.244	7.42	516.68	394.64	0.247	4.68	0.81	0.425	0.219
	median		0.500	5.00		0.250	0.218	2.00	3.83	3.68	0.250	4.00		0.375	0.160
No change	mean	32	0.380	4.66	0.91	0.376	0.264	7.47	18.53	61.63	0.380	4.66	0.91	0.372	0.272
	median		0.400	4.50		0.367	0.185	2.00	3.86	13.39	0.400	4.50		0.333	0.194
Total		**263**													
Wilcoxon Rank-Sum Test between firms that increased and decreased the proportion of independent directors															
Wilcoxon Z			-6.557	1.178		2.941	0.522	-0.757	0.019	0.647	8.133	2.579		-3.691	0.226
Sig.			0.000	0.239		0.003	0.602	0.449	0.985	0.517	0.000	0.010		0.000	0.821
			***			***					***	***		***	
ANOVA Test between three groups of firms that show an increase, decrease or no change in the proportion of independent directors															
F stats			19.882	1.449		3.357	0.372	0.546	0.642	0.945	35.816	2.671		9.591	1.033
Sig.			0.000	0.229		0.019	0.773	0.651	0.589	0.419	0.000	0.048		0.000	0.379
			***			**					***	**		***	

% of Indep Dir measures the percentage of independent directors on the board. **Board size** is measured by the total number of directors on the board. **Dual Lead** is when different people hold the positions of chairperson and CEO. **% of Exe Dir** measures the percentage of executive directors on the board. **DIR's interest** is measured by the proportion of shares held directly, indirectly, or beneficially by directors and/or director-related entities. **Op Hist** (i.e., operating history) is measured by the number of years the IPO firm has been incorporated prior to the IPO. **Firm Size** is measured by the total assets that an issuing firm has immediately prior to the IPO. **1st Yr Revenue** is measured by the total revenue (excluding interest revenue) in the first year following listing. *** Significant at 1% level. ** Significant at 5% level. * Significant at 10% level.

Panel D

Proportion of executive directors on the board 5 years after listing

Prospectus yr	1994		1995		1996		1997		1998		1999		1994-1999	
% of exe dir[b] per board	No. of firms	%	No. of firms	%	No. of firms	%	No. of firms	%	No. of firms	%	No. of firms	%	No. of firms	%
0%	9	15.8	1	4.3	2	4.7	4	9.3	0	0.0	12	14.8	28	10.6
1-9%	0	0.0	0	0.0	0	0.0	1	2.3	0	0.0	0	0.0	1	0.4
10-19%	5	8.8	5	21.7	4	9.3	3	7.0	3	16.7	4	4.9	24	9.1
20-29%	12	21.1	4	17.4	10	23.3	16	37.2	5	27.8	21	25.9	68	25.9
30-39%	10	17.5	6	26.1	7	16.3	7	16.3	2	11.1	13	16.0	45	17.1
40-49%	6	10.5	2	8.7	8	18.6	4	9.3	3	16.7	18	22.2	41	15.6
50-59%	14	24.6	0	0.0	4	9.3	3	7.0	2	11.1	6	7.4	29	11.0
60-69%	0	0.0	2	8.7	5	11.6	3	7.0	2	11.1	5	6.2	17	6.5
70-79%	1	1.8	1	4.3	2	4.7	0	0.0	0	0.0	1	1.2	5	1.9
80-89%	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
90-99%	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
100%	0	0.0	0	0.0	1	2.3	2	4.7	1	5.6	1	1.2	5	1.9
Total	**57**	**100**	**21**	**91**	**43**	**100**	**43**	**100**	**18**	**100**	**81**	**100**	**263**	**100**

Summary statistics:	1994	1995	1996	1997	1998	1999	1994-1999
Mean	30.11%	31.45%	37.72%	32.03%	37.44%	31.16%	32.60%
Median	33.33%	30.77%	33.33%	25.00%	33.33%	33.33%	33.33%
Minimum	0.00%	0.00%	0.00%	0.00%	14.29%	0.00%	0.00%
Maximum	75.00%	75.00%	100%	100%	100%	100%	100%
Standard Deviation	18.11%	18.93%	20.68%	22.34%	22.38%	19.35%	20.02%

[b] An executive director refers to a director who is a full-time employee of the firm.

Panel E

Changes in the proportion of executive directors on the board from the time of IPO to five years later

Prospectus year	1994		1995		1996		1997		1998		1999		1994-1999	
% of Exe Dir has …	No. of firms	%	No. of firms	%	No. of firms	%	No. of firms	%	No. of firms	%	No. of firms	%	No. of firms	%
Increased	12	21.1	6	28.6	14	32.6	14	32.6	6	33.3	19	23.5	71	27.0
Decreased	24	42.1	9	42.9	23	53.5	23	53.5	9	50.0	43	53.1	131	49.8
Not changed	21	36.8	6	28.6	6	14.0	6	14.0	3	16.7	19	23.5	61	23.2
Total	**57**	**100**	**21**	**100**	**43**	**100**	**43**	**100**	**18**	**100**	**81**	**100**	**263**	**100**

Panel F

Comparison of board and firm characteristics between firms that increased, decreased or did not change the proportion of executive directors on the board

			At IPO								Five years after IPO				
% of Exe Dir has ...		n	% of Exe Dir	Board Size	Dual Lead (% firm)	% of Indep Dir	DIRs' interest	Op Hist (Yrs)	Firm Size ($m)	1st Yr Revenue ($m)	% of Exe Dir	Board Size	Dual Lead (% firm)	% of Indep Dir	DIRs' interest
Increased	mean	71	0.269	4.96	0.93	0.387	0.208	4.59	21.94	54.80	0.474	4.56	0.75	0.351	0.217
	median		0.250	5.00		0.400	0.181	2.00	2.98	1.50	0.400	4.00		0.333	0.176
Decreased	mean	131	0.476	5.32	0.85	0.290	0.311	6.82	337.90	282.27	0.247	5.44	0.90	0.496	0.222
	median		0.500	5.00		0.286	0.268	2.00	8.01	15.01	0.250	5.00		0.500	0.157
No change	mean	61	0.323	4.77	0.90	0.353	0.217	7.46	247.96	47.60	0.323	4.89	0.92	0.484	0.235
	median		0.333	4.00		0.333	0.111	3.00	3.04	6.46	0.333	4.00		0.500	0.179
Total		**263**													
Wilcoxon Rank-Sum Test between firms that increased and decreased the proportion of executive directors															
Wilcoxon Z			-7.741	-1.655		3.476	-2.752	-0.5	-2.422	-3.351	7.087	-3.636		-4.11	0.321
Sig.			0.000	0.098		0.001	0.006	0.617	0.015	0.001	0.000	0.000		0.000	0.748
			***	*		***	***		**	***	***	***		***	
ANOVA Test between three groups of firms that show an increase, decrease or no change in the proportion of executive directors															
F stats			44.226	2.816		5.151	5.864	1.066	0.534	1.227	37.936	6.059		10.501	0.136
Sig.			0.000	0.062		0.006	0.003	0.346	0.587	0.295	0.000	0.003		0.000	0.873
			***	*		***	***				***	***		***	

% of Exe Dir measures the percentage of executive directors on the board. **Board Size** is measured by the total number of directors on the board. **Dual Lead** is when different people hold the positions of chairperson and CEO. **% of Indep Dir** measures the percentage of independent directors on the board. **DIR's interest** is measured by the proportion of shares held directly, indirectly, or beneficially by directors and/or director-related entities. **Op Hist** (i.e., operating history) is measured by the number of years the IPO firm has been incorporated prior to the IPO. **Firm Size** is measured by the total assets that an issuing firm has immediately prior to the IPO. **1st Yr Revenue** is measured by the total revenue (excluding interest revenue) in the first year following listing. *** Significant at 1% level. * Significant at 10% level.

Panel G

Descriptive statistics and univariate tests of changes in board structures after listing

Variable	N	At IPO					5 years after IPO					Wilcoxon Signed Ranks Test		
		Mean	Median	SD	Min	Max	Mean	Median	SD	Min	Max	Z	Asymp. Sig.	
% of Indep Dir	263	0.33	0.33	0.22	0.00	0.91	0.45	0.50	0.23	0.00	1.00	6.974	0.000	***
% of Non-exe Dir [c]	263	0.62	0.60	0.19	0.00	1.00	0.67	0.67	0.20	0.00	1.00	4.247	0.000	***
% of Exe Dir	263	0.38	0.40	0.18	0.00	1.00	0.33	0.33	0.20	0.00	1.00	-4.351	0.000	***

*** Significant at 1% level (2-tailed)

[c] Non-executive directors refer to directors to who are not full-time employees of the firm and include independent and grey directors. The latter refers to directors who are either former employees of the firm or are affiliated with managers through current or potential future business or family ties (e.g. employees of banks, law and consulting firms).

Panels D, E and F focus on executive directors. Specifically, Panel D shows the distribution of executive directors on the board five years of listing. Across the sample, the percentage of executive directors on the board for most firms fall into the range of 20-29% both at the time of IPO and five years after. The pooled median proportion of executive directors however has decreased from 40% at the time of IPO to 33% five years after.

Panel E documents the proportion of firms showing an increase, decrease or no change in the proportion of executive directors on the board five years after listing. For about half of the sample firms, the proportion of executive directors on the board has declined within five years of listing, confirming the finding observed in previous panels on independent directors. That is, there is an increase in the independence of board members post-IPO. The result also suggests that after listing, IPO firms become more consistent with the ASX's recommendation on having a majority of independent directors on the board. A similar pattern is found in US IPOs over the period 1980-1983. Specifically, Mikkelson et al. (1997) report that the median proportion of executive directors on the board after listing reduces from 50% prior to the IPO to 40% five years after and to 30% ten years after.

Penal F compares the board and firm characteristics of firms that increase, decrease and do not change the proportion of executive directors after listing for five years. The Wilcoxon Rank-Sum Test shows that firms that increase the proportion of executive directors on the board have smaller median board size five years after listing than firms that decrease the proportion of executive directors, significant at the 1% level. This finding corresponds with that observed in Panel C; firms that increase the proportion of independent directors have larger median board size after listing.

