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*Corporate Governance
Mechanisms in IPO Firms*

Peter Roosenboom



Corporate Governance Mechanisms in IPO Firms

Corporate Governance Mechanisms in IPO Firms

Proefschrift

ter verkrijging van de graad van doctor aan de Universiteit van Tilburg, op gezag van de rector magnificus, prof. dr. F.A. van der Duyn Schouten, in het openbaar te verdedigen ten overstaan van een door het college voor promoties aangewezen commissie in de aula van de Universiteit op woensdag 18 september 2002 om 16.15 uur door

Petrus Gerardus Jacobus Roosenboom

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Promotor: Prof.dr. P.W. Moerland

Copromotor: Dr. M.R. Kabir

Preface

This dissertation presents the results of my research on corporate governance mechanisms in initial public offering (IPO) firms. This research was conducted at the Department of Finance of Tilburg University from May 1998 to March 2002. Here I would like to express my great appreciation to the people that contributed to the realization of this study.

First, I want to thank my supervisor Piet Moerland for his encouragement. Discussions with Piet have helped me to formulate my ideas more clearly. His extensive knowledge of corporate governance was instrumental to this study.

Second, I owe thanks to my supervisor Rezaul Kabir for his constant support. He interested me in pursuing an academic career in 1998 and helped me to improve my skills as a researcher. His constructive comments have greatly benefited this thesis. Moreover, I have enjoyed working with Rez as a co-author on several other papers and I hope to continue our cooperation in the future.

In addition to my supervisors, several other people have contributed to this thesis. I want to thank Tjalling van der Goot. He is the co-author of the paper that underlies Chapter 3. His insights and comments have helped to improve earlier drafts of the dissertation. I am grateful to Mark Koevoets, Caroline Franke and Willem Schramade for their assistance in gathering data from IPO prospectuses. I want to thank my former colleagues from Tilburg University for a pleasant and stimulating working environment. A special word of thanks goes to Alexei Gorjaev. We shared one office and many good times. I want to thank my new colleagues from Erasmus University Rotterdam, whom I have enjoyed working with as from March 2002.

I would also like to thank the members of my Ph.D. committee, the professors Piet Duffhues (Tilburg University), Chris Veld (Tilburg University), Gerard Mertens (Erasmus University Rotterdam) and Uli Hege (HEC) for approval of the thesis. Finally, I want to express gratitude to those who contributed in a way not directly related to the contents of this thesis for their support, especially my parents and family.

Peter Roosenboom
Roosendaal, May 2002

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Chapter 1: Introduction

1.1. Introduction

Going public is a major event in a firm's history that involves benefits and costs. Principally, the potential benefits of public listing are twofold (Röell, 1996). First, once the stock is publicly traded, the increased liquidity gives the company access to new finance on more advantageous terms than if it had to compensate investors for the lack of liquidity associated with a privately held firm. Second, public listing allows existing shareholders to sell all or part of their shareholdings in a secondary offering at or following the Initial Public Offering (IPO). This improves the degree of wealth diversification of existing shareholders.

However, with these benefits come costs. For example, going public is associated with one-time direct costs (legal, auditing, administrative and underwriting fees) and continuing costs related to disclosure requirements such as the loss of valuable proprietary information to product market competitors. In addition, the dilution coming from selling shares to the general public at an offer price that is, on average, below the market price prevailing shortly after the IPO, produces indirect costs for existing shareholders (Ibbotson and Ritter, 1995). Next to these direct and indirect costs, there is the disadvantage of closer public scrutiny and a potential loss of control through an unwanted takeover. Because of these concerns the original shareholders often want to retain control of the firm as much as possible. They tend to sell no more than the bare minimum of shares to the public needed to establish a sufficiently liquid market (Röell, 1996).

In this thesis, we focus on agency problems within an IPO context. The event of going public closely resembles the situation described in Jensen and Meckling (1976), where an owner-manager is attempting to sell equity claims to outside investors. Often the entrepreneur acts as the single controlling owner and manager of the firm, even after it goes public. This prompts an agency conflict between the owner-manager and minority shareholders that buy their shares in the IPO. At that time outside investors invest their funds in the company, counting on the owner-manager's talents to yield returns on their investments. But the interests of the owner-manager and minority shareholders are unlikely to coincide. The owner-manager might shirk and not put in the same effort than would occur if he were the sole proprietor of the firm. In addition, the owner-manager has the ability to consume private

benefits of control at minority shareholders' expense. Given that the controlling owner receives 100% of the private benefits of control but incurs less than 100% of related costs, he has incentives to exploit small shareholders that buy shares in the IPO. Examples of these private benefits of control include but are not limited to on-the-job consumption, above-market levels of salary and empire-building behavior.

However, potential IPO investors are aware that the owner-manager may take actions that are not in their best interest. In evaluating the IPO they will therefore take into account the expected amount of private benefits that the owner-manager takes out of the firm. Investors 'price-protect' themselves against potential expropriation of the owner-manager and lower the price that they are willing to pay for the shares in IPO firms. In turn, this provides an incentive to the owner-manager to use corporate governance mechanisms that (partially) mitigate the agency problem¹.

Shleifer and Vishny (1997) argue that corporate governance is closely associated with the agency problem. Corporate governance deals with constraints that managers put on themselves, or that investors put on managers, to mitigate the agency problem. IPO firms provide an important event for examining how governance adapts to structural changes. In the extreme case, the owner-manager may strategically decide to ignore minority shareholders' rights and structure corporate governance to its own advantage. This allows the owner-manager to pursue his personal interests that are (possibly) conflicting with those of small shareholders. Alternatively, the owner-manager may choose to mitigate agency costs by adopting an effective corporate governance structure. In this case, corporate governance is organized to limit the potential expropriation of minority shareholders.

In this thesis, corporate governance is viewed as a relevant design issue at the time of the IPO. As such, the thesis combines and extends two strands of literature. With notable exceptions, the IPO literature has focussed on explaining first-day returns (underpricing) and long-term stock price performance. There are relatively few empirical studies that apply an agency perspective to the event of going public. The equally extensive corporate governance literature has mainly studied large publicly traded companies. There exist few studies analyzing corporate governance structures in small and closely held firms. In this thesis, we examine the use of corporate governance mechanisms in IPO firms in the Netherlands, France and the United Kingdom². In particular, we analyze the use of takeover defenses by

¹ For example, surveys found that institutional investors are willing to pay a premium of 11% over market value for companies with corporate governance mechanisms that are more protective of investors' rights (Felton, Hudnut and Van Heeckeren, 1996).

² In recent years, going public has become increasingly popular in Europe. For the first time in recent history, Europe has overtaken the United States in the capital raised by IPO firms. In 2000, IPO firms raised \$125.9

Dutch IPO firms (Chapter 3), board structures in French IPO firms (Chapter 4) and executive compensation, management ownership and insider trading in small U.K. IPO firms (Chapter 5). In the next section we discuss the outline of the thesis in more detail.

1.2. Outline of the thesis

This thesis consists of a literature review and three empirical studies on the use of corporate governance mechanisms in IPO firms in the Netherlands, France and the United Kingdom, respectively. In Chapter 2 we provide a survey of corporate governance literature. We confine ourselves to a discussion of the legal protection of minority shareholders and internal corporate governance mechanisms (ownership structure, boards of directors and executive compensation). Throughout the survey we make an effort to describe corporate governance mechanisms in Initial Public Offering (IPO) firms (if such studies are available).

In Chapter 3 we examine the use of takeover defenses by Dutch IPO firms. We use a sample of 111 Dutch IPO firms from January 1984 to December 1999. The Dutch corporate governance landscape is characterized by a widespread use of takeover defenses. The Netherlands is therefore an interesting country to examine the valuation impact of takeover defenses at the time of going public. Other studies have left this valuation impact of takeover defenses at the time of the IPO largely unexplored. Agency theory predicts that IPO investors anticipate potential conflict of interests with management and reduce the price they pay for the IPO shares if takeover defenses are adopted. On the assumption that managers use takeover defenses to protect their private benefits of control, we expect to find a negative relation between the use of takeover defenses and IPO firm value.

In Chapter 4 we study board structures at the time of the IPO. We analyze a sample of 299 French IPO firms from January 1993 to December 1999. This chapter provides one of the first empirical tests of the Hermalin and Weisbach (1998) bargaining model in the IPO context. The power of the controlling owner-manager to take advantage of small shareholders may be moderated when an ‘independent’ board of directors monitors his actions. We hypothesize that when the owner-manager has more bargaining power vis-à-vis shareholders – for example when he owns more stock – the board’s independence declines. We study France because it is characterized by a strong power structure of the Chief Executive Officer, who often assumes general management control and presides over meetings of the board of

billion in United States (AMEX, NYSE and NASDAQ) against \$171.5 billion in Europe (EU15 countries). Figures are taken from F.I.B.V. Annual Statistics.

directors. This prompts the question whether and how shareholders can successfully bargain for ‘independent’ board members.

In Chapter 5 we investigate the cross-sectional determinants of the wealth-to-performance sensitivity of managers in 188 small IPO firms on the Alternative Investment Market (AIM) of the London Stock Exchange. Wealth-to-performance sensitivity measures the increase in the amount of executive wealth (consisting of shareholdings, option holdings and human capital) per £1,000 increase in shareholder wealth. The sample period is from June 1995 to December 1999. Agency theory advocates aligning the interests of managers with those of shareholders through share ownership and stock options. However, the resulting lack of ability to diversify his or her personal investment portfolio increases managers’ exposure to firm-specific risks. We hypothesize that managers that already own large shareholdings in the firm are less willing to accept stock options and more likely to sell shares in the IPO. We choose to study the United Kingdom because of data availability reasons. Currently the United Kingdom is the single European country that requires detailed disclosure on the individual pay packages of managers. Worldwide only the United States and Canada require similar disclosures. AIM is an interesting market to investigate since it is one of the most established stock markets for small companies within Europe.

A summary and conclusions are presented in Chapter 6. We summarize the results of the three previous chapters. In addition, we discuss potential avenues for future research.

Chapter 2:

A Review of the Literature on Investor Protection and Internal Corporate Governance Mechanisms

2.1. Introduction

Consider a wealth-constrained owner-manager that needs to raise equity from the public to fund a new investment project. In a common equity issue, the firm receives cash from outside investors without a contractual obligation to give anything back as dividends or capital gains to investors. For equity financing to be possible, investors must expect to receive sufficient cash flows to yield them an expected return comparable to what they would expect to earn on other investments within the same risk class (Stulz, 1999). However, it is difficult for the owner-manager to convince investors that they will receive such cash flows. Shleifer and Vishny (1997, page 740) write: “But how, can financiers be sure that, once they sink their funds, they get anything but a worthless piece of paper back from the manager?”

In other words, selling equity claims to investors creates an agency problem. The controlling owner may pursue his personal interests that may conflict with those of small investors. Johnson, La Porta, Lopez-de-Silanes and Shleifer (2000) discuss the expropriation of minority shareholders. A controlling shareholder can transfer resources from the firm for his own benefit through self-dealing transactions – private benefits of control. In most countries such private control benefits short of theft are legal. These transactions can take a variety of forms. For example, on-the-job consumption, above-market levels of salary, subsidized personal loans, intra-group sales of goods and services or non-arms-length asset transactions advantageous to the controlling shareholder. Given that the controlling owner receives 100% of control benefits but bears less than 100% of related costs, he has incentives to exploit small shareholders that buy shares in the equity issue³.

Shleifer and Vishny (1997) argue that corporate governance is closely associated with the agency problem. Corporate governance is, to a large extent, a set of mechanisms through

³ Becht and Röell (1999) argue that in the United States the agency conflict is between management and dispersed shareholders, while in Europe the agency conflict is between large controlling shareholders and powerless minority shareholders. This suggests two different types of agency problems. However, the arguments can be equally well applied to the management-shareholder conflict. Only the forms of private benefits would be different. For example, managers would be more likely to consume private benefits in the form of above-market salaries, while controlling owners would be more likely to extract private benefits through intra-group sales of goods and services at below market prices.

which outside investors protect themselves against expropriation by the controlling owners (La Porta, Lopez-de-Silanes, Shleifer and Vishny, 2000). Hart (1995) writes that governance structures allocate the residual rights of control over the firm's assets; that is, "the right to decide how these assets should be used, given that a usage has not been specified in an initial contract" (page 680). Similarly, Zingales (1998) defines corporate governance as the complex set of constraints that shape the ex-post bargaining of the quasi-rents generated by a firm.

Corporate governance is a multi-faceted phenomenon. In this survey we confine ourselves to a discussion of legal investor protection and internal governance mechanisms (ownership structure, boards of directors and executive compensation). We also discuss the role of takeover defenses as a mechanism to impede the market for corporate control. We view takeover defenses as a part of the ownership and control structure of firms. This implies that we omit a discussion of the protection of creditor's rights and the interests of other stakeholders in the firm (employees, suppliers and customers). Additionally, we omit a detailed discussion of external governance mechanisms such as the managerial labor market or product market competition. Although a discussion of these issues would be interesting, they are less relevant to the central theme of this thesis, the use of internal corporate governance mechanisms at the time of the IPO. An IPO often represents the first time that a firm or its controlling owner sells shares to powerless and dispersed investors. The IPO is therefore an event that gives rise to an agency problem between the controlling owner, which is often the manager, and investors that buy their shares in the IPO. Throughout this review we make an effort to describe corporate governance mechanisms in Initial Public Offering (IPO) firms (if such studies are available).

As a result, this chapter does not provide a comprehensive review of the corporate governance literature. We refer to Shleifer and Vishny (1997) or Garvey and Swan (1994) for a broader survey on corporate governance. In Section 2 we take a legal approach to investor protection. In Section 3 we discuss ownership and control, including the role of takeover defenses. Section 4 presents a review of the literature on boards of directors. In Section 5 we discuss executive compensation. We draw conclusions in Section 6.

2.2. Investor protection

2.2.1. Legal origin and investor protection

The legal approach to corporate governance holds that the key mechanism is the protection of outside investors through the legal system – laws and their enforcement. La Porta, Lopez-de-Silanes, Shleifer and Vishny (2000) argue that the legal protection of investors reduces the efficiency of the expropriation technology. Controlling owners must set up more ingenious and costly diversion mechanisms to consume private benefits of control. Coffee (2001a) defines these private benefits as “all the ways in which those in control of a corporation can siphon off benefits to themselves that are not shared with the other shareholders” (page 9). As long as diversion mechanisms are efficient enough controlling owners choose to consume private benefits of control at the expense of small shareholders. If investor protection is good, the diversion mechanisms become less efficient, controlling owners expropriate less and the private benefits of control decrease in size.

Investor protection varies across legal systems. La Porta, Lopez-de-Silanes, Shleifer and Vishny (1998) distinguish four legal origins: common law, French civil law, German civil law and Scandinavian civil law. Common law countries such as the United States and the United Kingdom give investors stronger legal rights than civil law countries do. Judges form common law by resolving specific disputes. Precedents from judicial decisions are incorporated into written law by the legislature. Common law courts rely on the concept of fiduciary duty, which leaves judges much greater discretion, which is often applied to rule in favor of minority shareholders (Coffee, 1999). Conversely, the civil legal tradition relies on statutes and comprehensive legal codes. Civil law courts are required to apply these comprehensive codes mechanically to the cases before them. If a new issue is not specifically covered in an existing code, the judge has little discretionary power.

Johnson, La Porta, Lopez-de-Silanes and Shleifer (2000) define tunneling as the transfer of assets and profits out of firms for the private benefit of the controlling shareholder. They show that courts in civil law countries are not very successful in dealing with tunneling. In all major legal systems, conduct is assessed on the basis of the duty of care and the duty of loyalty. The duty of care requires that a manager acts as a ‘reasonable’ person would act in his position. The duty of loyalty requires that managers do not profit at the expense of shareholders or the corporation. Courts in civil law countries generally have a narrower application of the duty of loyalty largely to transactions with no business purpose and a higher standard of proof in conflict of interest situations. In addition, civil law courts have a

greater responsiveness to stakeholder interests, and a greater reliance on statutes rather than fairness to regulate self-dealing situations. Johnson, Lopez-de-Silanes, Shleifer and Vishny (2000) therefore argue that courts in civil law countries may accommodate more tunneling than courts in common law countries. La Porta, Lopez-de-Silanes, Shleifer and Vishny (1998) also show that legal enforcement is weaker in French and German civil law countries than in common law countries.