In addition, firms that decrease boards' independence after listing have smaller firm size at the time of the IPO and lower revenue in the first year of public trading. The results thus suggest that smaller firms, in terms of having lower total assets and total revenue, are more likely to reduce the board size and have more executive directors on the board after listing.

Panel G reports descriptive statistics for board composition at the time of IPO and five years thereafter, and the results from Wilcoxon Signed Ranks Test to see if there are any significant changes in board composition after listing. The Wilcoxon Signed Ranks Test show that the increases in the proportion of independent directors and non-executive directors on the board from the time of IPO to five years later are statistically significant at the 1% level, and so is the decrease in the proportion of executive directors.

The average proportion of independent directors on the board has increased by 12% from 33% at the time of IPO to 45% five years after listing. The push for a more independent board by corporate governance reformers in recent years, and the rise in capital after listing that enable more independent directors to be appointed may explain the observed increase in the proportion of independent directors in the post-IPO period. Further, the average proportion of non-executive directors shows an increase from 62% to 67%, indicating that non-executive directors continue to dominate the board after listing. Overall, the results suggest that after five years of public trading, there is a significant change in board composition with firms adopting a more independent board and becoming more in line with the ASX best practice recommendations.

7.2.4 Director ownership

At the time of IPO, directors' shares are subject to escrow requirements that typically require a holding of 12 months. Five years after initial pubic offerings, the shares held by directors should have been released from the escrow already. Thus, in Table 7.5, we examine the level of director ownership after five years of public trading and the changes since the IPOs. Panel A of Table 7.5 shows the distribution of director ownership five years after listing. The director ownership is measured by the total number of shares held directly, indirectly, or beneficially by directors and/or director-related entities as a proportion of total shares outstanding at the financial year-end. In contrast to the director ownership at the time of IPO where 14% of sample firms have zero director ownership, after five years of public trading each board holds at least one share in the firm. Further, we find that about the same percentage of firms have directors holding less than 10% of the shares in the firms both at the time of IPO (i.e., 33% of the firms) and five years later (36%).

Moreover, as expected, we observe a decline in director ownership in the post-IPO period. The pooled median director ownership reduces from 23% at the time of IPO to 17% five years later, and the mean has reduced from 27% to 22%. Balatbat et al. (2004) who focus on the earlier sample period between 1976 and 1993 in Australia also report a trend in director ownership after firms go public; the median director ownership declines from 37% in the first year after the IPO to 18% five years after. A comparison of our findings with that of Balatbat et al.'s thus shows that the median director ownership in IPO firms tends to decline to about 17-18% after five years of public trading.

Panel B reports the number and proportion of firms that have had an increase or decrease in director ownership after listing for five years. It shows that across the sample, over half of the IPO firms (58%) experience a fall in director ownership. The observed decline in director ownership after listing is as expected, given that after five years of public trading, directors' shares are usually released from the escrow. Therefore, directors may choose to sell their shares in the firm to reduce their personal risk.

In terms of the individual sample years, Panel B shows that there are more IPO firms (just over 50% of the firms) exhibiting an increase in director ownership after five years of trading in the 1994 and 1995 samples than in other sample years. The median percentage increase in director ownership across the sample is 12% and the median percentage decrease is -16%. Panel C of Table 7.5 uses the Wilcoxon Signed Ranks Test to test if the change in director ownership from the time of IPO to five years later is significant. The test result shows that the decrease in director ownership five years after the IPO is significant at the 1% level.

Table 7.5 Post-IPO director share ownership

Panel A

Distribution of director share ownership 5 years after listing

Prospectus yr	1994		1995		1996		1997		1998		1999		1994-1999	
Post-IPO Dir ownership	No. of firms	%	No. of firms	%	No. of firms	%	No. of firms	%	No. of firms	%	No. of firms	%	No. of firms	%
0%	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
1-9%	24	42.1	13	61.9	16	37.2	22	51.2	4	22.2	16	19.8	95	36.1
10-19%	8	14.0	1	4.8	12	27.9	8	18.6	3	16.7	18	22.2	50	19.0
20-29%	10	17.5	3	14.3	4	9.3	5	11.6	5	27.8	15	18.5	42	16.0
30-39%	7	12.3	2	9.5	4	9.3	2	4.7	3	16.7	8	9.9	26	9.9
40-49%	2	3.5	1	4.8	1	2.3	2	4.7	0	0.0	8	9.9	14	5.3
50-59%	2	3.5	0	0.0	4	9.3	3	7.0	2	11.1	6	7.4	17	6.5
60-69%	1	1.8	1	4.8	2	4.7	1	2.3	1	5.6	5	6.2	11	4.2
70-79%	3	5.3	0	0.0	0	0.0	0	0.0	0	0.0	3	3.7	6	2.3
80-89%	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	1	1.2	1	0.4
90-99%	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	1	1.2	1	0.4
100%	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Total	**57**	**100**	**21**	**100**	**43**	**100**	**43**	**100**	**18**	**100**	**81**	**100**	**263**	**100**

Summary statistics:	1994	1995	1996	1997	1998	1999	1994-1999
Mean	20.89%	13.74%	19.62%	16.33%	25.12%	29.65%	22.35%
Median	18.32%	5.81%	13.36%	9.95%	23.70%	25.37%	17.07%
Minimum	0.06%	0.02%	0.02%	0.004%	0.20%	0.04%	0.004%
Maximum	78.51%	65.61%	68.31%	62.00%	64.22%	98.09%	98.09%
Standard Deviation	20.63%	17.92%	19.73%	18.10%	18.91%	22.72%	21.02%

Post-IPO Director ownership is measured by the total number of shares held directly, indirectly, or beneficially by directors and/or director-related entities as a proportion of total shares outstanding at the fifth financial year end after listing.

Panel B

Number and proportion of firms showing an increase or decrease in director ownership from the time of IPO to five years later

Prospectus year	1994		1995		1996		1997		1998		1999		1994-1999	
Dir ownership has..	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Increased	30	54.5	11	52.4	16	38.1	18	41.9	6	33.3	29	36.3	110	42.5
Decreased	25	45.5	10	47.6	26	61.9	25	58.1	12	66.7	51	63.8	149	57.5
Total**	**55**	**100**	**21**	**100**	**42**	**100**	**43**	**100**	**18**	**100**	**80**	**100**	**259**	**100**

Summary statistics of changes in Dir ownership five years after listing:							
	1994	1995	1996	1997	1998	1999	1994-1999
Average Increase	19.8%	6.3%	20.6%	14.8%	11.8%	23.3%	18.2%
Median Increase	10.2%	0.9%	16.7%	7.9%	8.9%	13.9%	11.5%
Min Increase	0.1%	0.0%	0.1%	0.004%	0.3%	0.04%	0.004%
Max Increase	78.5%	27.9%	65.1%	55.2%	29.4%	96.0%	96.0%
SD Increase	22.3%	10.0%	17.5%	15.7%	11.0%	23.6%	19.9%
Average Decrease	-15.2%	-9.8%	-20.5%	-22.0%	-21.7%	-22.5%	-19.9%
Median Decrease	-12.8%	-6.1%	-17.6%	-14.4%	-9.6%	-19.4%	-15.6%
Min Decrease	-0.4%	-0.1%	-0.6%	-0.6%	-1.2%	0.0%	-0.04%
Max Decrease	-53.5%	-30.3%	-71.7%	-59.8%	-70.2%	-66.1%	-71.7%
SD Decrease	13.2%	10.7%	17.1%	18.2%	23.7%	16.3%	16.8%

** The total number of firms for this analysis is reduced in some years (including 1994 by 2 firms, 1996 by 1 firm and 1999 by 1 firm) because these firms did not disclose directors' shareholdings in their prospectuses.

Panel C

Descriptive statistics and univariate tests of changes in director share ownership after listing

Variable	N[a]	At IPO					5 years after IPO					Wilcoxon Signed Ranks Test		
		Mean	Median	SD	Min	Max	Mean	Median	SD	Min	Max	Z	Asymp. Sig.	
Dir Ownership (%)	259	0.26	0.23	0.24	0.00	0.85	0.22	0.17	0.21	0.00	0.98	-3.016	0.003	***

a The total number of firms for this analysis is reduced by 4 because these firms did not disclose directors' shareholdings in their prospectuses. *** Significant at 1% level (2-tailed)

7.2.5 Board structures by industry groups

As some industries are more high-tech than others and require firm-specific knowledge, monitoring costs are likely to differ across industries. Thus, in this section, we examine the level of board independence by industry groups. Table 7.6 reports the average number of independent directors and board size five years after listing, the changes in board structures since the IPO, and firm characteristics at IPO by industry groups. Similar to the findings reported earlier in Table 5.7 at the time of the IPO, independent directors in most industry sectors hold on average about half or just over half of the board seats after five years of public trading. This suggests that five years down the track, the average board structures of IPO firms have merely conformed to the ASX best practice recommendations on having a majority of independent directors on the board.

Compared the findings reported in the US studies, Australian firms have significantly smaller boards even after listing for five years. In fact, the average Australian company board is just half the size of average US company boards. The US studies by Klein (1998) and Klein (2002) show that for 692 companies listed on the S&P 500 in 1992-1993, they have an average board size of 12. A similar US finding is reported by Bhagat and Black (2002) who examine 934 large US public companies in the Institutional Shareholder Services database in 1991 and report a mean board size of 11.

The proportion of independent directors on the US company boards is also higher than that on Australian company boards, which have an average of 45% of independent directors. Similar to the definition of "independence" used in this study, Klein (1998) and Klein (2002) define an independent director as a director who has no affiliation with the firm beyond being a member of the firm's board, and report a higher average of 58% of independent directors on US company boards. Bhagat and Black (2002) find an even higher average of 64% of independent directors (defined as outside directors without affiliations, such as family and business relationships, with management and excluding previous officers) on US boards. The major contributor to the difference in board structures between US and sample Australian companies is that US companies tend to be larger than Australian companies. Such positive relationship between firm size and board size is also evident in Table 7.6 by industry groups. For example, firms in the transport and banks & finance sectors not only have larger boards but also are relatively larger in firm size.

Earlier in Table 5.7, we have observed that more than half of the firms in gold and other metals industries have board size smaller than the median of five. Five years following listing, a relatively large number of firms in these sectors is found to increase the number of directors on their boards and the proportion of independent directors, as shown in Table 7.6. This is consistent with our expectation that smaller and younger IPO firms are more likely to increase the independence of the board following listing after gaining more capital and operating experience. Similar patterns are also observed in the investment and financial services industry and the miscellaneous industries, which have median firm size of about $7 million and operating history of less than 2 years, and have a relatively large number of firms showing a move towards a more independent board.

Further, Table 7.6 reports that while a greater number of firms in the retail and telecommunications sectors shows a decrease in board size compared with the number of firms that shows an increase in board size, more firms in these sectors are found to increase the proportion of independent directors rather than to decrease it. One explanation is that due to the higher media coverage for these sectors, firms in these sectors face more pressure from regulators and corporate governance reformers to limit board size and to increase the independence of the board than other sectors.

Table 7.6 Board and firm characteristics five years after listing by industry groups 1994-1999

		Five years after IPO		Changes in board structures after IPO				Firm characteristics at IPO			
ASX Sector	**Sample size**	**Average no. of indep directors**	**Average board size**	**No. of firms increase board size**	**No. of firms decrease board size**	**No. of firms increase % of indep directors**	**No. of firms decrease % of indep directors**	**Average operating history**	**Median operating history**	**Average firm size ($m)**	**Median firm size ($m)**
01 Gold	24	1.9	4.0	8	6	20	2	2.4	1.0	1.8	0.5
02 Other Metals	19	2.2	4.6	8	5	12	7	4.2	1.0	5.4	1.3
03 Diversified Resources	2	1.5	4.0	0	1	1	0	7.5	7.5	8.2	8.2
04 Energy	16	2.4	4.4	4	7	12	4	3.8	2.5	5.4	0.8
05 Infrastructure & Utilities	3	3.0	5.7	2	1	2	1	2.7	1.0	3.3	1.8
06 Developers & Contractors	7	2.9	6.1	4	1	5	1	11.7	7.0	101.5	34.8
07 Building Materials	2	4.5	7.0	1	1	2	0	16.0	16.0	NA	NA
08 Alcohol & Tobacco	2	3.0	5.0	0	1	2	0	6.5	6.5	27.9	27.9
09 Food & Household Goods	3	2.0	4.3	0	1	1	1	4.0	0.0	11.4	11.4
10 Chemicals	1	2.0	6.0	1	0	1	0	34.0	34.0	61.7	61.7
11 Engineering	4	2.3	5.3	1	2	3	1	6.0	5.0	34.6	12.9
12 Paper & Packaging	1	0.0	4.0	0	0	0	0	4.0	4.0	NA	NA
13 Retail	16	2.7	5.8	4	8	12	3	9.3	5.0	117.0	17.3
14 Transport	4	3.8	7.0	0	2	2	0	19.8	1.5	2881.1	215.1
15 Media	16	2.4	5.8	7	7	8	7	5.4	1.0	74.8	3.3
16 Banks & Finance	2	4.5	10.0	1	0	2	0	8.0	8.0	5056.5	5056.5
17 Insurance	0										
18 Telecommunications	25	2.4	5.0	7	12	16	7	8.3	2.0	1241.5	3.0
19 Invest & Financial Services	17	2.2	4.9	5	5	14	2	4.1	1.0	37.7	7.7
20 Property Trusts	0										
21 Healthcare & Biotech	23	2.7	5.3	7	6	14	4	5.8	4.0	49.8	3.8
22 Miscellaneous Industries	66	2.0	4.9	20	19	36	18	7.2	2.0	11.6	7.4
23 Diversified Industrials	0										
24 Tourism & Leisure	10	3.7	6.2	6	2	7	1.0	3.9	3.0	61.6	31.3
Average or Total	**263**	**2.4**	**5.1**	**86**	**87**	**172**	**59**	**6.4**	**2.0**	**231.0**	**4.7**

Board size is measured by the total number of directors on the board. **Indep director** is a director who is not a current or past employee of the corporation, does not have substantial business or family ties with management, nor does he/she have potential business ties with the firm. **Operating history** is measured by the number of years the IPO firm has been incorporated prior to the IPO. **Firm size** is measured by the total assets an issuing firm has immediately prior to the IPO. **NA** means the information is not available in the prospectuses.

7.3 Comparison between board structures of surviving and delisted sample IPO firms

To test if poor governed firms are more likely to fail, in this section we analyse the board structures of IPO firms that are delisted within five years after listing and compare them against those that have survived. The board information of delisted sample firms at their last listing year was mostly downloaded from the DatAnalysis online database. However, as the DatAnalysis provides directors' information only from November 2001 onwards, for sample firms that were delisted earlier on, their board information was hand-collected from their last available annual reports. Because directors' profiles are less complete for delisted firms, a cruder definition is used for measuring the independence of directors. Directors are classified into two categories only, non-executive and executive directors, depending on whether the director is currently a full-time employee of the firm.

Table 7.7 presents the descriptive statistics and univariate tests of delisted IPO firms' board structures at the time of IPO and five years later. The results from Wilcoxon Signed Ranks Test show that there are no significant changes in board structures, including board size and the percentage of executive and non-executive directors on the board, since the IPO.

Table 7.7 Descriptive statistics and univariate tests of changes in board structures after listing for sample firms that were delisted within five years after listing

Variables		At IPO			Post-IPO^			Wilcoxon Signed Ranks Test	
	N	Mean	Median	SD	Mean	Median	SD	Z	Asymp. Sig.
Board Size	48	5.480	5.000	1.458	5.440	5.000	2.113	-0.256	0.798
% of Non-exe Dir	48	0.644	0.600	0.180	0.670	0.732	0.232	0.800	0.424
% of Exe Dir	48	0.359	0.400	0.359	0.324	0.250	0.233	-1.103	0.270

^ The statistics for post-IPO is reported as at the last year of listing. **Board Size** is measured by the total number of directors on the board. **% of Non-exe Dir** measures the percentage of non-executive directors on the board who are not full-time employees of the firm. **% of Exe Dir** measures the percentage of executive directors on the board.

To test if there are significant differences between the board structures of surviving and delisted IPO firms at the time of IPO and after listing, Wilcoxon Rank-Sum Test for two independent samples is used. Table 7.8 shows that the board structures of surviving and delisted IPO firms are not significantly different except for the board size at the time of IPO, which is significant at the 5% level. Delisted firms have a slightly larger board than surviving firms on average; the former has an average board size of 5.5 while the later has an average board size of 5.1. The results suggest that IPO firms' board characteristics cannot be used to predict or explain whether an IPO firm will become delisted or not since there are no significant differences in the board structures of surviving and delisted IPO firms.

Table 7.8 Univariate tests of differences in board structures between surviving and delisted firms at the time of IPO and after listing

Statistics	N	At IPO			Post-IPO^		
		Board Size	**% of Non-exe Dir**	**% of Exe Dir**	**Board Size**	**% of Non-exe Dir**	**% of Exe Dir**
Surviving firms	263						
Mean		5.100	0.615	0.384	5.080	0.669	0.326
Median		5.000	0.600	0.400	5.000	0.667	0.333
Delisted firms	48						
Mean		5.479	0.644	0.360	5.438	0.671	0.325
Median		5.000	0.600	0.400	5.000	0.732	0.250
Sample differences							
Wilcoxon Z		-2.089	-0.756	0.688	-0.943	-0.523	0.599
Asymp. Sig.		(0.037) **	(0.450)	(0.491)	(0.346)	(0.601)	(0.549)

^ For surviving firms, the statistics for post-IPO is reported as at five years after listing; as for delisted firms, the statistics for post-IPO is reported as at the last year of listing. **Board Size** is measured by the total number of directors on the board. **% of Non-exe Dir** measures the percentage of non-executive directors on the board who are not full-time employees of the firm. **% of Exe Dir** measures the percentage of executive directors on the board. Sample differences are tested using Wilcoxon Rank-Sum Test for any significant differences in median values. ** Significant at 5% level (2-tailed).

7.4 Test of post-IPO long-run performance and changes in board structures

In this section, we examine our final research question: whether changes in board structures after the IPO are related to post-IPO long-run performance. IPO firms are documented to experience a negative drift in long-run returns. Thus, we test if IPO firms that become better governed after listing (i.e., move towards the best practice recommendations) are associated with less underperformance in the long-run.

Earlier in the chapter, univariate analyses of how board structures five years after the IPO differ from that at the time of IPO were presented. The following briefly summarises the main findings:

- ***Board size***. More than half of the IPO firms (65.8%) document a change in board size after listing for five years; about half of these firms (i.e., 33%) show an increase and half show a decrease in board size. The average and median board size has remained the same at five members.
- ***Board leadership***. A majority of IPO firms (83%) are found to retain the leadership structure they had at the time of IPO, with the remaining 10% of the firms documenting a change to unitary leadership and 8% change to dual leadership after listing for five years.
- ***Board composition***. Most IPO firms (65.4% of firms) show an increase in the proportion of independent directors on the board five years after the IPO. The average proportion of independent directors has increased from 33% at time of IPO to 45% five years later.
- ***Director ownership***. Just over half of the IPO firms (57%) document a decrease in director ownership five years after the initial listing. The average director share ownership decreases from 26% at the time of IPO to 22% five years later.