What does investor protection involve? La Porta, Lopez-de-Silanes, Shleifer and Vishny (1997, 1998) distinguish six anti-director rights. Anti-director rights measure how strongly the legal system protects minority shareholders against managers or controlling shareholders. First, in some countries, shareholders need to show up in person on the shareholders' meeting or authorize another party to cast their votes on their behalf. In other countries, it is easier for shareholders to exercise their voting rights since they can mail their proxy vote directly to the firm. Second, in some countries shares have to be deposited with the company or financial intermediary several days before the shareholders' meeting. The shares are held in custody up to a number of days after the meeting. This prevents shareholders from trading in the stock during the period surrounding the meeting. If shareholders do not comply with this practice, they are not allowed to cast their votes. Third, some countries allow minority shareholders to appoint a proportional number of board members through cumulative voting. This gives more power to small shareholders to put their representatives on the board of directors. Fourth, several countries give investors the opportunity to challenge managerial decisions in court. This protects minority shareholders against oppression by management. Fifth, in some countries, the law grants minority shareholders a preemptive right to participate in new equity issues at the same conditions as the controlling owner. This preemptive right protects investors against dilution that occurs when shares are issued to preferential investors at below market prices. Sixth, La Porta, Lopez-de-Silanes, Shleifer and Vishny (1998) consider the percentage of capital needed to call an extraordinary shareholders' meeting (ESM). They assume that the higher this percentage, the more difficult it becomes for minority shareholders to organize a meeting to question management's decisions.

La Porta, Lopez-de-Silanes, Shleifer and Vishny (1998) develop an anti-director index to measure minority shareholder protection. The index ranges from 0 to 6, with higher scores for better protection of minority shareholders' rights. The index is formed by adding one if the country allows shareholders to mail their proxy votes; shareholders are not required to deposit their shares prior to the shareholders' meeting; cumulative voting is allowed; an oppressed minorities mechanism is in place; shareholders have preemptive rights to new

equity issues; and when the minimum percentage of share capital that entitles a shareholder to call for an extraordinary shareholders' meeting is less than or equal to 10%. They show that common law countries protect the rights of shareholders significantly better than civil law countries. The average anti-director index equals 4 for common law countries, 3 for Scandinavian civil law countries, and 2.33 for French and German civil law countries. Common law countries most frequently (39%) allow shareholders to vote by mail, never require shareholders to deposit their shares before the meeting, most frequently (94%) have laws protecting oppressed minorities, and often (94%) require 10% or less of capital to call for an extraordinary shareholders' meeting.

In summary, common law countries have laws that are more protective of minority shareholders relative to other countries. Common law courts tend to be effective enforcers of these laws. This reduces the efficiency of the expropriation technology available to the controlling owner. This makes it more costly for the controlling shareholder to consume private benefits of control at the expense of small shareholders in common law countries.

2.2.2. Does investor protection matter?

In the previous section, we observed that investor protection is stronger in common law relative to civil law countries. But does investor protection matter in practice? In this section we discuss the consequences of investor protection.

First, investor protection may reduce the private benefits that controlling owners can expropriate from the company to the detriment of small shareholders. Nenova (2001) analyzes a sample of 661 dual-class firms (companies with two classes of shares that differ in their voting rights) from 18 countries in 1997. These dual-class firms allow direct observation of the value of voting control. The premium at which the higher-voting class shares trade over the lesser-voting shares is assumed to represent the benefits of control that the controlling owner can extract from the firm at the expense of other shareholders. She finds that the benefits that shareholders derive from corporate control are significant in magnitude and differ widely across countries. Legal origin plays an important role in explaining differences in private benefits of control. In particular, control benefits average 4.5% and 0.5% in common law and Scandinavian civil law countries, respectively, versus 25.4% and 16.2% in French civil law and German civil law countries, respectively⁴.

⁴ The remarkable finding is that Scandinavian civil law countries have the lowest private benefits of control, whereas they have similar legal systems as French and German civil law countries. Coffee (2001a) suggests that social norms in Scandinavia may discourage the consumption of private benefits by controlling owners. He

La Porta, Lopez-de-Silanes, Shleifer and Vishny (2002) find evidence of higher valuation of firms – as measured by Tobin's Q – in countries with better protection of minority shareholders. They analyze a sample of 536 large firms from 27 wealthy economies. If the law better protects their rights, outside investors are willing to pay more for securities. They pay more because they recognize that, with better legal protection, more of the firm's profits would be paid to them as dividends as opposed to being expropriated by the controlling shareholder.

Second, investor protection may enhance access to external capital markets. A sound legal environment – as described by legal rules and their enforcement – protects potential financiers from expropriation by controlling owners. As a result, it increases investor's willingness to hold securities and expands the scope of capital markets. Using a sample of 49 countries, La Porta, Lopez-de-Silanes, Shleifer and Vishny (1997) find that the legal protection of shareholder rights promotes the development of equity markets. In particular, they report that countries with high legal protection of investors have more valuable stock markets, larger number of listed securities per capita and a higher rate of initial public offering (IPO) activity than do countries with low investor protection⁵.

As a related issue, Stulz (1999) posits that globalization enables non-U.S. companies from countries with low protection of minority shareholders to apply for a listing on an U.S. stock market that improves investor protection. These cross-listings increase firm value both by ensuring that the firm's policies are more likely to increase shareholder wealth and by enabling the firm to raise capital on better terms. Reese and Weisbach (2000) examine the hypothesis that a non-U.S. firm cross-lists in the United States to increase the protection of its minority shareholders. They find that firms from common law countries (which protect shareholder rights relatively well) are significantly less likely to list in the United States than firms from French civil law countries (which protect shareholder rights relatively poorly). In addition, they document a large increase in both the number and value of equity offerings following cross-listings. The increase in equity proceeds is larger for firms from countries that do not protect minority shareholder rights well. This suggests that non-U.S. firms from countries with low investor protection face capital constraints in their home market, which

argues that in addition to legal systems, social norms may explain cross-country differences in the private benefits of control.

⁵ Although La Porta, Lopez-de-Silanes, Shleifer and Vishny (1997) have shown a statistically significant correlation between strong capital markets and high legal protection of investors, correlation does not prove causation. Coffee (2001b) shows that the United Kingdom and the United States developed legal and institutional mechanisms to protect investors' rights following rather than preceding the appearance of strong securities markets. Coffee (2001b) argues that an investor constituency must emerge before there will be political pressure for legislative reform to protect their rights.

they successfully relax by improving investor protection through cross-listing their shares on a U.S. stock market.

Third, investor protection may explain cross-country differences in ownership patterns. La Porta, Lopez-de-Silanes and Shleifer (1999) investigate the ownership structure of the 20 largest publicly traded firms from the 27 wealthiest economies. They examine the hypothesis that widely dispersed ownership is more widespread in common law countries with good legal protection of minority shareholders. In these countries, controlling shareholders have less fear of being expropriated themselves in the event that they lose control through a corporate control contest. As a result, they may be more willing to reduce their ownership by selling shares to raise funds or to diversify. In countries with poor protection of small shareholders, relinquishing control and becoming a minority shareholder is less attractive for controlling owners. Consequently, controlling shareholders keep a lock on control and indulge in private benefits of control. La Porta, Lopez-de-Silanes and Shleifer (1999) find that 47.8% of companies in common law countries are widely held against 30.8% in civil law countries. Results are even more striking for medium-sized firms. In common law countries 45.5% of medium-sized firms are widely held as opposed to 12.8% in civil law countries.

In conclusion, good investor protection assists to reduce the consumption of private benefits by the controlling owner. Investor protection may also facilitate external financing. As a final point, investor protection may be important to understand cross-country differences in ownership patterns. The next section discusses market-oriented versus network-oriented corporate systems.

2.2.3. Market-oriented versus network-oriented corporate governance systems

Traditionally, classifications of corporate governance systems are based on institutions rather than on legal investor protection. Roe (1990, 1993) discusses the political and legal restraints on the ownership and control of public companies. Law restricts financial institutions in the United States from holding equity in industrial companies and from networking the small blocks that they do own. In contrast, such political and legal constraints are absent in Germany and Japan, where banks play an important corporate governance role through their stock ownership and board representation⁶. Roe (1990, 1993) argues that because politics in

⁶ La Porta, Lopes-de-Silanes, Shleifer and Vishny (2000) note that many countries do not have laws that restrict financial institutions from holding equity in industrial companies. However, this does not imply that in all these countries financial institutions have become important shareholders. For example, the United Kingdom has no such regulations, yet it has a well-developed stock market with few equity holdings by banks. Although the

the United States restricted institutional ownership, an active takeover market and stock-based compensation developed as substitutes.

According to Roe (1990, 1993) different historical politics led to different institutional structures, and different institutions led to different corporate governance structures. Moerland (1995a) builds on this idea and distinguishes between market-oriented systems, such as those of the United States and the United Kingdom, and network-oriented (otherwise known as bank-centered) corporate governance systems, such as those of Germany and Japan. This distinction is a matter of degree. He argues that market-oriented and network-oriented corporate governance systems differ in their historical origins, methods of capital mobilization and their structures of ownership and control. Well-developed financial markets, widely dispersed share ownership and active markets for corporate control characterize market-oriented systems. Closely held corporations, group membership of corporations and substantial involvement of universal banks in financing and controlling firms are typical of network-oriented corporate governance systems⁷.

In accordance with Roe (1990, 1993), market-oriented and network-oriented corporate governance systems rely on different disciplinary mechanisms to mitigate the agency problem. Moerland (1995b) distinguishes between direct mechanisms such as stock-based compensation and boards of directors and indirect mechanisms such as the stock market and the market for corporate control. Stock-based compensation aligns the interests of managers and shareholders by linking executive compensation to stock prices (e.g. through stock options or stock ownership). Boards of directors monitor management and discipline managers if they perform poorly. The stock market has indirect disciplinary power. When shareholders decide to sell their shares because of poor management, stock price decreases, which in turn augments the firm's cost of capital. The market for corporate control is another way to discipline poorly performing managers. Competing management teams will mount hostile takeovers for those companies that are performing poorly. Moerland (1995b) argues that monitoring boards, ownership concentration and banks are more important in network-

approach of Roe (1990, 1993) may be useful to distinguish Germany from the United States, his conclusions may not be generalized.

⁷ La Porta, Lopez-de-Silanes, Shleifer and Vishny (2000) show that the distinction between network and market-oriented systems is not easy to draw. For example, Japan has powerful banks and a highly developed and widely held equity market. Moreover, La Porta, Lopez-de-Silanes, Shleifer and Vishny (1997) show that, on average, countries with well-developed stock markets tend to have higher ratios of private debt to GDP. This is at odds with the view that debt and equity financing are alternative sources of financing. As an empirical matter, La Porta, Lopez-de-Silanes and Shleifer (1999) show that the incidence of widely held firms does not statistically differ between bank-centered and market-centered systems of corporate governance.

oriented systems while the stock market, the market for corporate control and stock-based compensation are more important in market-oriented systems.

A discussion of boards of directors and stock-based compensation is deferred to Section 2.4 and Section 2.5, respectively. The next section discusses ownership and control in further detail.

2.3. Ownership and control

2.3.1. Principal agent framework

To structure our discussion on ownership and control, we first describe the traditional principal-agent framework of Jensen and Meckling (1976). Their model considers the effect of outside equity on agency costs by comparing the behavior of a manager when he is the sole owner of the firm to his behavior when he sells a proportion of those shares to outside investors. The analysis assumes that both the owner-manager (the agent) and outside investors (the principals) maximize their utility functions. The utility functions of both the manager and outside investors depend on the shared benefits associated with an increase in firm value. However, the owner-manager also derives utility from non-transferable private benefits such as “the kind and amount of charitable contributions, personal relations with employees, a larger than optimal computer to play with, purchase of production inputs from friends, etc.” (Jensen and Meckling, 1976, page 312). The market value of these private benefits detracts from firm value.

This engenders an agency relation between the owner-manager (agent) and outside shareholders (principals). Jensen and Meckling (1976) define an agency relation as “a contract under which one or more persons (principals) engage another person (the agent) to perform some service on their behalf which involves delegating some decision making authority to the agent” (page 308). There is no reason to assume that the agent will act in the best interest of the principal under all circumstances. The principal therefore has incentives to engage in monitoring activities to ensure that the agent acts in his interest. On his part, the agent may incur bonding costs to ensure that he will not take actions that would go against the interests of the principal. Agency costs are the sum of monitoring expenditures incurred by the principal, bonding costs expended by the agent and a residual loss. This residual loss is the loss in welfare because it is infeasible to write contracts that completely map out the

firm's state-contingent future. Next, we will describe the intuitive reasoning behind the principal-agent model of Jensen and Meckling (1976).

If the owner-manager owns 100% of the company, he will make operating decisions that maximize his utility. The optimum mix of shared and private benefits is achieved when the marginal utility resulting from an additional dollar of private benefits equals the marginal utility derived from an additional dollar of shared benefits. In this situation, agency costs are zero because the principal and agent are one and the same.

If the owner-manager sells a fraction α of shares to outside investors, agency costs will be generated because the interests of the owner-manager differ from those of outside shareholders. Outside shareholders share in the increase in firm value (i.e. they proportionally share in the firm's cash flows) but in contrast to the owner-manager, do not obtain private benefits. Since the owner-manager has now sold a fraction α of shares to outside investors, he will no longer bear the full cost of any private benefits he takes out of the firm in maximizing his own utility. The owner-manager will achieve an optimum mix of shared and private benefits at the point where the marginal utility resulting from an additional dollar of private benefits equals the marginal utility derived from an additional $(1-\alpha)$ cents of shared benefits.

As a result, the owner-manager will consume more private benefits than if he were still the sole owner of the company. Outside shareholders will try to moderate the consumption of these private benefits through monitoring. This involves monitoring costs. As long as prospective shareholders form rational expectations about the actions of the owner-manager, the price they will pay for the shares will reflect these agency costs. The owner-manager therefore bears the expected agency costs to the extent he owns shares in the company and trades-off these costs against the utility he derives from his private benefits.

The principal-agent model of Jensen and Meckling (1976) predicts a positive relation between management stock ownership and firm value. If managers own more stock in the employing company, they internalize a larger fraction of the costs associated with their shirking and perk consumption. As a result, the incentives to consume private benefits are reduced and firm value is increased.

Ang, Cole and Lin (2000) provide a unique empirical test of the principal-agent model. They analyze a sample of 1,708 private U.S. firms. They use the expense ratio (operating expense to annual sales) and asset utilization ratio (annual sales to total assets) as a measure of agency costs of the firm. They define no-agency-cost firms as firms that are 100% owned by their manager. They compare these no-agency-cost firms to firms that are 100% owned by a single shareholder but managed by an outsider-manager. By definition, this outsider-manager owns no stock in the company. Ang, Cole and Lin (2000) find that firms

that hire outside managers have operating expenses that are greater and an asset utilization ratio that is lower than those at owner-managed firms. This suggests that agency costs are greater in outsider-managed firms. In multivariate tests, Ang, Cole and Lin (2000) find that agency costs vary inversely with management stock ownership. Consistent with the key prediction of agency theory, agency costs are lower when managers internalize the wealth consequences of their own decisions.

2.3.2. Management ownership and firm value

As argued in the previous section, principal-agent theory predicts a positive relation between management ownership and firm value. If managers own more stock in the employing company their interests become better aligned with those of outside shareholders. Numerous studies analyze the relation between management ownership and firm value. A widely used approach is to regress Tobin's Q – a proxy for firm value – on the percentage of equity held by managers. Tobin's Q is generally defined as the market value of the firm divided by the replacement value of the assets.

Morck, Shleifer and Vishny (1988) examine the relation between management stock ownership and firm value for a sample of 371 large U.S. firms in 1980 using a piecewise linear regression technique. They find that firm value increases until management ownership reaches 5%, then declines until managerial ownership reaches 25% and then increases beyond the 25% ownership level. They explain this non-linear relation as follows. If management owns less than 5% of the shares, there is a convergence of interest between management and other shareholders. As predicted by principal-agent theory, managers have an incentive to maximize value as their ownership increases.

However, if management ownership is between 5% and 25%, it becomes more difficult for outside shareholders to control managers. Management may therefore entrench and indulge his preferences for private benefits such as shirking and perk consumption that reduce firm value, albeit to a more limited extent than if he had effective control but no stock ownership. Morck, Shleifer and Vishny (1988) argue that beyond the 5% ownership level, increases in management ownership are associated with conditions contributing to entrenchment, such as “status as a founder, increased voting power, increased tenure, lower employment of professional managers and dominance of inside over outside directors on the board” (page 301). In the range between 5% and 25% ownership, this entrenchment effect outweighs the convergence of interest effect.

At management ownership greater than 25% the convergence of interest effect again dominates the entrenchment effect. Morck, Shleifer and Vishny (1988) argue that additional entrenchment effects are likely to be minimal when managers own more than 25% of the shares. Denis and Denis (1994) provide a more detailed study of 72 U.S. firms with majority management ownership (>50%). They find no evidence that majority-owned firms perform poorly compared to industry-matched control firms.

Holderness, Kroszner and Sheehan (1999) analyze the relation between management ownership and Tobin's Q for a large sample of U.S. firms in 1935 and 1995. Their analysis largely corroborates the findings of Morck, Shleifer and Vishny (1988). For the 1935 data, they find that a positive and statistically significant relationship between firm value and management ownership for the first 5% of ownership and a negative and statistically significant relationship for management ownership between 5% and 25%. The firm value-management ownership relation for the 1995 data is weaker. Although the sign pattern of the coefficients is similar to that reported in Morck, Shleifer and Vishny (1988), only the coefficient on management ownership less than 5% is positive and statistically significant.