To examine the impact of changes in board structures from the time of IPO to five years later on post-IPO long-run performance, the following model is tested:

$$LRRETURN_{it} = \beta_0 + \beta_1.CH\_BSIZE_{it} + \beta_2.CH\_LEADER\_U_{it} + \beta_3.CH\_LEADER\_D_{it} + \beta_4.CH\_INDEPDIR_{it} + \beta_5.CH\_DIROWN_{it} + \beta_6.UPRICE_{it} + \beta_7.OPHIST_{it} + \beta_8.LnFSIZE_{it} + \beta_9.LnOFFER_{it} + \beta_{10}.TDELAY_{it} + \beta_{11}.TECH_{it} + \varepsilon_{it}$$

Variable	**Definition**
LRRETURN	The long-run performance of IPOs is measured by the decile (or market) adjusted buy-and-hold returns over the five year post-IPO period, excluding the initial return period
CH_BSIZE	Change in board size is measured by subtracting board size at the time of IPO from the board size five years later
CH_LEADER_U	1 if the leadership structure changes from dual leadership at the time of IPO to unitary leadership five years later, and 0 otherwise
CH_LEADER_D	1 if the leadership structure changes from unitary leadership at the time of IPO to dual leadership five years later, and 0 otherwise
CH_INDEPDIR	Change in the proportion of independent directors is measured by subtracting the proportion of independent directors on the board at the time of IPO from the proportion of independent directors five years thereafter
CH_DIROWN	Change in director ownership is measured by subtracting director ownership at the time of IPO from the director ownership five years thereafter
UPRICE	The market adjusted initial return is measured by raw initial return adjusted for return to the ASX All Ordinaries Accumulation Index
OPHIST	Number of years the IPO firm has been incorporated prior to the IPO
LnFSIZE	Natural log of total assets that an issuing firm has immediately prior to the IPO
LnOFFER	Natural log of the product of offer price and total number of shares offered in the prospectus
TDELAY	Number of days between the date the prospectus was lodged with ASX and the listing date
TECH	1 if the IPO firm belongs to one of the high-tech industries, including network operator (ASX sector 181), cables (sector 182), equipment & services (sector 183), other telecommunications (sector 184), pharmaceuticals (sector 211), biotechnology (sector 212), computer & office services (sector 226), and high technology (sector 228), and 0 otherwise

Apart from the test variables of interest (i.e., changes in the proportion of independent directors and changes in board size) and two additional control variables, changes in board leadership and changes in director ownership, the model outlined above includes the same control variables as in Table 6.6. As discussed in the chapter on hypothesis development, if “better” governed firms are associated with lower agency costs and higher firm value, we would expect the long-run performance to be higher for these firms. In this thesis, the proxies we use for better governance are: a higher proportion

of independent directors on the board, larger board size, dual leadership, and higher director ownership.

The correlations matrix of the major variables considered are reported in Table 7.9. The upper triangular half of the table is the Pearson correlations while the lower triangular half of the table reports Spearman rank order correlations. The Pearson correlations show that decile adjusted returns are positively and significantly related with changes in board size, firm size and offer size while significantly negatively associated with time delay.

Multivariate regression results are presented in Table 7.10. Panel A uses decile adjusted returns over a five-year holding period as the dependent variable while Panel B uses market adjusted returns over the same holding period as the dependent variable. Panel A shows that the long-run performance model explains 8 per cent to 9 per cent of the variability in decile adjusted returns. The first four models show that the variable, change in board size, is positive and significant at the 1% level, providing strong support for the hypothesis that firms that increase their board size after listing perform better in the long-run. The dummy variable, Ch_Leader_D, is negative and significant at the 10% level, suggesting that firms that do not change to dual leadership in the aftermarket is associated with better long-run performance.

Moreover, consistent with expectation, both time delay and the tech industry dummy are found to be significantly negatively associated with decile adjusted returns over the five-year holding period. A shorter time delay between the prospectus date and listing date implies a greater degree of informed demand. Thus, the fact that a short time delay is associated with better post-IPO long-run performance suggests that informed investors are able to distinguish between good and bad issues and subscribe (mostly) to

good issues. Further, the significant negative relationship found between tech industry dummy and long-run performance suggests that firms in the high-tech industries tend to perform more poorly in the long-run.

Panel B shows the multivariate regression results of changes in board structures and IPO firm characteristics on market adjusted returns over a five-year holding period. The adjusted R-squared are lower when explanatory variables are regressed on market adjusted returns than on decile adjusted returns. The model explains 3 to 4 per cent of the variation in market adjusted returns over the event-window [+1,+60], defined in months relative to the listing month. Only two variables are significant in explaining market adjusted returns and they are change to dual leadership dummy variable and the time delay variable. Consistent with the results found in Panel A, both are negatively associated with long-run returns, suggesting that firms that change to dual leadership after listing and firms that have long time delay between the prospectus date and the listing date perform more poorly in the long-run.

In short summary, a move to dual leadership and the time delay between prospectus date and listing date have consistently been found to be significantly negatively associated with long-run returns across models and performance measures. The former result is contrary to our expectation and the best practice recommendations for a more independent board. In fact, more executive control is found to be related with better long-run performance. Further, we find some supporting evidence that IPO firms that increase their board size in the aftermarket perform better in the long-run and that high-tech firms have poorer long-run performance.

Table 7.9 Descriptive statistics and correlations for post-IPO long-run performance and board changes regression variables

N=143	Mean	Median	Min	Max	SD	1		2		3		4		5	6		7		8		9		10	
1. EqDec5	-0.20	-0.56	-1.73	6.08	1.19	1.00		0.81	***	-0.03		.260	***	0.01	0.05		0.04		0.16	*	-0.26	***	0.16	*
								(0.00)		(0.74)		(0.00)		(0.95)	(0.57)		(0.68)		(0.06)		(0.00)		(0.06)	
2. EMktR5	-0.11	-0.58	-1.33	9.54	1.46	**0.75**	***	1.00		-0.06		.198	**	0.02	0.13		0.05		0.09		-0.20	**	0.10	
						(0.00)				(0.49)		(0.02)		(0.86)	(0.12)		(0.57)		(0.28)		(0.02)		(0.26)	
3. Uprice	0.15	0.02	-0.74	3.63	0.61	**0.01**		**-0.03**		1.00		0.03		-0.01	0.01		-0.05		-0.07		0.12		-0.21	**
						(0.88)		**(0.70)**				(0.70)		(0.87)	(0.93)		(0.58)		(0.39)		(0.17)		(0.01)	
4. Ch_BSize	0.13	0.00	-5.00	4.00	1.54	**0.27**	***	**0.18**	**	**0.12**		1.00		0.09	0.16	*	0.05		0.06		-0.14	*	0.06	
						(0.00)		**(0.04)**		**(0.15)**				(0.28)	(0.06)		(0.55)		(0.49)		(0.10)		(0.48)	
5. Ch_IndepDir	0.14	0.13	-0.67	0.80	0.27	**0.01**		**0.04**		**-0.01**		**0.11**		1.00	0.13		-0.07		-0.07		0.04		-0.05	
						(0.87)		**(0.62)**		**(0.91)**		**(0.21)**			(0.13)		(0.39)		(0.44)		(0.63)		(0.54)	
6. Ch_DirOwn	-0.03	-0.02	-0.72	0.65	0.24	**0.12**		**0.23**	***	**0.05**		**0.10**		**0.04**	1.00		0.07		-0.02		-0.08		0.07	
						(0.14)		**(0.01)**		**(0.58)**		**(0.23)**		**(0.63)**			(0.44)		(0.82)		(0.37)		(0.42)	
7. OpHist	7.05	2.00	0.00	96.00	12.95	**0.05**		**0.14**	*	**0.04**		**0.06**		**-0.06**	**0.08**		1.00		0.46	***	-0.10		0.54	***
						(0.54)		**(0.09)**		**(0.63)**		**(0.51)**		**(0.47)**	**(0.37)**				(0.00)		(0.23)		(0.00)	
8. LnFSize	15.18	15.52	1.10	23.98	3.21	**0.17**	**	**0.21**	**	**0.09**		**0.04**		**-0.08**	**0.03**		**0.42**	***	1.00		-0.27	***	0.60	***
						(0.04)		**(0.01)**		**(0.27)**		**(0.66)**		**(0.37)**	**(0.76)**		**(0.00)**				(0.00)		(0.00)	
8. TDelay	61.87	55.00	27.00	186.00	26.94	**-0.34**	***	**-0.31**	***	**-0.11**		**-0.30**	***	**0.04**	**-0.10**		**-0.17**	**	**-0.35**	***	1.00		-0.32	***
						(0.00)		**(0.00)**		**(0.21)**		**(0.00)**		**(0.61)**	**(0.23)**		**(0.05)**		**(0.00)**				(0.00)	
9. LnOffer	16.22	15.82	13.82	23.37	1.52	**0.23**	***	**0.25**	***	**-0.11**		**0.08**		**-0.08**	**0.12**		**0.32**	***	**0.57**	***	**-0.39**	***	1.00	
						(0.01)		**(0.00)**		**(0.18)**		**(0.35)**		**(0.34)**	**(0.16)**		**(0.00)**		**(0.00)**		**(0.00)**			

*** Correlation is significant at the 1% level (2-tailed). ** Correlation is significant at the 5% level (2-tailed). * Correlation is significant at the 10% level (2-tailed). Numbers in parentheses are the p-values. Pearson correlations for the upper triangular half of the table and Spearman rank order correlations for the lower triangular half of the table. **EqDec5** is the (equal-weighted) decile adjusted returns over the event-window [+1,+60], defined in months relative to the listing month. **EMktR5** is the (equal-weighted) market adjusted returns where the market portfolio includes all firms that have the share price available for calculating BHRs over the event-window [+1,+60]. **Uprice** is the IPO underpricing measured by market adjusted initial returns; that is, the raw initial returns adjusted for returns to the ASX All Ordinaries Accumulation Index. **Ch_BSize** is the change in the number of directors on the board from the time of listing to five years later. **Ch_IndepDir** measures the change in the percentage of independent directors on the board from the time of listing to five years later. **Ch_DirOwn** is the change in the proportion of shares (excluding options) held directly, indirectly, or beneficially by directors and/or director-related entities from the time of listing to five years later. **OpHist** is measured by the number of years the IPO firm has been incorporated prior to the IPO. **LnFSize** is the natural logarithm of total assets that an issuing firm has immediately prior to the IPO. **TDelay** measures the number of days from the date the prospectus was lodged with ASX to the listing date. **LnOffer** is measured by the natural log of the product of offer price and total number of shares offered in the prospectus.

Table 7.10 Pooled OLS regression of changes in board structures and IPO firm characteristics on post-IPO long-run performance

[+1,+60]		Panel A: Dependent variable: Decile adjusted returns								Panel B: Dependent variable: Market adjusted returns							
Variable	**Exp sign**	**1**		**2**		**3**		**4**		**5**		**6**		**7**		**8**	
Ch_BSize	+	0.177	***	0.176	***	0.177	***	0.176	***	0.163		0.163		0.163		0.163	
		(2.905)		(2.898)		(2.925)		(2.916)		(1.570)		(1.577)		(1.569)		(1.578)	
Ch_Leader_U		0.072		0.074		0.065		0.067		-0.299		-0.298		-0.303		-0.303	
		(0.326)		(0.335)		(0.297)		0.306		(-1.194)		(-1.194)		(-1.223)		(-1.224)	
Ch_Leader_D		-0.367	*	-0.365	*	-0.369	*	-0.367	*	-0.757	***	-0.757	***	-0.758	***	-0.759	***
		(-1.744)		(-1.748)		(-1.769)		(-1.768)		(-2.786)		(-2.793)		(-2.781)		(-2.786)	
Ch_IndepDir	+	0.011		0.020		0.006		0.013		0.091		0.092		0.088		0.087	
		(0.042)		(0.075)		(0.022)		(0.048)		(0.275)		(0.281)		(0.269)		(0.270)	
Ch_DirOwn	+	-0.154		-0.172		-0.187		-0.196		0.545		0.543		0.524		0.525	
		(-0.349)		(-0.395)		(-0.432)		(-0.455)		(1.003)		(1.014)		(0.972)		(0.984)	
Uprice	–	0.088		0.086		0.096		0.094		-0.057		-0.057		-0.052		-0.051	
		(0.762)		(0.749)		(0.858)		(0.842)		(-0.374)		(-0.378)		(-0.332)		(-0.332)	
OpHist	+	-0.004				-0.003				-0.001				0.000			
		(-0.607)				(-0.437)				(-0.064)				(0.054)			
LnFSize	+	0.026		0.022						0.016		0.016					
		(1.140)		(1.055)						(0.435)		(0.454)					
LnOffer	+	0.039		0.024		0.063		0.049		-0.011		-0.012		0.005		0.006	
		(0.444)		(0.323)		(0.698)		(0.710)		(-0.118)		(-0.152)		(0.049)		(0.082)	
TDelay	–	-0.009	***	-0.009	***	-0.009	***	-0.009	***	-0.009	***	-0.009	***	-0.009	***	-0.009	***
		(-3.588)		(-3.722)		(-3.670)		(-3.748)		(-2.804)		(-2.788)		(-2.803)		(-2.782)	
Tech	–	-0.381	**	-0.399	**	-0.404	**	-0.414	***	0.141		0.139		0.127		0.128	
		(-2.392)		(-2.559)		(-2.588)		(-2.678)		(0.501)		(0.491)		(0.440)		(0.444)	
Constant		-0.601		-0.302		-0.580		-0.370		0.411		0.446		0.424		0.396	
		(-0.409)		(-0.258)		(-0.396)		(-0.316)		(0.264)		(0.327)		(0.274)		(0.288)	
N=143																	
Adj R^2		0.082		0.088		0.086		0.092		0.027		0.034		0.033		0.041	
F-stat		2.159	**	2.364	**	2.337	**	2.602	***	1.355		1.501		1.489		1.667	

Dependent variables are (equal-weighted) decile adjusted returns and market adjusted returns over the event-window [+1,+60] for Panel A and B, respectively. **Ch_BSize** is the change in board size from the time of listing to 5 years later. **Ch_Leader_U** is coded as 1 if leadership structure changes from dual leadership at the time of listing to unitary leadership 5 years later, and 0 otherwise. **Ch_Leader_D** is coded as 1 if leadership structure changes from unitary leadership at the time of listing to dual leadership 5 years later, and 0 otherwise. **Ch_IndepDir** measures the change in the percentage of independent directors on the board from the time of listing to 5 years later. **Ch_DirOwn** is the change in director ownership from the time of listing to 5 years later. **Uprice** is measured by market adjusted initial returns. **OpHist** measures the number of years the IPO firm has been incorporated prior to the IPO. **LnFSize** is the natural log of total assets immediately prior to the IPO. **LnOffer** is natural log of the product of offer price and total number of shares offered in the prospectus. **TDelay** measures the number of days from the prospectus date to the listing date. **Tech** is coded as 1 if the IPO firm belongs to high-tech industries and 0 otherwise. The final sample excludes 3 firms whose average adjusted returns are greater than 3 standard deviation from the mean. Note also that this analysis is based a sample of IPOs over the period 1994 - Nov 1998 due to the unavailability of share price data for firms listed in and after Dec 1998. *** Significant at 1% level. ** Significant at 5% level. * Significant at 10% level. Numbers in parentheses are the *t*-statistics. The analysis uses heteroscedasticity-consistent covariance matrix.

7.5 Summary

The analysis of how board structures changed from the time of listing to five years later showed that most IPO firms retained the leadership structure they had at the time of IPO, with most firms still preferring the dual leadership structure. The evidence thus showed that both at the time of listing and afterwards, the majority of IPO firms conformed to ASX's recommendation on having a non-executive chairman. Additionally, although more than half of the IPO firms documented a change in board size, the average board size remained at five after listing, the same as the average size at the time of IPO. Thus, IPO firms' average board size was still one person short of that implied in the best practice recommendations of six directors. In terms of board composition, 65% of IPO firms showed an increase in the proportion of independent directors on the board after listing. This suggested that more firms conformed to best practice recommendations five years after listing, though there was still a significant number of firms that showed deviations from the recommendations.

A comparison of surviving and delisted IPO firms showed no significant differences in the board structures of these two groups of firms, suggesting that board structures were not likely to be the reason that contributed to the delisting. Finally, the multivariate analyses provided some supporting evidence for hypothesis H10; that is, IPO firms that later increased the size of the board performed better in the long-run. However, no significant evidence was found for hypothesis H9 on the relationship between changes in board composition and post-IPO long-run performance.

Chapter 8

Summary and Conclusions

A wave of financial scandals that broke out in the US in 2001-2002, including Enron and WorldCom, has refocused our attention to corporate governance. Boards of directors that perform the critical roles of monitoring and advising top management, in particular, become one of the central governance reform agenda. The directors are elected by shareholders to safeguard their wealth. Their duty includes not only reviewing the company's proposed plans and initiatives but also selecting and, if necessary, dismissing the firm's managers.

In 2003, the Australian Stock Exchange released new corporate governance guidelines, which include a highly detailed model of board structure and composition that is ostensibly "best practice". Companies that choose not to follow the model face the consequences of investors perceiving them to be of higher risk, notwithstanding the explanation provided by the companies for their non-conformance. The purpose of this research was to assess the practicality and conformity of the recommendations by a sample of Australian IPO firms between 1994 and 1999, a period that arguably was relatively unregulated. In order to maximise the intrinsic value of initial shareholders' investment in the firm, the process of going public is likely to foster issuers to adopt an "optimal" board structure. Thus, in this thesis, we compared the board structures of IPO firms with the ASX best practice recommendations on board structures to assess if the so-called "best practice" was similarly shared by investors who were at the best position in assessing the appropriateness of the guidelines. Since better governed boards, proxied by higher proportions of independent directors, larger boards, dual leadership, and higher director ownership, were argued to lead to better firm outcomes,

we also examined if conformity with the recommendations were associated with better outcomes, including lower IPO underpricing, better long-run aftermarket performance, and higher likelihood of a subsequent equity offering. Further, we analysed the changes in board structures after listing to see if there was a shift towards the recommended best practice and if the changes were related to long-run performance.

Our analyses suggest that small IPO companies with relatively short operating history have board characteristics that diverge substantially from ASX's recommendations, notwithstanding their strong incentives to adopt corporate governance measures that maximise their appeal to investors. These companies comprise the majority of firms undertaking IPOs and their characteristics are shared by more than a third of actively trading ASX companies. Further, we find that significant departures from best practice recommendations persist even after listing for five years, with just about half of the sample firms having a board dominated by independent directors. Thus, our findings lend support to the view that the ASX recommendations on corporate governance are excessively prescriptive and unduly costly for small companies in particular. The ASX is no less likely to achieve the expected benefits from adoption of its recommendations, but will substantially reduce companies' compliance costs in aggregate, if it allowed a blanket exemption based on firm size.

The study by Coles, Daniel and Naveen (2005) similarly challenges the listing requirements by the stock exchange, mandates from institutional investors and law restrictions that based on the conventional wisdom suggest firms to have a majority of outside directors on the board. Coles et al. (2005) find that when firm-specific knowledge of insiders is relatively important, firms that are, for example, more R&D intensive, can benefit from having greater insider representations on the board. McConnell (2003), along the same lines, urges caution in requiring companies to

comply with the same model of board composition.

The following then summarises our findings from multivariate analyses:

1. Contrary to the expectation that better governed firms should have less underpricing, IPO firms' board structures, including board size, board leadership, board composition and director ownership, at the time of listing are found to have no significant relationship with the level of IPO underpricing.
2. Larger board size is associated with better post-IPO long-run performance, consistent with the resource dependence theory. However, other board governance variables, including board leadership, board composition and director ownership, have no impact on long-run aftermarket performance.
3. Smaller firms, with smaller boards, at the time of IPO are more likely to reissue equity after listing. There is also weak evidence that lower proportions of independent directors are associated with a higher likelihood of a SEO. Both results are inconsistent with expectation, suggesting that the market may not consider smaller boards and less independent boards as associated with poor governance since firms with these structures are able to successfully convince investors to put up more funds in the firms. A potential area for future research is to explore if initial board structures are related to the sharemarket performance at the first SEO announcement; in particular, whether smaller boards and lower proportions of independent directors at the time of IPO can explain the negative sharemarket reaction to a SEO announcement that has been widely documented.
4. There is some evidence that IPO firms that increase their board size after listing perform better in the long-run. However, contrary to expectation, firms that change their leadership structures to have an executive chairman after listing perform better in the long-run. Further, neither changes in board composition or director ownership are found to be related to post-IPO long-run performance.

Overall, we find that board governance lack significant explanatory power for IPO firm outcomes. Thus, despite the strong emphasis placed by best practice recommendations on board independence, our findings lead us to question if the new corporate governance guidelines have any bearing or real effect on improving firm performance.

Moreover, the findings from this research cast doubts on the signalling or the certification role played by the boards of directors at the time of IPO. Apart from the reported relationship between board size and post-IPO long-run performance, initial board characteristics have no explanatory power for IPO performance. In other words, our study based on a sample of IPO firms finds only a weak relationship between board structure and firm performance, which previous studies also struggle to find. Thus, even though Jensen (1993, p. 862) argues that there is an implicit relationship between boards of directors and firm performance because "(t)he board, at the apex of the internal control system, has the final responsibility for the functioning of the firm", the bulk of research over several decades on the link between board structures and firm performance shows that the precise relationship remains inconclusive (Dalton & Daily, 1999).