Alternatively, McConnell and Servaes (1990) are unable to replicate the specific empirical findings of Morck, Shleifer and Vishny (1988) for a large sample of U.S. firms in 1976 and in 1986. However, they do report a non-linear relation between firm value and management stock ownership. They regress Tobin's Q on management ownership and management ownership squared. They find that the coefficient on management ownership is statistically positive and significant, whereas the coefficient on management ownership squared is statistically negative. This suggests that the relationship between firm value and management ownership is curvilinear as the value of the firm first increases and then decreases, as ownership becomes concentrated in the hands of management. More precisely, McConnell and Servaes (1990) find a dominating convergence of interest effect for management ownership levels between 0% and 40/50%. This differs from the findings of Morck, Shleifer and Vishny (1988) that report entrenchment effects between 5% and 25% of management ownership. Kole (1995) attributes the different findings of McConnell and Servaes (1990) to differences in the size of sample firms. Whereas Morck, Shleifer and Vishny (1988) only analyze large companies from the Fortune 500 list, the sample of McConnell and Servaes (1990) contains smaller firms.

Short and Keasey (1999) analyze the relation between management ownership and firm value in the United Kingdom. In the United Kingdom companies are subject to greater institutional monitoring and have a lesser ability to use takeover defenses than in the United States. On account of these institutional differences, the authors hypothesize that managers

should become entrenched at higher ownership levels in the United Kingdom. Correspondingly, they find a non-linear relation between firm value and management stock ownership in the United Kingdom. Managers in the U.K. become entrenched at higher levels of ownership, namely in the 12% and 40% ownership range instead of the 5%-25% ownership range for the United States reported by Morck, Shleifer and Vishny (1988).

In the context of going public, Keloharju and Kulp (1996) report a non-linear relation between firm value, measured by the market-to-book ratio, and management ownership for a sample of Finnish IPO firms. Management ownership has a more positive effect on firm value at low ownership levels, whereas at high levels the relation is not significant (although positive). They conclude that especially at low levels of management stock ownership the interest of managers coincide with those of outside shareholders. Jain and Kini (1999) analyze a sample of 1,076 U.S. IPO firms from the period 1980-1991. They report a positive and significant relation between management ownership and IPO firm value measured as Tobin's Q .

However, Loderer and Martin (1997) question the relationship between firm value and management stock ownership. Specifically, they raise the question of reverse causality between management ownership and firm value, which is not addressed in any of the earlier studies. It can be argued that managers are more willing to retain a larger fraction of equity in a more successful firm rather than the firm being highly valued because of higher management stock ownership. Loderer and Martin (1997) write: "Do managers make better decisions because they own more stock or do they own more stock because their firms have better prospects?" (page 225). Using a simultaneous equations framework, they find no evidence that larger management stock ownership leads to higher firm value measured as Tobin's Q . However, they do report that Tobin's Q affects the size of managerial stockholdings. Himmelberg, Hubbard and Palia (1999) use panel data for 600 randomly selected U.S. firms over the 1982-1992 period. They also document that changes in management stock ownership do not affect firm value or firm performance. Taking into account the endogeneity of ownership structure, Demsetz and Villalonga (2001) find no relation between ownership structure and firm performance for a sample of U.S. companies. They interpret this as consistent with the view that diffuse ownership, while it may intensify agency problems, also yields compensating advantages that generally offset such problems. The market generally responds to forces that create appropriate ownership structures for firms, whether they are diffuse or concentrated.

In conclusion, several studies report that the relation between management ownership and firm value is non-linear. Consistent with the principal-agent model it is positive at low

levels of management ownership. The interests of managers become better aligned with those of outside shareholders. However, at higher levels of managerial stockholders, entrenchment effects outweigh the convergence of interest effects. These effects also appear to be important in the context of IPO firms. However, recent studies cast doubt on the robustness of the results from these earlier studies.

2.3.3. Monitoring by large shareholders

In a company with dispersed shareholders, it does not pay for any one of them to oversee managerial performance (i.e. there is a free-rider problem). If a minority shareholder decides to monitor he would incur 100% of the monitoring costs, while he would internalize only a minor fraction of the monitoring benefits. However, a large minority shareholder may have an incentive to monitor management and provide a solution to this free-rider problem (Shleifer and Vishny, 1986). Although this large shareholder bears the full monitoring costs, he earns a sizable fraction of the financial benefits that result from his monitoring activity.

In theory, multiple large shareholders may reduce the consumption of private benefits of control. Bennedsen and Wolfenzon (2000) show that multiple large shareholders – none of which can control the firm without agreeing with one or more of the other shareholders – may limit expropriation of minority shareholders. Because none of the shareholders is large enough to be in unilateral control, they need to form coalitions in order to obtain majority control. This coalition, by aggregating the cash flow ownership of its members, internalizes the wealth consequences of its actions to a larger extent than its individual members do. As a result, the consumption of value-reducing private benefits of control is reduced. Similarly, Gomes and Novaes (2001) show that, by sharing control with other large shareholders, the owner-manager (initial shareholder) limits the expropriation of minority shareholders. This effect arises from the bargaining problems associated with multiple large shareholders. A large shareholder will not agree to lower firm value because of the private benefits that another large shareholder might enjoy. This disagreement among large shareholders therefore protects minority shareholders.

Bloch and Hege (2000) consider the competition for corporate control at the shareholder's meeting. Two large shareholders and a multitude of small shareholders own the firm. The large shareholders submit competing proposals to limit the consumption of private benefits at small shareholders' expense. They need to build a voting majority by attracting the votes of small shareholders if they want their proposal accepted at the shareholder's meeting. The turnout and vote of small shareholders depends on the extent to which the proposals limit

private benefits. Multiple large shareholders are therefore viewed as a way to reduce private benefits through the competition for control.

From a theoretical perspective, large outside shareholders should be beneficial to firm value and firm performance. But what have empirical studies to say about this? In his survey article, Holderness (2002) mentions that U.S. studies of trades of large share blocks report a significant and positive stock price increase when large share blocks are purchased. He argues that if large shareholders do not positively affect the cash flows that accrue to minority shareholders, it would be difficult to explain these stock price increases.

Dherment-Ferere, Köke and Renneboog (2001) find that block purchasers replace poorly performing managers in Belgium and Germany, but not in France and the United Kingdom. This shows that large shareholders can have disciplinary power. In the United States, Denis, Denis and Sarin (1997) show that a change in the top manager is significantly more likely in a poorly performing firm in which there is an outside shareholder with a significant ownership stake. Renneboog (2000) and Crespi-Cladera and Renneboog (2000) find that industrial and commercial companies with large relative voting power replace poorly performing managers in Belgian and U.K. firms, respectively. Conversely, in another U.K. study, Franks, Mayer and Renneboog (2001) report that holders of substantial share blocks have little disciplinary power. Instead, new rights equity issues play an important role in restructuring boards. For Germany, Franks and Mayer (2001) do not find evidence of disciplining power of large shareholders either. However, Gorton and Schmid (2000) find that bank control rights from equity ownership significantly improve the performance of German firms beyond what large non-bank shareholders can achieve. Banks may thus play a special role in German corporate governance.

Crama, Leruth, Renneboog and Urbain (2000) investigate the role of a second large shareholder. Analyzing a random sample of 250 U.K. firms from the period 1989-1992, they find that financial performance is the highest for those companies where the second largest shareholder has a substantial amount of control. Consistent with the model of Gomes and Novaes (2001), the second largest owner forces the largest shareholder to bargain and maximize the firm value rather than his or her own utility function. This limits the expropriation of minority shareholders by the largest shareholder. Faccio and Lang (2002) analyze a sample of 3,740 Western European corporations in 1997. They measure expropriation of minority shareholders as the value loss (or gain) from diversification – the diversification discount. For companies with one single controlling owner, the value loss associated with diversification is a negative function of the cash flow ownership of this primary owner. Faccio and Lang (2002) argue that consistent with the principal-agent model,

higher cash flow ownership by the controlling owner reduces the risk of expropriation. In contrast, when multiple controlling owners are present, they do not find a significant association between cash flow ownership of the largest owner and the diversification discount. Faccio and Lang (2002) conclude that the second large shareholder – that owns at least 10% of the shares – monitors the largest shareholder and therefore limits expropriation of minorities.

Baker and Gompers (1999) examine the role of venture capitalists as a second large shareholder in U.S. IPO firms. Because venture capitalists require repeated access to IPO markets and do not enjoy the same private benefits of control as the owner-manager, they have greater incentives to monitor management. Baker and Gompers (1999) report that venture capitalists reduce the control potential of the owner-manager. Using fixed salary as a proxy, they also find some evidence that venture capitalists reduce the ability of the owner-manager to enjoy private benefits of control in the form of increased salary.

On the whole, large shareholders have incentives to monitor the management. Although they bear 100% of the monitoring costs, they internalize a sizable fraction of the monitoring benefits. However, there is mixed evidence that (certain types of) large shareholders replace poorly performing managers. Multiple large shareholders may limit the expropriation of minority shareholders by the largest controlling owner. In IPO firms, venture capitalists may be an important shareholder to oppose the owner-manager and to limit the expropriation of small IPO investors.

2.3.4. Mechanisms to separate voting rights from cash flow rights

A controlling owner may treat himself preferentially at the expense of other investors. Their ability to expropriate other shareholders is especially large if their voting power is significantly larger than their cash flow rights. This section offers an overview of a number of mechanisms to achieve a separation of voting and cash flow rights.

Bebchuk (1999) develops a rent protection theory of corporate ownership and control. In his theory, an owner-manager (initial owner) has to decide whether he stays in control when the company goes public. If the private benefits of control are large and transferable, the owner-manager decides to keep a lock on control. If the owner-manager would leave control contestable, rival management teams would seize power of the company to capture these large private control rents. As a result, publicly traded companies tend to have a controlling owner in countries where private benefits of control are large. Bebchuk (1999) also suggests that these controlling owners prefer to separate voting and cash flow rights

through pyramid structures, cross-ownership and dual class shares. On account of these mechanisms the controlling owner can exercise control while owning less cash flow rights than voting rights. This makes holding a lock on control less expensive because it does not require controlling owners to forego the benefits of diversification to the same extent as under a 'one share-one vote' rule.

Pyramid structures allow the controlling shareholder to exercise control through a chain of companies. In a two-tier pyramid structure, a controlling shareholder holds a controlling vote in a holding company that in turn holds a controlling stake in an operating company. In a third-tier pyramid structure, the primary holding company controls an intermediate holding company that in turn has power over the operating company. This process can be repeated a number of times. Analyzing the 20 largest publicly traded corporations from the 27 wealthiest economies, La Porta, Lopez-de-Silanes, Shleifer and Vishny (1999) document that controlling owners often have voting power in excess of their cash flow rights, primarily through the use of pyramids and management appointments. Claessens, Djankov and Lang (2000) show that pyramid structures are a popular mechanism to separate control and cash flow rights in East Asian corporations. On average, the controlling owner exercises control through at least one holding company in 38.7% of firms. Faccio and Lang (2002) report on the use of pyramid structures in Western Europe. The use of pyramiding is less pronounced in comparison to East Asian firms with 15% of controlling shareholders using pyramid structures to wield control.

Companies in a cross-ownership structure are linked by horizontal cross-holdings of shares. In cross-ownership structures each company in the business group owns shares in its shareholders. Control of group companies is therefore distributed among the entire business group instead of being concentrated in the hands of a single controlling owner. These cross-holdings might facilitate non-market based intra-group sales of goods and services at the expense of minority shareholders. Cross-ownership is less prevalent than pyramiding. Analyzing 8 East Asian countries, Claessens, Djankov and Lang (2000) show that, on average, 10.1% of East Asian firms have cross-ownership. Faccio and Lang (2002) find an even lower incidence (6%) of cross-ownership in Western Europe.

Under dual class equity two different classes of shares exist, one with voting rights superior to the other. Large publicly traded companies do not commonly use dual class equity (La Porta, Lopez-de-Silanes, Shleifer and Vishny, 1999). Likewise, Claessens, Djankov and Lang (2000) find that companies in East Asia do not tend to use shares with superior voting rights. In contrast, Faccio and Lang (2002) report that 16.5% of Western European corporations use dual class shares. However, this figure ranges from 0.2% in Spain to 41.4%

in Italy. Several studies have examined the use of dual class equity in IPO firms. Holmén and Högfeldt (2001) investigate Swedish IPO firms. Swedish IPO firms frequently issue low-voting B-shares to the public, whereas insiders own A-shares with superior voting rights. More precisely, they find that 76% of Swedish IPO firms employ dual class shares. For Germany, Goergen and Renneboog (2002) report that almost 43% of German IPO firms from 1981 to 1988 adopt dual class shares. Dual class structures are less frequently employed in the United States, Canada and Australia. Smart and Zutter (2000) document that 9.7% of U.S. firms use dual class shares. Amoako-Adu and Smith (2001) report that 16.3% of Canadian IPO firms sell low voting shares to the public while insiders retain high voting shares. For Australia, Taylor and Whittred (1998) find that about 10% of IPO firms use dual class shares.

Bebchuk, Kraakman and Triantis (2000) show that, in theory, stock pyramids, cross-ownership structures and dual class equity have the potential to create very large agency costs. Such arrangements allow a controlling shareholder or group to maintain a lock on control without holding the majority of cash flow rights. Consequently, the controlling owner does not internalize a large fraction of the wealth consequences of his decisions through his cash flow ownership. Therefore the controlling owner can indulge in private benefits at the expense of other shareholders, while bearing only a minor fraction of related costs. Correspondingly, Claessens, Djankov, Fan and Lang (2002) report that firm value is a negative function of the wedge between voting and cash flow rights for East Asian corporations.

Ehrhardt and Nowak (2001) study 105 family-controlled German IPO firms from 1970 to 1991. They conclude that the consumption of private benefits in IPO firms with dual class shares is more substantial than in single class IPO firms. In particular, they report that managers engage in self-dealing by awarding themselves more fixed salary in dual class IPO firms than in single class IPO firms. For the United States, Smart and Zutter (2000) report that dual class IPO firms sell for lower price-to-sales ratios than single class IPOs. This might, at least in part, reflect that managers of dual class IPO firms have a higher propensity to indulge in private benefits of control than management of single class IPO firms. Dual class shares also reduce the likelihood of potentially value-increasing transfers of control. For Germany, Goergen and Renneboog (2002) find that the probability of retaining substantial ownership concentration six years after the IPO increases if the IPO firm has issued non-voting shares to the public. Amoako-Adu and Smith (2001) analyze the use of dual class shares by Canadian IPO firms. They conclude that, in most cases, dual class equity is used to prevent hostile takeover as opposed to preventing a sale of control per se.

All in all, managers may use pyramid structures, cross-ownership and/or dual class equity to separate voting and cash flow rights. Large publicly traded firms do not often use dual class equity. However, IPO firms in Australia, Canada, Germany, Sweden and the United States issue dual class shares to the public. These dual class shares may be used to protect private benefits of control.

2.3.5. The use of takeover defenses

Another way to protect private benefits of control relates to takeover defenses. Bebchuk (1999) analyzes the partially contestable control arising from takeover defenses. He shows that takeover defenses may prevent some takeover attempts from superior rival management teams. By limiting the effectiveness of the market for corporate control, incumbent managers may entrench themselves at other shareholders' expense.

On the other hand, takeover defenses can return benefits to all shareholders. Stulz (1988) posits that takeover defenses can strengthen management's bargaining position when negotiating with a potential bidder. Takeover defenses may force the bidder to offer a higher takeover premium to shareholders than he would otherwise offer. If the gain in the expected premium is worth more than the costs of managerial entrenchment, takeover defenses yield a net benefit to all shareholders. In the model of Stein (1988) takeover defenses generate benefits to shareholders because they reduce managerial myopia. Managerial myopia arises when takeover pressures lead managers to sacrifice long-term interests in order to increase short-term profits. Takeover defenses insulate managers from these takeover pressures and encourage management to focus on long-term strategies and invest in firm-specific (non-marketable) human capital.

Danielson and Karpoff (1998) report that U.S. firms commonly use takeover defenses. Comment and Schwert (1995) review a large number of U.S. studies that have examined the stock price effects of takeover defenses. Typically, event studies support a decline of less than 1% for most types of takeover defenses (Coates, 1999). Increased bargaining power or a reduction in managerial myopia could potentially explain why the stock price changes are not more negative. For example, Comment and Schwert (1995) report that takeover defenses increase the bargaining position of target firms and do not prevent many control transfers from taking place.

Daines and Klausner (2001) investigate the use of takeover defenses in 310 U.S. IPO firms in the period 1994-1997. They find that almost two-thirds of U.S. IPO firms have adopted takeover defenses. Daines and Klausner (2001) find that IPO firms use more

protective takeover defenses when the market for corporate control in an IPO firm's industry is more competitive. This finding is at odds with the bargaining power hypothesis. Incumbent management's bargaining power is already strong when several bidders compete for control. In such circumstances there should be a decreased, instead of an increased, need for management to adopt takeover defenses to strengthen its bargaining power. In addition, Daines and Klausner (2001) find a negative relation between the adoption of takeover defenses at the time of the IPO and industry-average research and development expenditures. Assuming that research and development expenditures represent long-term investment projects, managers should be more inclined to spend money on these projects when protected by takeover defenses. The inverse relation between the adoption of takeover defenses and research and development expenditure therefore implies that takeover protection is most common when managerial myopia is expected to be less of a problem. Daines and Klausner (2001) conclude that the use of takeover defenses at the IPO is motivated by management entrenchment rather than increased bargaining power or a reduction in managerial myopia.

Field and Karpoff (2002) analyze a sample of 1,019 U.S. IPO firms from 1988 to 1992. They report that IPO managers are most likely to deploy takeover defenses when they earn high levels of cash compensation, bear little cost in terms of lost share value, and can act independently from non-management shareholders. Based on these findings, Field and Karpoff (2002) conclude that IPO managers are likely to use takeover defenses when they have large private benefits of control and they can shift some of the costs onto non-management pre-IPO investors. They also report that IPO firms with takeover defenses are less likely to be acquired in the next five years compared to other IPO firms, but that the presence of takeover defenses is unrelated to the takeover premium being paid. This suggests that managers do not use takeover defenses to negotiate higher takeover premiums that would benefit all shareholders.

Taken together, the theoretical literature suggests that takeover defenses involve both costs and benefits. Event studies generally find takeover defenses are associated with a stock price decline that is less than 1%. Increased bargaining power or a reduction in managerial myopia could potentially explain why the stock price changes are not more negative. However, the evidence suggests that managers of U.S. IPO firms adopt defensive measures to entrench themselves to the detriment of other shareholders. The costs associated with managerial entrenchment appear to outweigh the potential benefits of takeover defenses in IPO firms.

2.4. Board Structure

2.4.1. Functions of boards of directors

Boards of directors are an economic institution that, in theory, helps to solve the agency problems between management and shareholders (Hermalin and Weisbach, 2002). The board of directors provides a check on management. Shareholders formally elect the board to act on their behalf. For its part, the board of directors monitors top management and ratifies major corporate decisions such as acquisitions, equity issues and investment decisions. In the extreme case, boards are expected to remove managers in the event of poor performance.

Fama and Jensen (1983) describe the decision process in public corporations. They write that “an effective system for decision control implies, almost by definition, that the control (ratification and monitoring) of decisions is to some extent separate from the management (initiation and implementation) of decisions” (page 304). Inside directors (persons who are currently managers of the company) are specialized in decision management. They submit business proposals for board approval and execute decisions that have been ratified by the board. Outside directors are not involved in the day-to-day management of the company. These outside directors focus on decision control. They ratify important decisions, monitor management performance and decide on executive compensation.

Outside directors have incentives to actively monitor management on behalf of shareholders. The demand for their services is dependent upon their reputation as effective decision control specialists (Fama and Jensen, 1983). Kaplan and Reishus (1990) find evidence consistent with this argument. Directors of poorly performing companies, who therefore may be viewed as being poor monitors, are less likely to become directors at other firms. For the United States, Brickley, Linck and Coles (1999) report a strongly positive relation between the likelihood that a retiring CEOs will serve as an outside director on other companies’ boards and his performance while on the job. Additionally, in all major legal systems, outside directors have a fiduciary duty to monitor managers.

Interestingly, board structures differ across countries. Moerland (1995a) reports that companies in Germany are required to adopt a two-tier board structure existing of an executive board (current managers of the company) and a supervisory board (outside directors). The supervisory board of large German companies is required by law to consist of equal numbers of shareholder representatives and employee representatives. In France, companies may choose between a one-tier and two-tier board structure but without required

employee representation. More precisely, employee representatives can attend board meetings in France, but they do not have any vote in board meetings. In Anglo-Saxon countries there is a one-tier board structure where inside and outside directors sit on the same board. The academic literature has largely focussed on the board of directors of the Anglo-Saxon type.

2.4.2. Board composition

In principle, the board has a very important role to play, but there are some doubts on its effectiveness in practice. This section presents an overview of the literature on the effectiveness of board composition. Board composition refers to the ratio between inside and outside directors. Outside directors supposedly have incentives to build a reputation as an expert monitor of inside directors. However, not all outside directors are independent from management. Affiliated directors (outside directors that are former managers of the company, relatives of management and persons that have business relationships with the firm) may be 'captured' by management. Conversely, independent directors (outside directors that are not affiliated to management) are often assumed to be experts in decision control (Baysinger and Butler, 1985). The fraction of independent directors on the board is typically used as a proxy for the extent to which the board is independent from management.

Rosenstein and Wyatt (1990) conduct an event study to examine whether changes in board composition affect shareholder wealth. Analyzing U.S. firms, they find that the stock price reaction on the day of the announcement of an appointment of an outside director equals 0.2%, on average. However, the significant stock price increase is confined to small firms. For example, the stock price reaction equals 0.3% for small firms compared to 0.1% for large firms. Although the magnitude of the effect is economically small, this suggests that boards affect firm value and that outside directors are chosen in the interests of shareholders. Lin, Pope and Young (2000) study the appointment of outside directors and their impact on shareholder wealth in the United Kingdom. They find no evidence of a significant average stock price reaction at the time of announcement. However, dividing the sample by firm size and management stock ownership reveals significant positive abnormal returns for the small firm-low ownership sub-sample and significant negative abnormal returns for the large firm-low ownership sub-sample. These results may be attributed to personal characteristics of the outside directors. Outside directors appointed by small-low ownership firms generally have relevant experience in the industry, strong monitoring incentives and sufficient time to spend

on their new board duties, whereas outsiders appointed by large-low ownership firms lack sector-relevant know-how and face greater demands on their time.

Bhagat and Black (2000) examine the relation between board independence and long-term firm performance for a sample of U.S. firms. They find evidence that firms suffering from low profitability respond by increasing the number of independent directors on their board, but no evidence that firms with more independent directors achieve improved profitability. However, they report that independent directors who hold significant ownership stakes in the firm may add value, while other independent directors do not. Buckland (2001) analyzes a sample of U.K. IPO firms from 1990 to 1994. He does not find that the fraction of independent directors on the board is related to subsequent firm performance. Similarly, Mikkelsen, Partch and Shah (1997) find that subsequent operating performance of U.S. IPO firms is unrelated to board composition. However, Frye (1999) reports that U.S. IPO firms with more independent board members have higher stock market returns in the year following the IPO.

One of the most important tasks of boards is to replace poorly performing managers. Weisbach (1988) reports that boards with at least 60% independent directors are more likely than other boards to remove poorly performing CEOs. In particular, he finds that the likelihood of firing the CEO in firms with the lowest stock price (earnings) performance is 1.3% (6.8%) higher for firms with 60%-independent boards than for firms with 40% or fewer independent directors. Dherment-Ferere, Köke and Renneboog (2001) find that a higher fraction of outside directors increases the probability of removal of poorly performing managers in Belgium and France but not in the U.K. and Germany. For the United Kingdom, Franks, Mayer and Renneboog (2001) show that management turnover is a negative instead of a positive function of the fraction of outside directors. They argue that this is consistent with outside directors in U.K. firms playing a primarily advisory rather than disciplinary role. Perry (2000) and Bhagat, Carey and Elison (1999) study a large sample of U.S. firms. They document that independent directors with a financial stake in the performance of the firm through stock-based compensation are better monitors of management. When independent directors receive stock-based compensation, the likelihood of CEO turnover increases in the wake of poor firm performance.

Outside directors do not provide a perfect solution to agency problems. Hart (1995) identifies three reasons why outside directors may not do a good job at monitoring the firm's management. First, they may not have a significant financial interest in the company. Therefore they have nothing to gain personally from improvements in firm performance. Empirical work supports the hypothesis that independent directors with an ownership stake in

the company are more effective. As mentioned earlier, Bhagat and Black (2000) find that independent directors with stock ownership in the company add to firm value, whereas other directors do not. Correspondingly, Perry (2000) shows that independent directors with stock-based compensation are more effective in removing poorly performing managers.

Second, outside directors are busy people that may sit on too many boards. Above all, the board meets only briefly a couple of times each year, spends little time on its work and has no independent counsel or staff support of its own. Core, Holthausen and Larcker (1999) show that CEOs are able to earn greater compensation when outside directors sit on three or more other boards. They interpret this finding as consistent with the argument that directors become less effective when they serve on too many other boards.

Third, outside directors may owe their position to the CEO, who proposed them as directors to begin with. Shivdasani and Yermack (1999) study whether CEO involvement in the selection of new directors affects the nature of appointments to the board. They find that when the CEO is on the selection committee, U.S. firms are less likely to appoint independent directors. Stock price reactions to independent director appointments are significantly lower when the CEO is involved in the selection of directors. Moreover, these independent directors are more likely to face demands on their time due to a greater number of outside directorships at other companies. Baker and Gompers (2001) examine board composition in 1,116 U.S. IPO firms from 1978 to 1987. They find that the fraction of independent directors decreases as the voting control and tenure of the CEO increases. This suggests that more powerful CEOs exercise more influence over board composition in IPO firms.

In summary, there is mixed evidence concerning the relation between board composition and firm performance. Outside directors that are independent from management and that own stock in the company are found to be more active monitors of management compared to other directors. In IPO firms, there is little evidence of a relation between board composition and subsequent firm performance. One explanation may be that CEOs of IPO firms wield sufficient power to co-determine board composition.

2.4.3. Board size

The optimal size of the board balances the costs and benefits of additional directors. Although additional directors may input information, expertise, and/or monitoring, larger boards are often believed to be ineffective (Jensen, 1993 and Lipton and Lorsch, 1992). The idea is that coordination and communication problems increase when board size is pushed too far. When boards become too large, directors may free ride on the monitoring efforts of other

directors and the board becomes more symbolic and less a part of the decision process (Hermalin and Weisbach, 2002). On the assumption that a larger board leads to less active monitoring, CEOs favor larger than optimal boards.

Yermack (1996) analyzes the relationship between firm value, measured as Tobin's Q , and board size for a sample of 452 large U.S. corporations between 1984 and 1991. He shows that an inverse relation exists between firm value and board size, which is statistically significant. In addition, Yermack (1996) reports that this relation is convex. This implies that the largest losses occur when a company moves from a small to a medium sized board of directors. Eisenberg, Sundgren and Wells (1998) find that board size is negatively related to the operating performance for sample of small to midsize Finnish companies. Not surprisingly, these firms have smaller boards than the U.S. firms analyzed by Yermack (1996). This suggests that problems in coordination and communication extend to smaller boards and smaller firms. Conyon and Peck (1998) investigate the relation between board size and corporate performance for five European countries (United Kingdom, France, the Netherlands, Denmark and Italy). For all countries, they find a negative relation between Tobin's Q and board size.

In IPO firms, board size is lower than in larger publicly traded firms. For example, Buckland (2001) reports an average board size of 9 for large U.K. companies versus 6.8 for U.K. IPO firms. Analyzing U.S. IPO firms, Baker and Gompers (2001) find a median board size equal to 6, which compares to a median board size of 12 reported by Yermack (1996) for large U.S. corporations. Baker and Gompers (2001) find that board size is a negative function of CEO founder status and a positive function of CEO age. This suggests that founding CEOs do not push for larger boards whereas older CEOs prefer larger boards. Mak and Roush (2000) question whether the negative board size effect reported in Yermack (1996) holds true for IPO firms. They argue that while larger boards may make less timely strategic decisions, larger boards can also make it more difficult for CEOs to obtain consensus for taking actions that are harmful to minority shareholders. In addition, boards may be larger to include more outside directors. Mak and Roush (2000) find a negative relation between board size and management stock ownership for a sample of New Zealand IPO firms. They conclude that the agency problem between management and outside investors in IPO firms can either be addressed through increased management stock ownership or larger boards.

In conclusion, board size is negatively related to firm value. This negative relation has been documented for large U.S. firms, small and midsize Finnish firms as well as a large sample of firms from five European countries. However, the sparse evidence for IPO firms is less clear. Mak and Roush (2000) argue that larger boards may even assist to address the

agency problem. One possible explanation is that larger boards in IPO firms accommodate the appointment of more independent directors. Results of previous studies may therefore not be directly imputed to IPO firms.

2.5. Executive compensation

2.5.1. *The structure of executive compensation*

The structure of executive compensation has attracted the attention of many academic researchers. Murphy (1999) mentions several components of executive compensation with varying sensitivity to firm performance. Fixed salary is the component of pay least related to firm performance because salary levels are generally determined prior to the year the salary is paid. Conversely, bonuses are typically paid as the result of achieving a performance target. Stock options are linked to the performance of the firm because their value depends on the increase in share price. This stock-based compensation is often believed to address the agency problem between risk-averse managers and risk-neutral shareholders. Because stock-based compensation allows managers to share in improved firm performance, their financial interests become better aligned with those of shareholders.

The structure of executive compensation has changed significantly in recent years. Perry and Zenner (2000) report on the changes in the structure of CEO compensation in the United States from 1992 to 1998. They find that for the median CEO the fixed salary component has declined from 44.6% to 27.9% of total compensation from 1992 to 1998. This differs from the option component of total pay, which has risen from 16% in 1992 to 35% in 1998, evaluated at the median. The median bonus involves 19.1% of total compensation in 1992 and 16.6% in 1998. These findings highlight that CEO compensation has become more sensitive to firm performance especially due to the increased use of stock options.

It is therefore important to consider how changes in CEO wealth are related to firm performance. In an influential study, Jensen and Murphy (1990) develop a wealth-to-performance sensitivity measure, which captures the dollar change in CEO wealth per \$1,000 change in shareholder wealth. Analyzing an early period (1970-1988), they estimate that CEO wealth changes only \$3.25 for every \$1,000 change in shareholder wealth. More recently, Hall and Liebman (1998) show that there is an economically and statistically significant relation between CEO wealth and shareholder wealth for a sample of U.S. firms in 1994. For example, CEOs in the lowest performance decile lose \$435,000 whereas CEOs in

the top performance decile gain about \$8.6 million. Consistent with earlier findings of Jensen and Murphy (1990) they show that most of the gains and losses stem from the CEO's stock and option holdings. Hall and Liebman (1998) show that when only options are included in the calculations (stock is excluded) the median CEO earns \$2.15 for every \$1,000 increase in shareholder wealth. When stock is included, the median CEO receives \$5.29 for every \$1,000 increase in shareholder wealth. Interestingly, Baker and Gompers (1999) show that CEOs in U.S. IPO firms from 1979-1987 receive \$221 per \$1,000 gain in shareholder wealth. This implies that, on account of greater stock holdings, the wealth-to-performance sensitivity in IPO firms is 50 times higher than that reported by Jensen and Murphy (1990).

For the United States, stock options have become an important part of executive compensation. However, stock options are not equally important around the world. Murphy (1999) observes that as well as receiving higher total pay, U.S. CEOs are also paid differently than CEOs elsewhere. In the United States, CEOs receive a larger portion of their pay in the form of stock options and a lower part in the form of fixed salary. Stock options (and other long-term incentives) are absent in 9 of the 23 countries surveyed, and account for less than 5% of total compensation in 13 of the 23 countries. Conyon and Murphy (2000) show that even in the United Kingdom, which is often thought of as a country similar to the United States, stock options constitute a much smaller part of total pay. They attribute this difference to differences in corporate tax regimes and political and cultural differences.

In sum, stock-based compensation seems to be especially widespread and important in the United States. Owing to higher stock ownership, the wealth of CEOs in IPO firms is even more sensitive to changes in shareholder wealth. However, in other countries, stock-based compensation is a less important part of total CEO pay. Correspondingly, most of the academic literature on stock-based compensation has focussed on the United States. In Section 2.5.2 we answer the question whether stock-based compensation is used effectively.

2.5.2. Is stock-based compensation used effectively?

Stock-based compensation potentially addresses the agency problem between managers and shareholders because its value depends on firm performance. One of the key research questions is therefore whether a stock-based compensation plan improves firm performance. However, there are surprisingly few empirical studies that have addressed this issue. In an early study, Brickley, Bhagat and Lease (1985) document an average stock price reaction of 2.4% to the announcement that firms adopt a stock-based compensation plan. This suggests that stock-based compensation plans increase shareholder value. Abowd (1990) shows that

stock-based compensation plans relate positively to subsequent stock price performance. More recently, Mehran (1995) analyzes 153 randomly selected U.S. manufacturing firms in 1979-1980. He finds that firm performance, as measured by Tobin's Q and return on assets, is positively related to the percentage of executive compensation that is equity-based. Mehran (1995) concludes that equity-based compensation affects managerial incentives in ways that have a measurable impact on firm performance. Welbourne and Andrews (1996) report that U.S. IPO firms that have adopted equity-based compensation plans have better chances of survival than IPO firms without such compensation plans do.