Furthermore, a recent study by Chemmanur and Paeglis (2005) documents that higher management quality and reputation are associated with lower underpricing. Thus, it may be the quality of managers rather than the structure of the board that certifies firm quality at the time of the IPO. As the study by Chemmanur and Paeglis (2005) is based a sample of US IPO firms and does not incorporate measures for board structures in the IPO underpricing regression, future research can examine if the same conclusions can be reached using Australian IPOs as the sample. Chemmanur and Paeglis (2005)

suggest that higher management quality and reputation is associated with higher credibility in conveying firms' intrinsic value to outside investors and can reduce the information asymmetry between the firm and the market. Thus, we could hypothesise that the quality of managers may be negatively related with the level of IPO underpricing. That is, IPO firms with higher management quality would experience less underpricing. This is however, left for a future study.

References

Aggarwal, R., Leal, R.P.C., Hernandez, L., 1993. The aftermarket performance of initial public offerings in Latin America. Financial Management 22, 42-53

Aggarwal, R., Rivoli, P., 1990. Fads in the initial public offering market? Financial Management 19, 45-67

Aggarwal, R.K., Krigman, L., Womack, K.L., 2002. Strategic IPO underpricing, information momentum, and lockup expiration selling. Journal of Financial Economics 66, 105-137

Agrawal, A., Knoeber, C.R., 1996. Firm performance and mechanisms to control agency problems between managers and shareholders. Journal of Financial and Quantitative Analysis 31, 377-397

Allen, F., Faulhaber, G.R., 1989. Signalling by underpricing in the IPO market. Journal of Financial Economics 23, 303-323

Anderson, C.A., Anthony, R.N., 1986. The new corporate directors: Insights for board members and executives. Wiley, New York.

Arthur, N., 2001. Board composition as the outcome of an internal bargaining process: Empirical evidence. Journal of Corporate Finance 7, 307-340

ASX, 1997. Fact book 1997: Statistics to 31 December 1996. Australian Stock Exchange.

ASX, 2002. Fact file 2002: Statistics to 31 December 2001. URL http://www.asx.com.au/shareholder/pdf/factfile2002.pdf

ASX, 2003. Principles of Good Corporate Governance and Best Practice Recommendations. URL http://www.asx.com.au/corporategovernance

Baker, M., Gompers, P.A., 2003. The determinants of board structure at the initial public offering. Journal of Law and Economics 46, 569-598

Balatbat, M.C., Taylor, S.L., Walter, T.S., 2004. Corporate governance, insider ownership and operating performance of Australian initial public offerings. Accounting and Finance 44, 299-328

Baliga, B.R., Moyer, R.C., Rao, R.S., 1996. CEO duality and firm performance: What's the fuss? Strategic Management Journal 17, 41-53

Barber, B.M., Lyon, J.D., 1997. Detecting long-run abnormal stock returns: The empirical power and specification of test statistics. Journal of Financial Economics 43, 341-372

Barnhart, S.W., Rosenstein, S., 1998. Board composition, managerial ownership, and firm performance: An empirical analysis. Financial Review 33, 1-16

Bathala, C.T., Rao, R.P., 1995. The determinants of board composition: An agency theory perspective. Managerial and Decision Economics 16, 59-69

Baysinger, B.D., Butler, H.N., 1985. Corporate governance and the board of directors: Performance effects of changes in board composition. Journal of Law, Economics and Organization 1, 101-124

Bazerman, M.H., Schoorman, F.D., 1983. A limited rationality model of interlocking directorates. Academy of Management Review 8, 206-217

Beatty, R.P., Ritter, J.R., 1986. Investment banking, reputation, and the underpricing of initial public offerings. Journal of Financial Economics 15, 213-232

Beiner, S., Drobetz, W., Schmid, F., Zimmermann, H., 2004. Is board size an independent corporate governance mechanism? Kyklos 57, 327-356

Berg, S.V., Smith, S.K., 1978. CEO and board chairman: A quantitative study of dual vs. unitary board leadership. Directors and Boards 3, 34-39

Bhabra, H.S., Pettway, R.H., 2003. IPO prospectus information and subsequent performance. Financial Review 38, 369-397

Bhagat, S., Black, B., 1999. The uncertain relationship between board composition and firm performance. Business Lawyer 54, 921-963

Bhagat, S., Black, B., 2002. The non-correlation between board independence and long-term firm performance. Journal of Corporation Law 27, 231-273

Bhagat, S., Carey, D.C., Elson, C.M., 1999. Director ownership, corporate performance, and management turnover. Business Lawyer 54, 885-919

Boone, A.L.R., Field, L.B.C., Karpoff, J.M., Raheja, C.G., 2004. The determinants of corporate board size and composition: An empirical analysis. URL http://ssrn.com/abstract=605762

Booth, J.R., Chua, L., 1996. Ownership dispersion, costly information, and IPO underpricing. Journal of Financial Economics 41, 291-310

Booth, J.R., Smith, I., Richard L., 1986. Capital raising, underwriting and the certification hypothesis. Journal of Financial Economics 15, 261-281

Bourgeois, L.J., 1987. Strategic management: From concept to implementation. In: Germane GE (ed.) The Executive Course. Addison-Wesley, Reading, MA, pp. 347-391.

Bradley, D.J., Jordan, B.D., Yi, H.-C., Roten, I.C., 2001. Venture capital and IPO lockup expiration: An empirical analysis. Journal of Financial Research 24, 465-492

Brav, A., 2000. Inference in long-horizon event studies: A Bayesian approach with application to initial public offerings. Journal of Finance 55, 1979-2016

Brav, A., Geczy, C., Gompers, P.A., 2000. Is the abnormal return following equity issuances anomalous? Journal of Financial Economics 56, 209-249

Brav, A., Gompers, P.A., 1997. Myth or reality? The long-run underperformance of initial public offerings: Evidence from venture and nonventure capital-backed companies. Journal of Finance 52, 1791-1821

Brav, A., Gompers, P.A., 2003. The role of lockups in initial public offerings. Review of Financial Studies 16, 1-29

Brennan, M.J., Franks, J., 1997. Underpricing, ownership and control in initial public offerings of equity securities in the UK. Journal of Financial Economics 45,

391-413

Brickley, J.A., Coles, J.L., Jarrell, G.A., 1997. Leadership structure: Separating the CEO and chairman of the board. Journal of Corporate Finance 3, 189-220

Brown, E., 1999. Long-run performance analysis of a new sample of UK IPOs. Working Paper, University of Edinburgh.

Brown, P., da Silva Rosa, R., 1998. Research method and the long-run performance of acquiring firms. Australian Journal of Management 23, 23-38

Brown, S.J., Warner, J.B., 1980. Measuring security price performance. Journal of Financial Economics 8, 205-258

Buffini, F., 2003a (16 June 2003). ASX board rule may be relaxed. In: Australian Financial Review

Buffini, F., 2003b (6 June 2003). Directors may "choke" on governance - Mansfield. In: Australian Financial Review

Burt, R.S., 1980. Cooptive corporate actor networks: A reconsideration of interlocking directorates involving American manufacturing. Administrative Science Quarterly 25, 557-581

Burton, B., Helliar, C., Power, D., 2004. The role of corporate governance in the IPO process: A note. Corporate Governance: An International Review 12, 353-360

Cameron, A., 2003. Independence - all those in favour? In: CCH *"Across the Board"* Newsletter

Carter, R.B., Dark, F.H., Singh, A.K., 1998. Underwriter reputation, initial returns, and the long-run performance of IPO stocks. Journal of Finance 53, 285-311

Certo, S.T., Covin, J.G., Daily, C.M., Dalton, D.R., 2001a. Wealth and the effects of founder management among IPO-stage new ventures. Strategic Management Journal 22, 641-658

Certo, S.T., Daily, C.M., Dalton, D.R., 2001b. Signaling firm value through board structure: An Investigation of initial public offerings. Entrepreneurship: Theory and Practice 26, 33-50

Chaganti, R.S., Mahajan, V., Sharma, S., 1985. Corporate board size, composition and corporate failures in retailing industry. Journal of Management Studies 22, 400-416

Chemmanur, T.J., Paeglis, I., 2005. Management quality, certification, and initial public offerings. Journal of Financial Economics 76, 331-368

Chen, C.-H., Shih, H.-T., 2001. Initial public offering and corporate governance in China's transitional economy. URL www.nber.org/books/ease12/chen-shih9-4-01.pdf

Ching, K., Firth, M., Rui, O.M., 2002. Earnings management, corporate governance and the market performance of seasoned equity offerings. URL http://ssrn.com/abstract=337880

Coles, J.L., Daniel, N.D., Naveen, L., 2005. Boards: Does one size fit all? URL

http://ssrn.com/abstract=665746

Conyon, M.J., Peck, S.I., 1998. Board size and corporate performance: Evidence from European countries. European Journal of Finance 4, 291-304

da Silva Rosa, R., Nguyen, T., Walter, T., 2004. Market returns to acquirers of substantial assets. Australian Journal of Management 29, 111-134

da Silva Rosa, R., Velayuthen, G., Walter, T., 2003. The sharemarket performance of Australian venture capital-backed and non-venture capital-backed IPOs. Pacific-Basin Finance Journal 11, 197-218

Daily, C.M., Dalton, D.R., 1993. Board of directors leadership and structure: Control and performance implications. Entrepreneurship Theory and Practice 17, 65-81

Daily, C.M., Dalton, D.R., 1997. CEO and board chair roles held jointly or separately: Much ado about nothing? Academy of Management Executive 11, 11-20

Dalton, D.R., Daily, C.M., 1999. What's wrong with having friends on the board? Across the Board 36, 28-32

Dalton, D.R., Daily, C.M., Ellstrand, A.E., Johnson, J.L., 1998. Meta-analytic reviews of board composition, leadership structure, and financial performance. Strategic Management Journal 19, 269-290

Denis, D.J., Sarin, A., 1999. Ownership and board structures in publicly traded corporations. Journal of Financial Economics 52, 187-223

Donaldson, L., Davis, J.H., 1991. Stewardship theory or agency theory: CEO governance and shareholder returns. Australian Journal of Management 16, 49-64