However, other studies show that stock-based compensation is not a universal solution to the agency problem. In their survey article, Shleifer and Vishny (1997) write "the more serious problem with high-powered incentives is that they create enormous opportunities for self-dealing for the managers, especially if these contracts are negotiated with poorly motivated boards of directors rather than with large investors" (page 745). Yermack (1997) analyzes the timing of CEO stock option awards in the United States, as a way of studying managers' influence over their own compensation. In a sample of 620 stock option awards to CEOs, he finds that the timing of awards coincides with good news announcements. Managers delay option grants until after bad news announcements. These findings suggest that stock options are not so much an incentive device as a mechanism of self-dealing. Brenner, Sundaram and Yermack (2000) find that firms tend to change the terms of previous stock option grants in the event of poor firm performance. In particular, firms lower the exercise price to the current market price following performance deterioration and half of the changes extend the maturity of the options. This implies that managers do not share in the decline of firm performance to the same extent as they share in the improvement in firm performance. Ofek and Yermack (2000) and Core and Guay (1999) find evidence of managers selling shares of previously held stock during periods in which they are granted new stock options. Ofek and Yermack (2000) report that additional selling of shares occurs over time if options move into-the-money. These effects are strongest for managers who already own many shares, whereas stock options do increase the shareholdings of managers with low ownership. This partially reflects the desire of managers to diversify their personal wealth. But this selling activity also highlights that the incentive effects of stock options are reduced and that costly stock options may not necessarily be an effective compensation tool. Pontbriand and Breton (1999) show that stock options at the time of the IPO can be used to transfer wealth from dispersed investors to the controlling owner(s). They conduct 25 case studies of Canadian IPO firms in the computer industry. Wealth transfers usually take the

form of option grants given just before the IPO with an exercise price far below the offer price that is paid for the IPO shares by small shareholders.

Some studies have examined the circumstances that are conducive to such self-serving behavior of the CEO. Core, Holthausen and Larcker (1999) find that U.S. CEOs earn more compensation especially when board structures are less effective. CEO compensation is higher if the CEO is also the board chair, the board is larger and the CEO appoints a larger fraction of outside directors. Conversely, CEO compensation is lower when he owns a larger ownership stake in the company and when an external large shareholder owns at least 5% of the equity. Bertrand and Mullainathan (2000) show that options are add-on compensation in firms with weak governance structures, but are made up for by decreases in cash compensation in companies with stronger corporate governance. In particular, they find that if a large shareholder is represented on the board, managers are charged more for their option grants. Using fixed salary as a proxy, Baker and Gompers (1999) find some evidence that venture capitalists reduce the ability of the CEO in U.S. IPO firms to enjoy private benefits of control in the form of increased salary.

In conclusion, stock-based compensation may potentially address the agency problem between risk-averse management and risk-neutral shareholders. However, stock options may also be used to expropriate shareholders and therefore not provide a universal solution to the agency conflict. Whether or not stock options are used effectively seems to depend on other corporate governance mechanisms such as board structure and monitoring by large shareholders.

2.6. Summary and conclusions

In this chapter we confine ourselves to a discussion of investor protection and internal corporate governance mechanisms. Moreover, we pay special attention to the use of internal corporate governance mechanisms in IPO firms. We start by observing that selling equity claims to investors engenders an agency problem. The controlling owner may pursue his personal interests at the expense of minority investors that buy their shares in the equity issue. Corporate governance is a set of mechanisms through which investors shield themselves against expropriation by the controlling owners. As such, corporate governance is closely associated with the agency problem.

In Section 2.1 we take a legal approach to corporate governance. The legal approach to corporate governance holds that the key mechanism is the protection of outside investors

through the legal system – laws and their enforcement. Investor protection tends to be stronger in common law and weaker in civil law countries. Strong investor protection helps to moderate the expropriation of minority shareholders by the controlling owner, promotes external financing, and is important to understand cross-country differences in ownership patterns. Alternatively, corporate governance systems can be classified on the basis of institutions rather than legal investor protection. According to Roe (1990, 1993) different historical political and legal restraints on ownership and control of companies led to different institutional structures and different institutions led to different corporate governance structures.

In Section 2.3 we discuss ownership and control. Principal-agent theory predicts a positive relation between management ownership and firm value. If managers own more stock in the employing company their interests become better aligned with those of shareholders. Correspondingly, many empirical studies find a positive relation between management ownership and firm value at low levels of ownership. However, at higher levels of management stock ownership entrenchment effects outweigh these incentive effects. This implies a non-linear relation between management stock ownership and firm value. Albeit less pronounced, this non-linear relation is also reported for IPO firms. However, recent studies cast doubt on the robustness of the relation between management stock ownership and firm value.

Large shareholders have incentives to monitor management. Although they bear 100% of the monitoring costs, they internalize a sizable fraction of the monitoring benefits. However, there is mixed evidence that (certain types of) large shareholders replace poorly performing managers. Multiple large shareholders may limit the expropriation of minority shareholders by the largest controlling owner. In IPO firms, venture capitalists may be an important shareholder to oppose the owner-manager and to limit the expropriation of small IPO investors.

The ability of a controlling owner to expropriate other shareholders is especially large if their voting power is significantly larger than their cash flow rights. The controlling owner may use pyramid structures, cross-ownership and/or dual class equity to separate voting and cash flow rights. Such arrangements allow a controlling shareholder or group to maintain a lock on control without holding the majority of cash flow rights. Consequently, the controlling owner does not internalize a large fraction of the wealth consequences of his decisions through his cash flow ownership. Therefore the controlling owner can indulge in private benefits at the expense of other shareholders, while bearing only a minor fraction of

related costs. IPO firms in several countries issue dual class shares to the public. These dual class shares may be used to protect private benefits of control of the controlling owner.

Takeover defenses involve both costs and benefits for shareholders. Event studies generally find takeover defenses are associated with a stock price decline that is less than 1%. Increased bargaining power or a reduction in managerial myopia could potentially explain why the stock price changes are not more negative. However, the existing evidence suggests that managers of U.S. IPO firms adopt defensive measures to entrench themselves to the detriment of other shareholders. The costs associated with managerial entrenchment appear to outweigh the potential benefits of takeover defenses in IPO firms.

In Section 2.4 we describe boards of directors. In theory, the board of directors is an economic institution that helps to solve the agency problem between management and shareholders. Outside directors that are not involved in the day-to-day management of the company are often believed to monitor the actions of managers on behalf of shareholders. However, there is mixed evidence concerning the relation between board composition and firm performance. Outside directors that are independent from management and that own stock in the company are found to be more active monitors of management compared to other directors. In IPO firms, there is little evidence of a relation between board composition and subsequent firm performance. One explanation may be that CEOs of IPO firms wield sufficient power to determine board composition.

Although additional directors may input information, expertise, and/or monitoring, larger boards are often believed to be ineffective. The idea is that coordination and communication problems increase when board size is pushed too far. Accordingly, several studies have reported that board size is negatively related to firm value. However, the evidence for IPO firms is less clear. Mak and Roush (2000) argue that larger boards may even assist to address the agency problem. One possible explanation is that larger boards in IPO firms accommodate the appointment of more independent directors. Results of previous studies may therefore not be directly imputed to IPO firms.

As a final point, Section 2.5 discusses executive compensation. In recent years, executive compensation has become more sensitive to firm performance. Especially in the United States, stock options have become a more important part of executive compensation. Owing to higher stock ownership, the wealth of CEOs in IPO firms is even more sensitive to firm performance. Stock-based compensation may potentially address the agency problem between risk-averse management and risk-neutral shareholders. However, stock options may also be used to expropriate shareholders and therefore not provide a universal solution to the agency conflict. Whether or not stock options are used effectively seems to depend on other

corporate governance mechanisms such as board structure and monitoring by large shareholders.

Chapter 3:

Takeover Defenses and IPO Firm Value in the Netherlands

3.1. Introduction

In recent years, takeover defenses have been at the center of a major European public policy debate. The long-awaited European takeover code, often referred to as the Thirteenth Directive, was, although agreed upon by the Council of Ministers, rejected by European Parliament on July 4, 2001⁸. The ongoing argument relates to the strict ‘neutrality’ rule that prevents managers from using most takeover defenses without shareholder approval (Kirchner and Painter, 2001). Proponents of the strict neutrality rule argue that takeovers improve social welfare by transferring assets to those who value them most, whereas opponents argue that hostile takeover activity may lead to an unnecessary and socially harmful loss of jobs.

This chapter contributes to the policy debate by providing an example of the effect of takeover defenses on firm valuation. In particular, we examine the costs and benefits of takeover defenses at the time of an initial public offering (IPO) on Euronext Amsterdam. There are distinct advantages to structure the analysis around a corporate event – the IPO. Firstly, the IPO firm’s management adopts takeover defenses as part of a long-term strategy, not because a takeover is imminent. Secondly, IPO firm’s managers often internalize a large proportion of the costs of takeover defenses through their substantial pre-IPO stock ownership. The situation is different for large public corporations, because managers at these companies typically own only a small fraction of the firm’s equity.

The presence of one or more takeover defenses at the IPO affects three parties: management, IPO investors and non-management pre-IPO owners⁹. If protected by a takeover defense, the IPO firm’s management may block wealth-creating takeovers, indulge in private benefits and entrench itself at shareholders’ expense. Principal-agent theory predicts that pre-IPO owners, including managers, bear these costs when the firm goes public (Jensen and Meckling, 1976). Investors that buy shares in the IPO anticipate conflict of

⁸ See 13th Council Directive on Company Law Concerning Takeover Bids, European Community, COM (95) 655 – 1995/0341 (COD).

⁹ Non-management pre-IPO owners may include venture capitalists, industrial and commercial companies and institutional investors.

interests with management and are expected to negatively factor takeover defenses into the price they are willing to pay for the IPO shares. Management (also an important, often controlling owner) recognizes that IPO valuation will be negatively affected by the extent to which they use takeover defenses. In theory, management would therefore decide to use takeover defenses only when the retention of private benefits outweighs the reduction in share prices due to the adoption of these defensive measures (Bebchuk, 1999). Non-management pre-IPO owners stand to lose. Their shares are expected to be worth less because of the takeover defenses but different from managers, they do not obtain compensating private benefits.

Our research extends a growing empirical literature examining the use of takeover defenses by U.S. IPO firms. Field and Karpoff (2002) report that 53% of the firms going public in the United States deploy at least one takeover defense. They find that the presence of takeover defenses is negatively related to the probability of acquisition within the next five years. Takeover premiums, on the other hand, are not significantly related to the use of takeover defenses. This suggests that managers do not use takeover defenses to bargain for higher takeover premiums that would benefit all shareholders. Instead they seem to adopt takeover defenses to insulate themselves from the market for corporate control. Field and Karpoff (2002) and Field (1999) conclude that IPO managers are most likely to use takeover defenses when their private control benefits are large. Daines and Klausner (2001) document that nearly two-thirds of the 310 American firms that went public between January 1994 and July 1997 have adopted takeover defenses. They study the factors that influence the rate of adoption of defensive measures. Consistent with Field and Karpoff (2002), they find no support for the premise that takeover defenses are adopted to negotiate higher takeover premiums in future takeovers. Additionally, Daines and Klausner (2001) report that IPO firms do not use takeover defenses to shield firm-specific investment in human capital or to encourage managers to invest in valuable long-term investment projects. They conclude that the use of takeover defenses at the IPO is best explained by managerial entrenchment. Coates (2000) argues that the use of takeover defenses at IPO firms is puzzling. Why would that many IPO firms adopt takeover defenses if these defensive measures reduce firm value?

The extant literature thus suggests that takeover defenses yield no benefits to IPO investors or to non-management pre-IPO shareholders, but given their widespread adoption, apparently do provide some private benefits to managers. The valuation impact of takeover defenses at the time of the IPO, however, remains largely unexplored. Our study aims to fill this gap. Although private control benefits are difficult to measure empirically, these benefits

should be reflected in a reduction in the price that IPO investors are willing to pay for the shares.

We analyze a sample of 111 IPOs on Euronext Amsterdam during the years 1984-1999. On average, IPO firms in the Netherlands adopt two takeover defenses before going public. The use of takeover defenses is common. More than 90% of IPO firms adopt at least one takeover defense. We report that IPO firms in the Netherlands deploy takeover defenses at the same rate as other publicly traded firms. First, we analyze in which circumstances these defensive measures are adopted. Similar to previous U.S. studies, we are unable to identify factors that can consistently explain the use of takeover defenses by IPO firms. Second, we examine whether takeover defenses impact IPO firm value, as predicted by standard principal-agent theory. Controlling for differences in size, profitability, sales growth and management ownership, we report that takeover defenses are inversely related to IPO firm value. In particular, the use of non-voting share certificates is negatively related to IPO firm value.

Our results suggest that managers use takeover defenses to protect their private benefits of control. Managers are important, often controlling owners. For example, management pre-IPO stock ownership exceeds 50% in 51 IPO firms (46% of total sample size). In general, managers therefore decide which and to which extent takeover defenses are adopted preceding the IPO. As these defensive measures lower firm value, managers incur costs through their stock ownership, but gain through their private benefits. IPO investors are likely to break even. Consistent with agency theory, they factor takeover defenses negatively into the price they are paying for the IPO shares. Non-management pre-IPO owners suffer losses. Their shares are worth less and, unlike managers, they do not get offsetting private benefits¹⁰.

The chapter is set up as follows. Section 2 reviews the literature. Section 3 provides a detailed overview of takeover defenses in the Netherlands. Section 4 presents the data. In this section we compare the use of takeover defenses in IPO firms to that in other public companies. Section 5 explains the methodology. Section 6 discusses the results. Section 7 concludes.

¹⁰ This prompts the question why these non-management pre-IPO owners, such as venture capitalists, tolerate the use of takeover defenses if their shares are worth less. One reason may be that venture capitalists do not want to jeopardize their good relations with management by opposing the adoption of takeover defenses (Coates, 2000). In addition, venture capitalists need the cooperation of management in order to bring the firm public. Managers may simply withhold their cooperation if venture capitalists or other non-management pre-IPO owners do not agree to the adoption of takeover defenses. In a survey, it is reported that 70% of European venture capitalists at some time experienced difficulties in exiting their investments ("Better Exits", Price Waterhouse Corporate Finance, commissioned survey by the Exits Committee of the European Venture Capital Association). One important reason for these difficulties is uncooperative management.

3.2. Prior literature

Bebchuk (1999) develops a theoretical model to analyze management's decision to adopt takeover defenses when taking the firm public. His model predicts that this decision depends on the expected size of the private benefits of control, such as above-market levels of compensation, status, subsidized personal loans or perk consumption. Because of these private benefits of control, management's interests diverge from the interests of other shareholders. In the model, IPO investors anticipate the conflict of interests with management and reduce the price they are willing to pay for the IPO shares. The reduction in share price will reflect the expected amount of the private control benefits to managers. To the degree that managers own equity in the firm, they would bear this cost directly in the value of their shares. However, provided managers own less than 100% of the pre-IPO stock, they do not bear the full cost of takeover defenses. As long as managers gain more through private control benefits than they lose through their pre-IPO stock ownership, they decide to adopt takeover defenses to shield these private benefits. Non-management pre-IPO owners also bear the costs of takeover defenses through their stock ownership, but do not obtain compensating private benefits. Hence non-management pre-IPO owners stand to lose from the use of takeover defenses.

Several empirical studies have examined the use of takeover defenses by U.S. IPO firms. Field and Karpoff (2002) report that IPO managers are most likely to deploy takeover defenses when they earn high levels of cash compensation, bear little cost in terms of lost share value, and can act independently from non-management shareholders. Based on these findings, Field and Karpoff (2002) conclude that IPO managers are likely to use takeover defenses when they have large private benefits of control and they can shift some of the costs onto non-management pre-IPO investors. They also report that IPO firms with takeover defenses are less likely to be acquired in the next five years compared to other IPO firms, but that the presence of takeover defenses is unrelated to the takeover premium being paid. This suggests that managers do not use takeover defenses to negotiate higher takeover premiums that would benefit all shareholders.

Daines and Klausner (2001) study the determinants of takeover defenses for a sample of U.S. IPO firms. They show that the use of takeover defenses cannot be explained by efficiency theories. The first efficiency explanation relates to the increased bargaining power to negotiate higher takeover premiums. Stulz (1988) argues that takeover defenses reduce the probability of a successful takeover, but increase the premium if a takeover bid is made. As long as the probability of a takeover is not reduced to zero and the shareholders receive a

sufficiently higher premium if a successful takeover does occur, all shareholders would benefit from takeover defenses. Daines and Klausner (2001) find that U.S. IPO firms adopt more protective takeover defenses when the market for corporate control in an IPO firm's industry is more competitive. This finding is at odds with the bargaining power hypothesis. Incumbent management's bargaining power is already strong when several bidders compete for control. In this setting there should be a decreased, instead of an increased, need for management to adopt takeover defenses to strengthen its bargaining power.

The second efficiency explanation involves the reduction of managerial myopia. Stein (1988) argues that if shareholders are imperfectly informed, temporarily low earnings may cause the stock to become undervalued, increasing the likelihood of a takeover at an unattractive price. So as to prevent these unwanted bids, myopic managers may decide to increase current profits at the expense of long-term interests (e.g. research and development expenditures). In order to resolve this managerial myopia the firm may adopt takeover defenses to give incumbent management greater power to block value-reducing takeover bids. Daines and Klausner (2001) find a negative relation between the adoption of takeover defenses at the time of the IPO and industry-average research and development expenditures. This implies that takeover protection is most common when managerial myopia is expected to be less of a problem. Daines and Klausner (2001) therefore conclude that the use of takeover defenses at the IPO is explained not by efficiency theories but by managerial entrenchment.