Donaldson, L., Davis, J.H., 1994. Boards and company performance: Research challenges the conventional wisdom. Corporate Governance 2, 151-160

Eckbo, B.E., Masulis, R.W., 1992. Adverse selection and the rights offer paradox. Journal of Financial Economics 32, 293-332

Eisenberg, T., Sundgren, S., Wells, M.T., 1998. Larger board size and decreasing firm value in small firms. Journal of Financial Economics 48, 35-54

Espenlaub, S., Gregory, A., Tonks, I., 2000. Re-assessing the long-term underperformance of UK Initial Public Offerings. European Financial Management 6, 319-342

Espenlaub, S., Tonks, I., 1998. Post-IPO directors' sales and reissuing activity: An empirical test of IPO signalling models. Journal of Business Finance and Accounting 25, 1037-1079

Ezzamel, M., Watson, R., 1993. Organizational form, ownership structure and corporate performance: A contextual empirical analysis of UK companies. British Journal of Management 4, 161-176

Fama, E.F., 1980. Agency problems and the theory of the firm. Journal of Political Economy 88, 288-307

Fama, E.F., 1998. Market efficiency, long-term returns, and behavioral finance. Journal

of Financial Economics 49, 283-306

Fama, E.F., Jensen, M.C., 1983. Separation of ownership and control. Journal of Law and Economics 26, 301-325

Farrell, K.A., Whidbee, D.A., 2000. The consequences of forced CEO succession for outside directors. Journal of Business 73, 597-627

Ferris, S.P., Jagannathan, M., Pritchard, A.C., 2002. Too busy to mind the business? Monitoring by directors with multiple board appointments. URL http://ssrn.com/abstract=167288

Feure, M., 1965. Handbook for corporate directors. Prentice-Hall, Englewood Cliffs, N.J.

Field, L.C., Hanka, G.R., 2001. The expiration of IPO share lockups. Journal of Finance 56, 471-500

Filatotchev, I., 2002. 'Going public with good governance': Board selection and share ownership in UK IPO firms. URL http://ssrn.com/abstract=311363

Filatotchev, I., Bishop, K., 2002. Board composition, share ownership, and underpricing of U.K. IPO firms. Strategic Management Journal 23, 941-955

Finkle, T.A., 1998. The relationship between boards of directors and initial public offerings in the biotechnology industry. Entrepreneurship Theory and Practice 22, 5-29

Finn, F.J., Higham, R., 1988. The performance of unseasoned new equity issues-cum-stock exchange listings in Australia. Journal of Banking and Finance 12, 333-351

Firstenberg, P.B., Malkiel, B.G., 1994. The twenty-first century boardroom: Who will be in charge? Sloan Management Review 36, 27-35

Firth, M., 1997. An analysis of the stock market performance of new issues in New Zealand. Pacific-Basin Finance Journal 5, 63-85

Fosberg, R.H., 1989. Outside directors and managerial monitoring. Akron Business and Economic Review 20, 24-32

Fosberg, R.H., 1999. Leadership structure and CEO compensation. American Business Review 17, 50-56

Fosberg, R.H., Nelson, M.R., 1999. Leadership structure and firm performance. International Review of Financial Analysis 8, 83-96

Gale, I., Stiglitz, J.E., 1989. The informational content of initial public offerings. Journal of Finance 44, 469-477

Garfinkel, J.A., 1993. IPO underpricing, insider selling and subsequent equity offerings: Is underpricing a signal of quality? Financial Management 22, 74-83

Gertner, R., Kaplan, S.N., 1996. The value-maximizing board. URL http://gsbwww.uchicago.edu/fac/steven.kaplan/research/gerkap.pdf

Gilson, S.C., 1990. Bankruptcy, boards, banks, and blockholders: Evidence on changes in corporate ownership and control when firms default. Journal of Financial

Economics 27, 355-387

Gompers, P.A., 1996. Grandstanding in the venture capital industry. Journal of Financial Economics 42, 133-156

Goodstein, J., Gautam, K., Boeker, W., 1994. The effects of board size and diversity on strategic change. Strategic Management Journal 15, 241-250

Goot, T.v.d., 1997. Valuing new issues: Information quality of initial public offerings at the Amsterdam Stock Exchange. Thesis Publishers, Amsterdam.

Grinblatt, M., Hwang, C.Y., 1989. Signalling and the pricing of new issues. Journal of Finance 44, 393-420

Harjoto, M., Garen, J., 2004. Inside ownership beyond the IPO: The evolution of corporate ownership concentration. Journal of Corporate Finance, In Press

Hensler, D.A., Rutherford, R.C., Springer, T.M., 1997. The survival of initial public offerings in the aftermarket. Journal of Financial Research 20, 93-110

Hermalin, B.E., Weisbach, M.S., 1988. The determinants of board composition. Rand Journal of Economics 19, 589

Hermalin, B.E., Weisbach, M.S., 1991. The effects of board composition and direct incentives on firm performance. Financial Management 20, 101-112

Hermalin, B.E., Weisbach, M.S., 2003. Boards of directors as an endogenously determined institution: A survey of the economic literature. Economic Policy Review - Federal Reserve Bank of New York 9, 7-26

Higgs, D., 2003. Review of the role and effectiveness of non-executive directors. URL http://www.dti.gov.uk/cld/non_exec_review/pdfs/higgsreport.pdf

Hoffmann-Burchardi, U., 2001. Clustering of initial public offerings, information revelation and underpricing. European Economic Review 45, 353-383

Horwath, 2002. Corporate governance report. Horwath (NSW) Pty Limited, Sydney, Australia.

How, J.C.Y., Izan, H.Y., Monroe, G.S., 1995. Differential information and the underpricing of initial public offerings: Australian evidence. Accounting and Finance 35, 87-105

Howton, S.D., Howton, S.W., Olson, G.T., 2001. Board ownership and IPO returns. Journal of Economics and Finance 25, 100-114

Ibbotson, R.G., 1975. Price performance of common stock new issues. Journal of Financial Economics 2, 235-272

Ikenberry, D., Lakonishok, J., Vermaelen, T., 1995. Market underreaction to open market share repurchases. Journal of Financial Economics 39, 181-208

Jain, B.A., 1995. The relationship between pricing of dealership services and the underpricing of initial public offerings. American Business Review 13, 22-29

Jain, B.A., Kini, O., 1994. The post-issue operating performance of IPO firms. Journal of Finance 49, 1699-1726

Jain, B.A., Kini, O., 1999. The life cycle of initial public offering firms. Journal of

Business Finance and Accounting 26, 1281-1307

James, C., 1992. Relationship-specific assets and the pricing of underwriter services. Journal of Finance 47, 1865-1885

Jegadeesh, N., 2000. Long-term performance of seasoned equity offerings: Benchmark errors and biases in expectations. Financial Management 29, 5-30

Jegadeesh, N., Weinstein, M., Welch, I., 1993. An empirical investigation of IPO returns and subsequent equity offerings. Journal of Financial Economics 34, 153-176

Jenkinson, T., Ljungqvist, A., 1996. Going public : The theory and evidence on how companies raise equity finance. Oxford University Press, New York.

Jensen, M.C., 1993. The modern industrial revolution, exit, and the failure of internal control systems. Journal of Finance 48, 831-880

Jensen, M.C., Meckling, W.H., 1976. Theory of the firm: Managerial behavior, agency costs and ownership structure. Journal of Financial Economics 3, 305-360

John, K., Senbet, L.W., 1998. Corporate governance and board effectiveness. Journal of Banking and Finance 22, 371-403

Kaplan, S.N., Reishus, D., 1990. Outside directorships and corporate performance. Journal of Financial Economics 27, 389-410

Keloharju, M., 1993. The winner's curse, legal liability, and the long-run price performance of initial public offerings in Finland. Journal of Financial Economics 34, 251-277

Keloharju, M., Kulp, K., 1996. Market-to-book ratios, equity retention, and management ownership in Finnish initial public offerings. Journal of Banking and Finance 20, 1583-1599

Kesner, I.F., 1987. Director's stock ownership and organizational performance: An investigation of Fortune 500 companies. Journal of Management 13, 499-508

Kesner, I.F., 1988. Directors' characteristics and committee membership: An investigation of type, occupation, tenure, and gender. Academy of Management Journal 31, 66-84

Kesner, I.F., Dalton, D.R., 1986. Boards of directors and the checks and (im)balances of corporate governance. Business Horizons 29, 17-23

Kiel, G.C., Nicholson, G.J., 2003. Board composition and corporate performance: How the Australian experience informs contrasting theories of corporate governance. Corporate Governance: An International Review 11, 189-205

Kim, J.-B., Krinsky, I., Lee, J., 1995. The aftermarket performance of initial public offerings in Korea. Pacific-Basin Finance Journal 3, 429-448

Kini, O., Kracaw, W., Mian, S., 1995. Corporate takeovers, firm performance, and board composition. Journal of Corporate Finance 1, 383-412

Klein, A., 1998. Firm performance and board committee structure. Journal of Law and Economics 41, 275-303

Klein, A., 2002. Audit committee, board of director characteristics, and earnings management. Journal of Accounting and Economics 33, 375-400

Koh, F., Walter, T., 1989. A direct test of Rock's model of the pricing of unseasoned issues. Journal of Financial Economics 23, 251-272

Koretz, G., 2000. High-tech IPOs rocket on. In: Business Week, p. 30

Kosnik, R.D., 1987. Greenmail: A study of board performance in corporate governance. Administrative Science Quarterly 32, 163-185

Kothari, S.P., Warner, J.B., 1997. Measuring long-horizon security price performance. Journal of Financial Economics 43, 301-339

KPMG, 2004. Fee for all. Boardroom Report 2, 4-5

Lawson, M., 2003. Australian Stock Exchange ready to scrub clean the nation's boardroom tables. In: Australian Financial Review

Lee, I., 1997. Do firms knowingly sell overvalued equity? Journal of Finance 52, 1439-1466

Lee, M., Lee, P.J., Taylor, S.L., 2003. Unit initial public offerings: Staged equity or signaling mechanism? Accounting and Finance 43, 63-85

Lee, P.J., 2003. Initial public offers in a multiple issue framework: The impact of subsequent equity issues on signalling by underpricing and retained ownership. Unpublished PhD Dissertation, University of Sydney.

Lee, P.J., Taylor, S.L., Walter, T.S., 1996a. Australian IPO pricing in the short and long run. Journal of Banking and Finance 20, 1189-1210

Lee, P.J., Taylor, S.L., Walter, T.S., 1996b. Expected and realised returns for Singaporean IPOs: Initial and long-run analysis. Pacific-Basin Finance Journal 4, 153-180

Leland, H.E., Pyle, D.H., 1977. Informational asymmetries, financial structure, and financial intermediation. Journal of Finance 32, 371-387

Levis, M., 1990. The winner's curse problem, interest costs and the underpricing of initial public offerings. Economic Journal 100, 76-89

Levis, M., 1993. The long-run performance of initial public offerings: The UK experience 1980-1988. Financial Management 22, 28-41

Levis, M., 1995. Seasoned equity offerings and the short- and long-run performance of initial public offerings in the UK. European Financial Management 1, 125-146

Levis, M., 1996. Empirical issues in raising equity capital. In: Levis M (ed.) Empirical issues in raising equity capital. Elsevier, New York, pp. 1-16.

Lipton, M., Lorsch, J.W., 1992. A modest proposal for improved corporate governance. Business Lawyer 48, 59-77

Logue, D.E., 1973. On the pricing of unseasoned equity issues - 1965-1969. Journal of Financial and Quantitative Analysis 7, 91-103

Loughran, T., Ritter, J.R., 1995. The new issues puzzle. Journal of Finance 50, 23-51

Loughran, T., Ritter, J.R., 1997. The operating performance of firms conducting

seasoned equity offerings. Journal of Finance 52, 1823-1850

Loughran, T., Ritter, J.R., Rydqvist, K., 1994. Initial public offerings: International insights. Pacific-Basin Finance Journal 2, 165-199

Lucas, D.J., McDonald, R.L., 1990. Equity issues and stock price dynamics. Journal of Finance 45, 1019-1043

Lucier, C., Schuyt, R., Handa, J., 2004. CEO succession 2003: The perils of "good" governance. In: strategy+business, pp. 1-17

Lyon, J.D., Barber, B.M., Tsai, C.-L., 1999. Improved methods for tests of long-run abnormal stock returns. Journal of Finance 54, 165-201

Macleay, J., 1999. ASIC slates Burns Philip directors. In: The Australian

Mak, Y.T., Li, Y., 2001. Determinants of corporate ownership and board structure: Evidence from Singapore. Journal of Corporate Finance 7, 235-256

Mak, Y.T., Roush, M.L., 2000. Factors affecting the characteristics of boards of directors: An empirical study of New Zealand initial public offering firms. Journal of Business Research 47, 147-159

Mallette, P., Fowler, K.L., 1992. Effects of board composition and stock ownership on the adoption of "poison pills". Academy of Management Journal 35, 1010-1035

Mathiesen, I., 2001. Predicting the performance of initial public offerings. URL http://www.tuta.hut.fi/studies/Courses_and_schedules/Isib/TU-91.167/Old_seminar_papers/mathiesen_inga.pdf

McConnell, J.J., 2003. Outside directors. Financial Review 38, 25-31

McConnell, J.J., Servaes, H., 1990. Additional evidence on equity ownership and corporate value. Journal of Financial Economics 27, 595-612

McKinsey & Company, 2002. Global investor opinion survey: Key findings. URL http://www.mckinsey.com/practices/corporategovernance/PDF/GlobalInvestorOpinionSurvey2002.pdf

Megginson, W.L., Weiss, K.A., 1991. Venture capitalist certification in initial public offerings. Journal of Finance 46, 879-903

Mehran, H., 1995. Executive compensation structure, ownership, and firm performance. Journal of Financial Economics 38, 163-184

Michaely, R., Shaw, W.H., 1994. The pricing of initial public offerings: Tests of adverse-selection and signaling theories. Review of Financial Studies 7, 279-319

Mikkelson, W.H., Partch, M.M., Shah, K., 1997. Ownership and operating performance of companies that go public. Journal of Financial Economics 44, 281-307

Miller, E.M., 1977. Risk, uncertainty, and divergence of opinion. Journal of Finance 32, 1151-1168

Miller, E.M., 2000. Long run underperformance of initial public offerings: An explanation. URL

http://www.business.uno.edu/econ/18_99miller_iporeturns.pdf

Mitchell, M.L., Stafford, E., 2000. Managerial decisions and long-term stock price performance. Journal of Business 73, 287-329

Morck, R., Shleifer, A., Vishny, R.W., 1988. Management ownership and market valuation: An empirical analysis. Journal of Financial Economics 20, 293-315

Nicholas, K., 2003. ASX sparks corporate governance revolt. In: Australian Financial Review

Ocasio, W., 1994. Political dynamics and the circulation of power: CEO succession in U.S. industrial corporations, 1960-1990. Administrative Science Quarterly 39, 285-312

OECD, 1999. OECD Principles of Corporate Governance. OECD, Paris.

Olivencia Code, 1998. *El Gobierno de las Sociedades Cotizadas*. CNMV.

Pfeffer, J., 1972. Size and composition of corporate boards of directors. Administrative Science Quarterly 17, 218-228

Pfeffer, J., Salancik, G.R., 1978. The external control of organizations : A resource dependence perspective. Harper & Row, New York.

Pheasant, B., Buffini, F., 2003. ASX agrees to review new code. In: Australian Financial Review

Pi, L., Timme, S.G., 1993. Corporate control and bank efficiency. Journal of Banking and Finance 17, 515-530

Preda Code, 1999. Report & Code of Conduct. Committee for the Corporate Governance of Listed Companies in Italy.

Rajan, R., Servaes, H., 1993. The effect of market conditions on initial public offerings. Working Paper, University of Chicago, Chicago, IL.

Rajan, R., Servaes, H., 1997. Analyst following of initial public offerings. Journal of Finance 52, 507-529

Rechner, P.L., Dalton, D.R., 1989. The impact of CEO as board chairperson on corporate performance: Evidence vs. rhetoric. Academy of Management Executive 3, 141-143

Rechner, P.L., Dalton, D.R., 1991. CEO duality and organizational performance: A longitudinal study. Strategic Management Journal 12, 155-160

Ritter, J.R., 1991. The long-run performance of initial public offerings. Journal of Finance 46, 3-27

Ritter, J.R., 1998. Initial public offerings. Contemporary Finance Digest 2, 5-30

Ritter, J.R., Welch, I., 2002. A review of IPO activity, pricing, and allocations. URL http://papers.nber.org/papers/w8805.pdf

Rock, K., 1986. Why new issues are underpriced. Journal of Financial Economics 15, 187-212

Rosenstein, S., Wyatt, J.G., 1990. Outside directors, board independence, and shareholder wealth. Journal of Financial Economics 26, 175-191

Schellenger, M.H., Wood, D.D., Tashakori, A., 1989. Board of director composition, shareholder wealth, and dividend policy. Journal of Management 15, 457-467

Shah, A., 1995. The Indian IPO market: Empirical facts. URL http://ideas.repec.org/p/wpa/wuwpfi/9507003.html

Shaw, D.C., 1971. The performance of primary common stock offerings: A Canadian comparison. Journal of Finance 26, 1101-1113

Shekhar, C., Stapledon, G., 2005. Governance of IPO firms - some exploratory Australian evidence. Working Paper, University of Melbourne.

Shiller, R.J., 1990. Speculative prices and popular models. Journal of Economic Perspectives 42, 55-65

Slovin, M.B., Sushka, M.E., Bendeck, Y.M., 1994. Seasoned common stock issuance following an IPO. Journal of Banking and Finance 18, 207-226

Smith, J., Clifford W., 1986. Investment banking and the capital acquisition process. Journal of Financial Economics 15, 3-29

Spiess, D.K., Affleck-Graves, J., 1995. Underperformance in long-run stock returns following seasoned equity offerings. Journal of Financial Economics 38, 243-267

Spiess, D.K., Pettway, R.H., 1997. The IPO and first seasoned equity sale: Issue proceeds, owner/managers' wealth, and the underpricing signal. Journal of Banking and Finance 21, 967-988

Stapledon, G.P., 1996. Regulation of corporate governance: Will it improve corporate performance? Australian Accounting Review 6, 11-15

Stapledon, G.P., Fickling, J., 2001. Board composition and pay in top 100 companies. URL http://www.corpgov.com/publications/fulltext/CMSFReport-WEBLK.pdf

Tinic, S.M., 1988. Anatomy of initial public offerings of common stock. Journal of Finance 43, 789-822

Titman, S., Trueman, B., 1986. Information quality and the valuation of new issues. Journal of Accounting and Economics 8, 159-172

Tully, S., 1999. Will the web eat Wall Street? Fortune 140, 112-116

Vance, S.C., 1978. Corporate governance: Assessing corporate performance by boardroom attributes. Journal of Business Research 6, 203-220

Vance, S.C., 1983. Corporate leadership: Boards, directors, and strategy. McGraw-Hill, New York.

Vancil, R., 1987. Passing the baton: Managing the process of CEO succession. Harvard Business School Press, Boston, MA.

Weisbach, M.S., 1988. Outside directors and CEO turnover. Journal of Financial Economics 20, 431-460

Welch, I., 1989. Seasoned offerings, imitation costs, and the underpricing of initial public offerings. Journal of Finance 44, 421-449

Welch, I., 1996. Equity offerings following the IPO: Theory and evidence. Journal of

Corporate Finance 2, 227-259

Westfield, M., 1996. Corporate governance on its knees as anything goes. In: The Australian

Whincop, M.J., 2001. Entrepreneurial governance. URL http://ssrn.com/abstract=254169

Wu, Y., 2000. Honey, CalPERS shrunk the board. URL http://ssrn.com/abstract=235295

Yermack, D., 1996. Higher market valuation of companies with a small board of directors. Journal of Financial Economics 40, 185-211

Zeckhauser, R., Pound, J., 1990. Are large shareholders effective monitors? An investigation of share ownership and corporate performance. In: Hubbard RG (ed.) Asymmetric information, corporate finance, and investment. University of Chicago Press, Chicago.

Zhang, S., 2005. Underpricing, share overhang and insider selling in follow-on offerings. Financial Review 40, 409-428