Coates (2000) argues that the variation in takeover defenses is partially explained by the quality of legal services provided to pre-IPO owners. He shows that U.S. IPO firms advised by larger law firms with more takeover experience adopt more defenses. However, he finds that dual class structures are distinct from other takeover defenses and their use is motivated by large private benefits of control. Coates (2000) concludes that these findings suggest that, except for dual class shares, takeover defenses are generally optimal at the IPO stage, but not all firms receive that advice from their lawyers.

Other studies primarily focus on the use of dual class shares. Under a dual class capitalization two classes of stock exist, one with voting rights superior to the other. Smart and Zutter (2000) compare dual class U.S. IPOs to single class U.S. IPOs. They find that dual class IPOs sell for lower price-to-sales ratios than single class IPOs. Amoako-Adu and Smith (2001) analyze the use of dual class shares by Canadian IPO firms. They conclude that, in most cases, dual class equity is used to prevent hostile takeover as opposed to preventing a sale of control per se. Taylor and Whittred (1998) find that Australian IPO firms with dual class shares have higher growth options requiring founder's human capital to exploit. They

conjecture that investors rationally seek to shield managers from the market for corporate control to encourage managers to invest in firm-specific human capital. Ehrhardt and Nowak (2001) examine a sample of 105 family-owned German IPO firms. They show that families use dual class structures to preserve private benefits of control, such as excessive management compensation (self-dealing) and enjoyment of luxury goods (amenities). Holmén and Högfeldt (2001) investigate Swedish IPOs. Swedish IPO firms frequently issue low-voting B-shares to the public, whereas insiders own A-shares with superior voting rights. Their results show that managerial entrenchment comes at a price since investors value non-founder controlled IPO firms that issue low-voting shares at significantly lower market-to-book ratios. Holmén and Högfeldt (2001) argue that this lower valuation of non-founder controlled IPO firms with low-voting shares implies that there are higher agency costs associated with entrenched non-founder owners, which are not offset by pivotal managerial capital that is contributed by founders.

Taken together, the existing literature suggests that IPO firm's management use takeover defenses to shield large private benefits of control. In general, takeover defenses do not benefit IPO investors or non-management pre-IPO shareholders, but are used to entrench managers. However, few studies have investigated the impact of takeover defenses on IPO firm value. This study aims to fill this gap using data for 111 IPOs on Euronext Amsterdam. The next section provides a detailed overview of takeover defenses in the Netherlands.

3.3. Takeover defenses in the Netherlands

3.3.1. Priority shares

Priority shares permanently vest special control rights in foundations friendly to incumbent management. In general, the holders of the firm's priority shares have the exclusive right to appoint or discharge members of the management board as well as supervisory directors. Moreover, the payments of dividends and important investments have to be approved by priority shareholders. If Dutch company law requires a company to install the structured regime (see hereafter), this company is no longer able to grant the holders of priority shares the right make binding nominations for board positions. Therefore, priority shares and the structured regime can be seen as substitutes. An important difference between priority shares and the structured regime is that a decision of the holders of priority shares can be overruled by a supermajority of two-third of the votes cast at the shareholders' meeting (with at least

half of the outstanding shares being represented). Priority shares are not traded on the stock exchange.

3.3.2. Share certificates

Companies may create share certificates by depositing the original voting shares with a trustee. For every deposited share the trustee issues a certificate of a common share which is traded on Euronext Amsterdam. The certificate entitles its holder to receive dividends only. The voting right attached to the original share remains with the trustee office. Only private investors may exchange these certificates for voting shares up to a maximum percentage of 1% of outstanding equity capital. In general the administration of the trustee office consists of board members and a number of outside members. While the chairman and majority of the trustee office members must be from the outside, in practice they are often on friendly terms with managers. Certificates are comparable to dual class shares that are used in other countries. However, certificates limit shareholders' rights more than dual class shares do. Under a dual class capitalization two classes of stock exist, one with voting rights superior to the other. In the case of certificates shareholders are simply deprived of their votes, which are not cancelled but cast by the trustee office.

3.3.3. Voting caps

Voting caps limit the number of voting rights that any single shareholder can cast at the shareholders' meeting, regardless of the number of shares he or she actually owns. From the viewpoint of incumbent management, the advantage of the voting cap is that the company is protected against hostile takeovers. However, voting caps also limit the voting rights of well-disposed shareholders. In particular, holders of preference shares and the trustee office cannot be exempted from the voting limitations. As a consequence, managers infrequently use voting caps.

3.3.4. Structured regime

The Netherlands is characterized by a two-tier board structure. Within Dutch firms, as in Germany, the management board consists of executive directors and controls day-to-day operations while an 'independent' supervisory board monitors the management board. The chairman of the management board is the Chief Executive Officer (CEO). He or she is not

involved with the supervisory board (no chairman-duality). The supervisory board is composed of at least three non-executive directors that are legally obliged to watch over the company as a whole, and not primarily or exclusively over the interests of shareholders or any other group of stakeholders. This corresponds to the recent proposals of European Parliament. European Parliament proposes to widen the fiduciary duty of directors in Europe to include employees as well as shareholders.

The structured regime transfers several decision rights from the shareholders to a self-perpetuating supervisory board. These rights include the right to appoint and dismiss members of the management board, to adopt the annual accounts, and the election of the supervisory board itself, called co-optation. The structured regime is legally required for Dutch companies that meet the following three conditions over a consecutive three-year period: 1. a book value of equity in excess of 25 million guilders, 2. a workers council and 3. at least 100 people employed in the Netherlands (Book 2 of the Dutch Civil Code). One reservation leveled at the structured regime is that even large shareholders cannot easily obtain control of the company's key positions since the binding nomination and discharge of directors is the exclusive right of the supervisory board. Moerland (2002) argues that the structured regime may turn out to be a takeover defense in disguise.

3.3.5. Authorization to issue preference shares

The authorization to issue preference shares has a limited time horizon. In general, every five years management has to renew the authorization at the general meeting of shareholders. Kabir, Cantrijn and Jeunink (1997) show that the procedure of defense with preference shares takes place in three consecutive steps that do not necessarily occur simultaneously. First, common shareholders authorize incumbent management to create the possibility of issuing preference shares. Second, incumbent management grants the option to a friendly party – usually a foundation and/or befriended institutional investor – to buy the preference shares. As a third step, management issues preference shares (typically at the threat of a hostile takeover).

Compared with ordinary shares, that have to be fully paid for, preference shares advance a relatively inexpensive way of increasing the number of shares (and thus votes). The amount to be paid up on preference shares is just 25% of nominal value. The acquirers of preference shares can even arrange for a loan, where the interest on the loan can be paid from future dividends on the preference shares. The company may not provide this loan itself. Because preference shares get the same voting rights as ordinary shares, substantial voting

power can be given to a friendly party at a relatively low cost. To some extent, preference shares are similar to poison pills used in the United States. Poison pills also represent the creation of securities carrying special rights exercisable by a triggering event, usually a takeover attempt.

3.4. Data and sample description

3.4.1. Dataset

The original sample consists of all 146 Dutch firms that have had initial public offerings from January 1984 through December 1999. Companies from the banking and financial sectors (14 firms), split-ups (4) and privatization issues (4) are excluded since they display different characteristics compared to other IPO firms. Firms that are quoted abroad before they join the Amsterdam Exchanges (4) and companies that transfer from the third tier of the stock market (the "Incourante Market") to the Official (Parallel) Market (9) are discarded because their price discovery is straightforward. After deleting these cases, our data set contains 111 IPOs on the Official Market (60), Official Parallel Market (39) and New Market (12) of Euronext Amsterdam¹¹. Market prices are collected from *Datastream*. Offer prices, financial statement numbers and information on takeover defenses are hand-collected from prospectuses.

The sample is distributed among numerous industry groups. The major industry groups involve computer hardware and software (20 firms), business services (16), manufacturing (15), wholesale trade (11) and electronic equipment and components (10). Clustering exists in time periods corresponding to hot issue periods in 1986/87 (31 IPO firms) and 1998/99 (30 IPO firms). During these years the number of IPO firms was substantially larger than in other periods and investors often heavily oversubscribed the issues.

3.4.2. Summary statistics

Table 3.1 presents summary statistics. Companies of a wide range of sizes go public. The median market capitalization, measured as the number of post-IPO shares times the closing market price on the first day that the shares start trading on the stock market, amounts to 62

¹¹ In 1982 a second tier of Euronext Amsterdam (the "Official Parallel Market") was created in the Netherlands. This was an intermediary tier of Euronext Amsterdam, for which listing requirements were less stringent than for the first tier (the "Official Market"). The second tier made its exit in 1994 and was later replaced by a new intermediary tier (the "New Market") in 1997.

million Euro with a minimum of 11.5 million Euro and a maximum of 13,453 million Euro. When taking a closer look at the IPO characteristics, we observe that the median initial offering comprises 22 million Euro worth of shares. The typical IPO consists of 33.8% of newly issued shares. This implies that the average Dutch company does not use its IPO to raise large amounts of equity capital by selling newly issued shares. Instead the larger part of the proceeds goes to pre-IPO owners that cash out by selling (part of) their existing shares. This contrasts sharply with the United States. Habib and Ljungqvist (2001) report that the average U.S. IPO consists of 80% newly issued shares and is therefore not often used to sell existing shares. Underpricing, measured as the offer-to-close return on the first day of trade, averages about 9.5%. This compares to an average underpricing of 14% reported for the United States (Loughran and Ritter, 2001).

The median percentage growth in sales during the financial year before the IPO comes to 24.2%. Return on sales is defined as earnings before interest, taxes, depreciation and amortization divided by sales and equals 12.4%. Long-term debt in the financial year before the IPO averages 12.3% of total assets. The median company age is 15 years. On average, managers hold 44.3% of pre-IPO shares. Managers are often controlling owners. More precisely, pre-IPO management ownership exceeds 50% in 51 IPO firms (46% of the sample). In comparison, De Jong, DeJong, Mertens and Wasley (2000) report that management ownership averages only 3.8% for all Dutch listed firms during the period 1992-1996. This confirms that managers at IPO firms internalize a large proportion of the costs of takeover defenses through their stock ownership, which is almost 12 times larger than management ownership in other Dutch corporations. The trade-off between private benefits of control and share value is therefore more relevant to managers at IPO firms than for managers at other publicly traded firms.

The market-to-book ratio of equity is calculated as the ratio of first-day market capitalization to post-issue book value of equity. In subsequent analyses, we will use the market-to-book ratio as our main proxy for IPO firm value (see Section 3.5.2). First-day market capitalization is measured as the number of post-IPO shares times the closing market price on the first trading day. Post-issue book value of equity equals the sum of the primary offering proceeds (i.e. the number of newly issued shares times the offer price) and the book value of equity from the last pre-IPO financial statement, or when available from a later interim statement as disclosed in the prospectus. The average market-to-book ratio of equity has a value of 6.2, whereas the median market-to-book ratio of equity is equal to 3.6.

Table 3.1: Summary statistics

Table shows summary statistics for 111 IPOs on Euronext Amsterdam from January 1984 to December 1999. Market capitalization is computed as the number of post-IPO shares times the closing market price on the first day of trading. Total assets relate to the financial year before the IPO. Proceeds are defined as the number of shares sold in the IPO times the offer price. Primary offering is the number of newly issued shares divided by the number of shares sold in the IPO. Underpricing is defined as the percentage difference between the closing market price on the first day of trading and the offer price. Sales growth is the percentage growth in sales during the financial year preceding the IPO. Return on sales is measured as earnings before interest, taxes, depreciation and amortization (EBITDA) divided by sales in the financial year before the IPO. Leverage is determined as long-term debt divided by total assets of the company in the financial year before the IPO. Company age is the number of years the company has been in existence prior to its IPO. Management ownership is the percentage of pre-IPO shares owned by executive officers, supervisory directors and their immediate family members. To calculate the market-to-book ratio of equity we divide first-day market capitalization by the post-issue book value of equity. The post-issue book value of equity equals the sum of the primary offering proceeds (i.e. number of newly issued shares times the offer price) and the book value of equity from the last pre-IPO financial statement, or when available from a later interim statement as disclosed in the prospectus. All Euro amounts are expressed in constant 1999 prices using the GNP deflator (one Euro equals 2.20371 guilders).

	Average	Median	Standard deviation	Maximum	Minimum
Market capitalization (million Euro)	426.77	61.99	1,507.99	13,453.20	11.54
Total assets (million Euro)	162.61	35.10	368.41	2,205.37	2.29
Proceeds (million Euro)	89.38	21.70	212.47	1,476.56	2.18
Primary offering (%)	33.83	23.40	33.42	100.00	0.00
Underpricing (%)	9.45	2.50	19.77	97.73	-31.24
Sales growth (%)	39.25	24.21	50.81	308.03	-33.96
Return on sales (%)	11.24	12.39	25.25	61.18	-199.77
Leverage (%)	12.26	6.23	16.28	95.20	0.00
Company age (years)	28.08	15.00	32.44	152.00	0.50
Pre-IPO management ownership (%)	44.35	33.05	40.52	100.00	0.00
Market-to-book ratio	6.19	3.63	6.96	41.53	0.57

3.4.3. Descriptive statistics on Dutch takeover defenses

In this subsection we compare the IPO firms' use of takeover defenses with other public firms' use of defense measures. In any given year during 1984-1999, other listed firms are defined as Dutch corporations that trade on Euronext Amsterdam for a period of at least five years. Data on takeover defenses used by listed firms is hand-collected from the yearly Guide to the Official Price List of the Amsterdam Exchanges. In total, we collect 1,981 firm-year observations over the entire 1984-1999 period. To make a time-weighted comparison with

the IPO firms, we compute a weighted average of the listed firms' use of each type of takeover defense. The weights are the fractions of IPO firms that went public during the years 1984-1999.

Panel A of Table 3.2 shows that 45.1% of IPO firms and 42.3% of other public firms use priority shares. Share certificates are used by 36.9% of listed firms as opposed to 28.8% of IPO firms. The difference is significant at the 10% level. A total of 4.5% of IPO firms and 5% of listed firms have voting caps in place. Table 3.2 also shows that IPO firms are less likely to qualify for the structured regime. Only 32.4% as opposed to 65.1% of listed firms are subject to this legal measure. This largely reflects the smaller size of the IPO firms. The structured regime is only mandatory for 'large' Dutch corporations having a book value of equity larger than 25 million guilders. The authorization to issue preference shares is used by 52.3% of IPO firms and 59.5% of other public firms.

Panel B of Table 3.2 reports on the frequency of the number of takeover defenses. More than 90% of Dutch firms adopt at least one takeover defense. The use of takeover defenses is particularly common in the Netherlands. Field and Karpoff (2002) document that 53% of the 1,019 firms that went public in the United States during the years 1988-1992 has adopted at least one defensive measure. To our knowledge, the rate of adoption of takeover defenses by European firms is relatively unexplored. Existing studies have centered on the use of dual class equity. Holmén and Högfeldt (2001) analyze 229 Swedish IPO firms from 1979 to 1997. They find that 76% of Swedish IPO firms employ dual class shares. Goergen and Renneboog (2002) study 54 German IPO firms and 54 size-matched U.K. IPO firms from 1981 to 1988. They report that almost 43% of German IPO firms adopt a dual class structure, while none of the matched U.K. IPO firms in that period use dual class shares. Short and Keasey (1999) concur that the adoption of takeover defenses in the U.K. is not widespread.

On average, IPO firms in the Netherlands use 1.63 takeover defenses and other listed firms deploy 2.09 defensive measures. Evaluated at the median, both IPO firms and other public firms use two takeover defenses. Dutch companies therefore seem to adopt takeover defenses before their IPO and not afterwards. For example, Bosveld and Goedbloed (1996) report that only 12 Dutch listed firms adopted priority shares or share certificates between January 1960 and July 1992. This contrasts with the results of Field and Karpoff (2002) for the United States. They find that IPO firms use significantly fewer takeover defenses than other listed firms do. In particular, U.S. IPOs use 2.04 takeover defenses as opposed to 3.36 takeover defenses used by other publicly traded companies.

Table 3.2: Takeover defenses in the Netherlands

This table compares the use of takeover defenses at IPO firms with the use of takeover defenses at other listed firms during the sample period 1984-1999. Data on takeover defenses used by other listed firms is hand collected from the yearly Guide to the Official Price List of the Amsterdam Exchanges. Other listed firms (about 120 in each year) are defined as firms that did not go public in the previous five years. This results in 1,981 firm-year observations. Data on the takeover defenses used by the 111 IPO firms is hand collected from the prospectuses. Panel A reports on the frequency of types of takeover defenses. The rows in Panel A does not add up to 100% since firms may apply more than one takeover defense in their corporate charter. Panel B shows the frequency of the number of takeover defenses. *** significant at the 1% level; ** significant at the 5% level; * significant at the 10% level.

Panel A: Frequency of types of takeover defenses

Type of takeover defense	Priority shares	Certificates	Voting caps	Structured regime	Preference shares
IPO firms	45.05%	28.83%	4.51%	32.43%	52.25%
Other listed firms	42.28%	36.85%	4.95%	65.12%	59.45%
<i>t</i> -statistic for difference	0.57	1.71*	0.21	7.04***	1.50

Panel B: Frequency of number of takeover defenses

Number of takeover defenses	IPO firms	Other listed firms
0	8.11%	8.63%
1	36.04%	17.07%
2	42.34%	38.01%
3	11.71%	29.88%
4	1.80%	6.16%
5	0.00%	0.25%
Average	1.63	2.09
Median	2.00	2.00

In the Netherlands, takeover defenses are generally adopted before the IPO. The finding that Dutch IPO firms adopt takeover defenses at the same rate as do other listed firms is surprising. Even though managers internalize a larger portion of the costs of takeover defenses through their substantial pre-IPO stock ownership, the median IPO firm uses two takeover defenses at the time of going public¹². However, IPO firms do use less share

¹² Managers may decide to adopt takeover defenses before the IPO because at that time they do not need the formal approval of the outside investors that buy their shares in the IPO. Alternatively, managers may adopt takeover defenses at the IPO because they anticipate a future reduction in their controlling position. Analyzing

certificates and are less likely to be subject to the structured regime than other listed firms. The lower adoption of the structured regime is largely due to the smaller size of IPO firms compared with other publicly traded firms. The structured regime is only required for large Dutch corporations. The lower rate of adoption of share certificates suggests that this type of takeover defense is most costly to management, at the margin.

3.5. Methodology and variable measurement

3.5.1. Determinants of IPO firms' use of takeover defenses

We estimate Poisson regressions to investigate the determinants of IPO firms' use of takeover defenses. In the Poisson regressions the dependent variable is the number of takeover defenses (TDEF). Poisson regression rather than OLS regressions are used since the number of takeover defenses is integer count data as opposed to a continuous variable. The model is specified as follows:

$$\begin{aligned} \text{TDEF}_i = & \beta_0 + \beta_1 \ln \text{TA}_i + \beta_2 \text{LEV}_i + \beta_3 \text{SG}_i + \beta_4 \text{ROS}_i + \beta_5 \text{MAN}_i + \beta_6 \text{ICT}_i + \beta_7 \text{NOV89}_i + \\ & \beta_8 \text{MANOWN}_i + \beta_9 \text{FOUND}_i + \beta_{10} \text{VCB}_i + \varepsilon_i \end{aligned} \quad (3.1)$$

We include several control variables. The natural logarithm of total assets (TA) is included to control for potential size effects. Coates (1999) notes that different size effects may be at work. The very largest firms are less vulnerable to takeover bids, because of financing constraints facing bidders. The smallest firms are unlikely to generate the large synergies necessary to make a bid profitable. Additionally, if size were not controlled for, then a correlated variable (such as management ownership) may appear significantly related to the use of takeover defenses, while this relationship would be spurious. Leverage (LEV), measured as long-term debt divided by total assets controls for differences in capital structure. Managers of IPO firms with lower levels of debt are more likely to have discretion over the firm's cash flows. These IPO managers might use takeover defenses to oppose the

the use of dual class shares by Swedish IPO firms, Holmén and Högfeltdt (2001) find support for this argument. Most Swedish IPO firms issue low-voting B-shares to the public, whereas insiders retain high-voting A-shares. Holmén and Högfeltdt (2001) conclude that it may be rational for controlling owners to initially 'over-invest' in high-voting A-shares anticipating future dilution of the controlling position through stock financed acquisitions and rights issues of low-voting B-shares. This argument may be extended to takeover defenses. Managers seeking to protect their private benefits are willing to internalize a large fraction of the costs associated with takeover defenses at the IPO, in anticipation of future dilution of their controlling position.

forced distribution of free cash flows in the form of interest payments. Consistent with this argument, Garvey and Hanka (1999) show that U.S. firms that are protected by anti-takeover laws are less likely to increase leverage. We therefore expect a negative relation between the use of takeover defenses and leverage. Although Coates (1999) mentions that previous studies only find weak evidence that operating performance determines the use of defensive measures, we include sales growth and return on sales in our regression model. To control for the possibility that firms with lower growth opportunities are more likely to adopt takeover defenses, the model incorporates the percentage growth in sales in the financial year before the IPO (SG). Return on sales (ROS), defined as earnings before interest, taxes, depreciation and amortization divided by sales, is incorporated to control for differences in profitability. The regression model also controls for industry effects. Given that each industry group covers a relatively small number of IPO firms, we group sample firms into three broader industry classifications; manufacturing (36 firms), information and communication technology (32) and non-financial services (43). Two industry dummies (MAN and ICT) are taken up to control for the industry effects related to manufacturing and technology. Stein (1988) argues that takeover defenses may be adopted to promote investment in long-term projects, such as research and development. Since technology firms tend to invest in research and development projects, we expect to find a positive relation between the ICT dummy and the use of takeover defenses¹³.

Although Dutch IPO firms may use all of the takeover defenses, at most two are allowed pursuant to a regulatory change in November 1989. The structured regime is not counted as a takeover defense in this regard. We therefore include a dummy variable (NOV89) that takes on the value one if the firm went public after November 1989. The percentage of pre-IPO shares in the hands of management and their family members (MANOWN) is included to capture possible substitution effects. Stulz (1988) shows that an increase in the fraction of voting rights in control of managers acts as an economic takeover defense by reducing the probability of a successful takeover bid. Majority management ownership may therefore mitigate the need to adopt takeover defenses. Alternatively, the higher pre-IPO management ownership, the more management loses by adopting defenses that reduce firm value. Both effects work in the same direction: higher management ownership is expected to result in less takeover defenses.

The regression also incorporates a dummy for founder controlled firms (FOUND). The 48 founder-controlled IPOs in our sample may differ from non-founder controlled

¹³ U.S. studies use research and development expenditures to proxy for long-term investment projects. However, Dutch firms generally do not disclose such information.

companies. If founders have specific human capital skills, they may require more protection from the market for corporate control (Taylor and Whittred, 1998). We therefore expect the founder dummy to be positively related to the use of takeover defenses.

Lastly, we include a venture-backing dummy (VCB) that equals one if the IPO firm is financed by venture capitalists before it went public. Venture capitalists have expertise in structuring companies and taking them public. Venture capitalists tend to employ value-maximizing governance structures. For example, Baker and Gompers (1999, 2001) show that venture capitalists improve the effectiveness of incentive compensation and board monitoring in U.S. IPO firms. Venture capitalists are therefore likely to oppose the use of takeover defenses that reduce the value of their pre-IPO shares.

We examine the determinants of the use of individual takeover defenses by binary logit analyses. In the five logit regressions the dependent variables are dummies that equal one if the firm adopts priority shares, share certificates, voting caps, the structured regime or preference shares, respectively. The independent variables are the same as with the Poisson regression.

3.5.2. Takeover defenses and IPO firm value

We estimate least-squares regressions to examine the relationship between IPO firm value and the use of takeover defenses. We use different measures of IPO firm value; market-to-book ratios, offer price-to-book ratios and price-to-sales ratios. In line with recent IPO studies (Keloharju and Kulp, 1996; Kim and Ritter, 1999; Holmén and Högfeldt, 2001), we use market-to-book ratios to capture the expected level of managerial performance. As mentioned earlier, we calculate the market-to-book ratio as the ratio of market capitalization on the first trading day divided by post-issue book value of equity. First-day market capitalization is calculated as the number of post-IPO shares times the closing market price on the first trading day. Post-issue book value of equity is determined as the sum of the primary offering proceeds (i.e. the number of newly issued shares times the offer price) and the book value of equity from the last pre-IPO financial statement. Offer price-to-book ratios are determined by dividing the offer value by the post-issue book value of equity. Offer value refers to the number of post-IPO shares times the offer price. Price-to-sales ratios are defined as the ratio of market capitalization on the first trading day divided by the sales figure during the last 12 months prior to the IPO as disclosed in the prospectus.

We also adjust market-to-book ratios for profitability and size. To do so, we took a universe of public firms which at any point in time were trading on Euronext Amsterdam

from January 1984 through December 1999 and who did not have an IPO in the previous five years. We gathered data for each listed firm's profitability (return on assets) and size (total assets), for each year during the period 1983-1998. Subsequently, we sort all public firms of a particular year in their appropriate quintiles based on their profitability or size, respectively. We then average the market-to-book ratio for these quintiles in every year. Next, each IPO firm is matched with its appropriate quintile on the basis of profitability or size¹⁴. As a final step, the average market-to-book ratio of the matched quintile is subtracted from the market-to-book ratio of the particular IPO firm.

We regress the proxy of IPO firm value (VALUE) on an intercept term, seven control variables and the number of takeover defenses (TDEF). The model reads as:

$$\text{VALUE}_i = \beta_0 + \beta_1 \ln \text{TA}_i + \beta_2 \text{LEV}_i + \beta_3 \text{SG}_i + \beta_4 \text{ROS}_i + \beta_5 \text{MAN}_i + \beta_6 \text{ICT}_i + \beta_7 \text{MANOWN}_i + \beta_8 \text{TDEF}_i + \varepsilon_i \quad (3.2)$$

The natural logarithm of total assets (TA) is included to control for the possibility that firm value is a function of company size. Leverage (LEV), measured as long-term debt divided by total assets controls for differences in capital structure. Jensen (1986) argues that debt reduces managers' discretion over free cash flows. Long-term debt commits managers to distribute free cash flow instead of diverting it to investments harmful to firm value. Leverage is therefore expected to increase firm value by reducing the free cash flow available to managers. To control for the possibility that firms with higher growth opportunities are valued more highly by investors, the model makes use of the percentage growth in sales in the financial year before the IPO (SG). Return on sales (ROS) is incorporated to control for differences in profitability. The regression model also controls for industry effects. Two industry dummies (MAN and ICT) are taken up to control for the industry effects related to manufacturing and technology. The percentage of pre-IPO shares in the hands of management and their family members (MANOWN) is included to control for possible incentive effects. Prior studies have reported a positive association between management ownership and IPO firm value (e.g. Keloharju and Kulp, 1996). Since managers bear the wealth consequences of their own decisions through their stock ownership, their incentives

¹⁴ Given that we measure the accounting data for IPO firms in the financial year before their IPO, we match them with their listed counterparts using data from that same financial year. For example, if a firm goes public in June 1999 we gather its return on assets and total assets as reported on December 31, 1998. We then match the IPO firm with the average market-to-book ratio of the appropriate quintile of publicly traded firms, where quintiles are based on return on assets and total assets of those public firms as reported on December 31, 1998.

become better aligned with those of other shareholders. This mitigates the agency problem and increases firm value (Jensen and Meckling, 1976).

We expect that the number of takeover defenses (TDEF) is inversely related to IPO firm value. IPO investors are assumed to anticipate the conflict of interests with management and reduce IPO firm value if takeover defenses are adopted. Apart from the impact of the number of takeover defenses on IPO firm value, we analyze the individual effects of priority shares (PRIOR), share certificates (CERT), voting caps (VCAP), the structured regime (STRUC) and the authorization to issue protective preference shares (PREF), each represented by its own dummy variable. Although we anticipate each of the takeover defenses to negatively impact IPO firm value, we predict that the valuation impact of share certificates is especially negative. Using Italian data, Zingales (1994) reports that non-voting shares trade at a substantial discount compared to voting shares of that same company. This finding suggests that the right to vote can be a valuable tool for shareholders to exercise influence over management's actions. Since share certificates deprive shareholders of these votes, the valuation impact of share certificates is predicted to be strongly negative.

Additionally, we expect that the valuation impact of the authorization to issue preference shares is less negative than for the other takeover defenses. The authorization to issue preference shares itself does not entrench management on a permanent basis. While priority shares, share certificates, voting caps and the structured regime are permanent takeover defenses, the authorization to issue preference shares is typically a temporary measure that, in general, has to be renewed at the shareholders' meeting every five years. Moreover, the authorization to issue preference shares is only the first of three steps in the procedure of defense, described in Section 3.3.5. Arguably, the entrenchment effects will only emerge at later steps in the defense process. Kabir, Cantrijn and Jeunink (1997) analyze the procedure of defense using preference shares. Analyzing Dutch data, they report that the authorization of preference shares is associated with a positive and significant stock price effect of 1.2% in two days. The second step, granting the purchase option to a friendly party – usually a foundation or an institutional investor – has an almost negligible stock price impact. The third step, the actual issuance of preference shares, is associated with a negative stock price reaction of 1.7% in two days. This indicates that entrenchment effects only emerge at the final step of the defense process, the actual issuance of preference shares.

Due to skewness of the distribution of the dependent variable and total assets, the natural logarithms of these variables are used in the regressions¹⁵. In general, no serious

¹⁵ The distribution of all variables was tested for normality using the Jarque-Bera (1980) statistic. For the market-to-book ratios, offer price-to-book ratios, price-to-sales ratios, and total assets the statistic indicated skewed distributions. Subsequently the log form of these variables is used.

collinearity problems are posed as the correlation matrix indicates low correlation between the independent variables. This suggests that there is sufficient variation among the variables used in the study to allow discrete effects to be estimated. In light of the possibility of heteroskedasticity, *t*-statistics using White (1980) heteroskedastic-consistent standard errors are reported throughout this chapter.

3.6. Empirical results

3.6.1. Determinants of IPO firms' use of takeover defenses

Table 3.3 shows the results of the Poisson regression (column 1) and logit regressions (columns 2-6). The logit regressions show that pre-IPO management ownership relates negatively to the adoption of voting caps and the structured regime¹⁶. To some extent, this is similar the findings of Field and Karpoff (2002) for U.S. IPOs. They also document a negative relation between management ownership and the adoption of takeover defenses. One explanation is the substitution effect. Stulz (1988) shows that management ownership may act as an economic takeover defense, reducing the need for other defensive measures. Another interpretation is that, as managers own more stock, they internalize a higher proportion of the costs associated with takeover defenses. The higher management ownership, the more managers lose by adopting takeover defenses that reduce firm value.

Interestingly, pre-IPO management ownership is positively related to the adoption of priority shares. This relation is significant at the 10% level. One interpretation could be that management ownership reinforces the effectiveness of priority shares. Priority shares grant special control rights to foundations friendly to management. However, a decision of the holders of priority shares can be rejected by a supermajority of two-thirds of the votes cast at the shareholders' meeting. When managers own a sizable fraction of the shares they can ensure that the decisions made by priority shareholders cannot be overruled by common shareholders. Accordingly, managers that own more shares may be more likely to adopt priority shares as an effective defensive measure.

¹⁶ However, we should be careful in interpreting these findings. The structured regime is a legal measure that managers are *required* to install if the firm meets certain criteria. In addition, few IPO firms apply voting caps.

premise that managers at IPO firms with lower debt levels introduce takeover defenses to maintain their discretion over the firm's free cash flows. Sales growth and return on sales are generally insignificant. These findings are consistent with previous studies that only find weak evidence that operating performance determines the rate of adoption of takeover defenses (Coates, 1999). Only the logit regression for share certificates shows that this type of takeover defense is more likely to be adopted by profitable firms (significant at the 10% level).

We find an industry effect related to the information and communication technology (ICT) industry. The negative coefficient on the ICT industry dummy indicates that technology firms are less likely to adopt takeover defenses. This finding is inconsistent with the managerial myopia theory put forth by Stein (1988). Stein (1988) argues that firms should adopt more takeover defenses when they have long-term investment projects, such as research and development. Since technology firms are characterized by these long-term investment projects, they should use more defensive measures. Our opposing finding is consistent with the results of Amoako-Adu and Smith (2001) who report that Canadian IPO firms active in the technology sector are less likely to adopt dual class equity. The theoretical work of Israel and Ma (2001) offers one possible explanation for the negative relation between the use of defensive measures and long-term investments. They argue that the investment in long-term projects acts as a takeover defense in itself. Their key insight is that managers interested in maintaining control prefer long-term investments because the high uncertainties associated with these investments increase expected takeover prices. The increase in takeover prices reduces the acquisition likelihood and thereby the need for defensive measures. The number of takeover defenses is slightly lower after the regulation of November 1989. The regulatory change limited the number of takeover defenses to a maximum of two. Although share certificates were not abolished in November 1989, this type of takeover defense is less frequently applied after that time.

Overall, our analysis identifies few factors that consistently explain the use of takeover defenses at the IPO. This is similar to U.S. evidence. For example, Daines and Klausner (2001) are unable to explain the adoption of takeover defenses at U.S. IPO firms using efficiency theories. They conclude that takeover defenses are motivated by managerial entrenchment. On the other hand, Coates (2000) suggests that IPO firms adopt takeover defenses simply because they are copying the use of defensive measures by other listed firms. Our previous finding that Dutch IPO firms use takeover defenses to the same extent as do other publicly traded firms provides preliminary support for this argument. Although private

benefits of control are difficult to measure empirically, the next section examines whether private benefits play a role in explaining the use of defensive measures at the IPO.

3.6.2. Takeover defenses and IPO firm value

In this subsection we analyze the relation between the use of takeover defenses and IPO firm value. We predict that IPO investors reduce IPO firm value when takeover defenses are adopted. In theory, this reduction in IPO firm value reflects the expected size of IPO management's private benefits of control. This allows us to infer whether private benefits play a role in the decision to adopt takeover defenses at the IPO.

Panel A of Table 3.4 compares IPO firm values of firms with a particular takeover defense to the IPO firm values of companies without that takeover defense. To confirm that our findings are robust with respect to sample distribution, we perform both parametric and non-parametric tests on the differences in IPO firm value. Priority shares do not seem to have a negative impact on IPO firm value. The non-parametric test even indicates that the 50 IPO firms that adopt priority shares have higher market-to-book ratios than the group of 61 firms that do not use priority shares. The difference is significant at the 10% level.

Consistent with expectations, we observe that the 32 IPO firms that adopt share certificates are valued at a substantial discount compared to the 79 firms that do not adopt share certificates. The difference is statistically significant at the 1% level. Prior research suggests that votes are an important and valuable tool to influence management (Zingales, 1994, 1995). Principally, share certificates deprive IPO investors of these valuable voting rights and therefore have a strongly negative impact on IPO firm value.

Voting caps have no significant effect on IPO firm value. The lack of statistical significance may be due to the limited number of companies that apply voting caps. The structured regime, on the other hand, lowers IPO firm value. The structured regime transfers important decision rights from shareholders to the supervisory board. The 36 companies that are subject to the structured regime exhibit lower market-to-book ratios than the 75 IPO firms that do not use the structured regime. The authorization to issue preference shares has no significant effect on IPO firm value. In contrast to the other defensive measures, the authorization to issue preference shares does not entrench managers on a permanent basis. In general, every five years the authorization to issue preference shares has to be renewed at the shareholders' meeting. The actual issuance of preference shares would only occur if a takeover bid were made in the future. It is at that time that potential entrenchment effects are expected to show up and not at the initial authorization at the IPO.

Table 3.4: IPO firm value and takeover defenses

Panel A shows the average market-to-book ratios for IPO firms with and without a particular takeover defense. A total of 50 IPO firms use priority shares, 32 firms use share certificates, 5 use voting caps, 36 are subject to the structured regime and 58 have an authorization to issue preference shares. We use both a parametric *t*-test and a non-parametric *z*-test to test whether IPO firm values of firms with a particular takeover defense are statistically different from the IPO firm values of companies that do not deploy that takeover defense. Panel B shows the average market-to-book ratios, offer price-to-book ratios, price-to-sales ratios, profit adjusted market-to-book ratios and size adjusted market-to-book by the number of takeover defenses. A total of 9 IPO firms do not use any takeover defense, 40 adopt one takeover defense, 47 use two takeover defenses, 13 deploy three defensive measures and 2 use four takeover defenses. The *F*-test tests whether the average IPO firm values significantly differ across the number of takeover defenses. The median chi-squared test tests whether median IPO firm values differ across the number of takeover defenses. The measures of IPO firm value are defined in Section 3.5.2. *** significant at the 1% level; ** significant at the 5% level; * significant at the 10% level.

Panel A: Market-to-book ratio by the type of takeover defense

Type of takeover defense	With takeover defense	Without takeover defense	<i>t</i> -test for difference	<i>z</i> -test for difference
Priority shares	6.69	5.79	0.68	1.93
Certificates	2.32	7.77	3.98***	5.29***
Voting caps	5.49	6.23	0.23	0.82
Structured regime	4.12	7.19	2.21**	4.72***
Preference shares	5.43	7.03	1.21	0.07

Panel B: Different measures of IPO firm value by the number of takeover defenses

Number of takeover defenses	Market-to-book ratios	Offer price-to-book ratios	Price-to-sales ratios	Market-to-book ratios profit adjusted	Market-to-book ratios size adjusted
0	10.82	8.13	15.03	9.13	9.21
1	7.76	7.22	3.75	3.78	5.19
2	5.38	4.84	6.54	2.75	3.65
3	1.90	1.82	0.94	0.54	0.70
4	1.19	1.22	0.29	-0.08	-0.09
<i>F</i> -test	3.44**	2.87**	1.14	2.84**	2.90**
Median χ^2	13.39***	13.39***	16.83***	17.67***	15.70***

Panel B of Table 3.4 reports on the number of takeover defenses. To check the robustness of our results we employ different measures of IPO firm value. We use market-to-book ratios, price-to-book ratios and price-to-sales ratios. Moreover, we adjust market-to-

book ratios for profitability and size. See Section 3.5.2 for the definitions of the metrics. We observe that IPO firms' values gradually decline as more takeover defenses are adopted. IPO firms that adopt no takeover defenses before going public show the highest valuations, whereas IPO firms that adopt three or four defense measures display the lowest share values. In most cases the average IPO firm values significantly differ across the number of takeover defenses at the 5% level. The median chi-squared tests are significant at the 1% level regardless of the measure of IPO firm value. This suggests that the accumulation of defensive measures is detrimental to firm value.

Besides these univariate tests, we also conduct multivariate tests. Panel A of Table 3.5 shows the results of the OLS regressions of IPO firm value on the number of takeover defenses. In four out of five regressions the number of takeover defenses loads up with a significantly negative coefficient. More precisely, the coefficient is significant at the 1% level when using market-to-book ratios as the dependent variable, the 5% level in case of the offer price-to-book ratio and the 10% level when market-to-book ratios are profitability and size adjusted. This corroborates the findings of the univariate analysis. The number of takeover defenses lowers IPO firm value. The effect is economically significant. Other things equal, the adoption of two defensive measures (the sample median) lowers the log of the market-to-book ratio by 0.36. When looking at the control variables, we observe that sales growth and return on sales are positively related to IPO firm value. Not surprisingly, fast growing and highly profitable firms exhibit higher IPO firm values.

The OLS regressions also uncover marked industry differences. Firms that are active in the information and communication technology (ICT) have higher IPO firm values than companies in the non-financial services industry, while IPO firms in the manufacturing industry display lower firm values. Leverage is not significantly related to IPO firm value, with the exception of the regression model that uses price-to-sales ratio as the dependent variable. This suggests that leverage does not create value by reducing management's discretion over the firm's free cash flow. Management ownership is not significantly related to IPO firm value. In contrast to the findings of Keloharju and Kulp (1996) for Finnish IPO firms, this suggests that management ownership does not yield significant incentive effects in the Netherlands.

Panel B of Table 3.5 reports on OLS regression of IPO firm value on the different types of takeover defenses, each represented by its own dummy variable. Only share certificates show a strongly negative relation with IPO firm value, which is significant at the 1% level.

Table 3.5: Cross-sectional regressions of IPO firm value on takeover defenses

Table shows the results of estimating Equation (3.2) using different measures of IPO firm value as the dependent variable. In parentheses are the *t*-statistics using White (1980) heteroskedastic-consistent standard errors. The measures of IPO firm value are defined in Section 3.5.2. *** significant at the 1% level; ** significant at the 5% level; * significant at the 10% level.

Panel A: Including the number of takeover defenses

	Dependent variable				
	Market-to-book ratio	Offer price-to-book ratio	Price-to-sales ratio	Market-to-book ratio profit adjusted	Market-to-book ratio size adjusted
Takeover defenses	-0.18 (-2.68)***	-0.14 (-2.06)**	-0.14 (-1.12)	-0.99 (-1.69)*	-0.96 (-1.68)*
<i>Control variables</i>					
Total assets	-0.09 (-1.76)*	-0.09 (-1.79)*	-0.16 (2.17)**	0.13 (0.30)	-0.29 (-0.68)
Leverage (%)	0.33 (0.62)	0.25 (0.46)	2.62 (3.76)***	4.00 (0.78)	0.44 (0.09)
Sales growth (%)	0.74 (4.10)***	0.62 (3.51)**	1.20 (4.52)***	4.91 (2.67)***	5.89 (3.39)***
Return on sales (%)	0.93 (2.90)***	0.97 (2.92)**	1.36 (3.45)***	6.98 (1.68)*	8.14 (2.07)**
Manufacturing industry (dummy)	-0.49 (-3.08)***	-0.52 (-3.33)***	-0.59 (-2.70)***	-1.86 (-1.55)	-2.23 (-1.89)*
ICT industry (dummy)	0.31 (2.03)**	0.28 (1.84)*	1.07 (4.25)***	1.44 (0.86)	0.70 (0.45)
Pre-IPO management ownership (%)	0.27 (1.48)	0.28 (1.58)	-0.23 (-0.78)	0.85 (0.74)	0.75 (0.64)
Intercept	1.60 (4.38)***	1.53 (4.47)***	0.42 (0.76)	0.95 (0.33)	4.01 (1.49)
R ² adjusted	0.55	0.52	0.60	0.20	0.31
F-test	17.95***	16.10***	21.41***	4.33***	7.09***

Table 3.5: Cross-sectional regressions of IPO firm value on takeover defenses (continued)

Panel B: Including dummy variables for each type of takeover defense

	Dependent variable				
	Market-to-book ratio	Offer price-to-book ratio	Price-to-sales ratio	Market-to-book ratio profit adjusted	Market-to-book ratio size adjusted
Priority shares (dummy)	-0.23 (-2.10)**	-0.19 (-1.69)*	0.16 (0.85)	-1.65 (-1.19)	-1.85 (-1.41)
Share certificates (dummy)	-0.53 (-3.11)***	-0.46 (-2.71)***	-0.53 (-2.69)***	-2.60 (1.77)*	-3.08 (-2.16)**
Voting caps (dummy)	0.03 (0.14)	-0.01 (-0.02)	0.38 (0.53)	0.54 (0.38)	1.15 (0.94)
Structured regime (dummy)	-0.04 (-0.21)	-0.01 (-0.06)	-0.27 (-1.16)	1.63 (1.04)	1.87 (1.26)
Preference shares (dummy)	0.02 (0.19)	0.04 (0.33)	-0.09 (-0.45)	-1.54 (-1.23)	-1.17 (-0.99)
<i>Control variables</i>					
Total assets	-0.11 (-2.08)**	-0.10 (-2.08)**	-0.13 (-1.74)*	-0.12 (-0.31)	-0.58 (-1.63)
Leverage (%)	0.50 (0.92)	0.40 (0.69)	2.54 (4.00)***	6.43 (1.07)	3.22 (0.57)
Sales growth (%)	0.78 (4.51)***	0.66 (3.78)***	1.14 (4.61)***	4.78 (2.57)***	5.84 (3.30)***
Return on sales (%)	1.05 (3.44)***	1.08 (3.30)***	1.36 (3.38)***	7.65 (1.82)*	9.03 (2.29)**
Manufacturing industry (dummy)	-0.46 (-2.92)***	-0.50 (-3.13)***	-0.49 (-2.38)**	-2.07 (-1.58)	-2.38 (-1.87)*
ICT industry (dummy)	0.23 (1.47)	0.20 (1.30)	0.97 (3.87)***	1.21 (0.67)	0.36 (0.22)
Pre-IPO management ownership (%)	0.30 (1.55)	0.29 (1.60)	-0.37 (-1.25)	1.92 (1.38)	1.92 (1.29)
Intercept	1.57 (4.63)***	1.50 (4.65)***	0.34 (0.68)	1.56 (0.55)	4.59 (1.72)*
R ² adjusted	0.58	0.55	0.62	0.20	0.32
F-test	13.72***	12.05***	15.76***	3.22***	5.37***

The adoption of share certificates lowers the log of the market-to-book ratio by 0.53. Priority shares are negatively related to market-to-book ratios. In contrast to the univariate results, there is no significant relation between IPO firm value and the structured regime, when controlling for size effects. There is even a positive, albeit insignificant, relation between the structured regime and the market-to-book ratios that are profit or size-adjusted. The lack of significance between preference shares may again be attributed to the fact that the initial authorization to issue preference shares is only the first step in the defense process. In general, the control variables are of similar sign and magnitude as those reported in Panel A.

In order to determine the robustness of the results from the OLS regressions, the distribution of the market-to-book ratio is truncated at the 5th and 95th percentile and the model is re-estimated to obviate any problems with outliers. Similar findings are still borne out in the regressions on the truncated sample (not reported). This implies that a few large outliers do not drive the regression results. The negative relation between the number of takeover defenses and IPO firm value may be driven by the use of share certificates. We therefore re-estimate the regression model from Panel A of Table 3.5 for the subset of 79 IPO firms that adopt takeover defenses other than share certificates (not reported). Again, we find that the number of takeover defenses relates negatively to market-to-book ratios. Although share certificates are arguably the most protective takeover defense, the buildup of other takeover defenses also allows managers to entrench.

In summary, our results suggest that the number of takeover defenses is negatively related to IPO firm value. This is consistent with IPO managers adopting takeover defenses to protect private benefits of control. According to principal-agent theory, IPO investors anticipate conflict of interests with management and lower firm value. This reduction in firm value due to takeover defenses, at least in part, reflects the expected size of private benefits. Our results are most concrete for non-management pre-IPO owners. The adoption of takeover defenses reduces the value of their shares, but, in contrast to management, they do not obtain compensating private benefits of control. Although we find that most types of takeover defenses are negatively related to IPO firm value, these effects lack statistical significance. This suggests that it is the accumulation of takeover defenses that allows IPO management to become entrenched. One notable exception relates to share certificates. Share certificates deprive IPO investors of their votes. This finding suggests that share certificates are used especially to shield large private benefits of control. This is consistent with the analysis of Zingales (1994, 1995). He argues that the value of the right to vote is positively correlated with private benefits, which only an investor with voting rights can appropriate to himself in addition to dividends and capital gains. These private benefits are likely to be at the expense of other shareholders that do not have voting rights. The special role of share certificates is also consistent with the analysis of Coates (2000). He shows that dual class equity, which is similar to share certificates to some degree, is used for different purposes than other defensive measures. Coates (2000) argues that managers of U.S. IPO firms use these dual class shares to protect large private benefits of control.

3.7. Conclusions

This chapter studies the use of takeover defenses at the time of the IPO. We find that Dutch IPO firms adopt takeover defenses at the same rate as do other Dutch corporations. The median IPO firm adopts two takeover defenses. The use of takeover defenses is particularly widespread in the Netherlands. More than 90% of IPO firms adopt at least one takeover defense before going public. The central question of our study involves the relation between the use of takeover defenses and IPO firm value.

Firstly, we examine the determinants of IPO firms' use of takeover defenses. Overall, our analysis shows that few factors can consistently explain the use of takeover defenses at the IPO. This is consistent with U.S. evidence. We infer that takeover defenses are motivated by managerial entrenchment. Alternatively, IPO firms may adopt takeover defenses simply because they are copying the use of defensive measures by other listed firms. Our finding that Dutch IPO firms use takeover defenses to the same extent as do other publicly traded firms provides preliminary support for this argument.

Secondly, we advance the literature on the use of takeover defenses by examining the relation between the use of defensive measures and IPO firm value. In theory, IPO investors consider takeover defenses a negative factor with respect to IPO firm value. Even though private benefits of control are difficult to measure empirically, the reduction in IPO firm value should reflect the expected size of management's private benefits of control. Controlling for differences in size, profitability, sales growth and management ownership, we find that the number of takeover defenses is negatively related to various measures of IPO firm value. Our results suggest that the negative effect of takeover defenses increases as the IPO firm accumulates defense measures. Most types of takeover defenses reduce IPO firm value, but with the exception of share certificates their negative effects lack statistical significance. Share certificates are therefore distinct from other takeover defenses. Share certificates deprive shareholders of voting rights. As these voting rights are an important and valuable tool to influence management's actions, IPO investors negatively adjust IPO firm value when share certificates deny them these rights.

Three parties are affected by the use of takeover defenses at the IPO. If IPO management (also an important, often controlling owner) adopts takeover defenses, they lose through their pre-IPO stock ownership, but gain through private control benefits. IPO investors anticipate conflict of interests with management because of takeover defenses and reduce the price paid for the IPO shares. The non-management pre-IPO owners lose. Their shares are worth less because of the takeover defenses and, different from managers, they do

not get compensating private benefits. They may accept this reduction in value because they do not want to jeopardize their good relations with management. Moreover, they need management's cooperation in order to bring the firm public. On the whole, our study provides evidence that takeover defenses are detrimental to IPO firm value. We infer that managers use takeover defenses to entrench themselves at non-management pre-IPO shareholders' expense.

Chapter 4:

Board Structures at the Initial Public Offering: Do Owner-managers Bargain with Large Outside Shareholders?

4.1. Introduction

At the time of an initial public offering (IPO) an entrepreneur seeks to raise new capital from outside investors or otherwise to cash out part of his shareholdings in the company. Often the entrepreneur acts as the single controlling owner and manager of the firm, even after it goes public. This prompts an agency conflict between the owner-manager and minority shareholders that buy shares in the IPO. The manager might shirk and not exert the same effort than would occur if he were the sole owner of the firm (Jensen and Meckling, 1976). The owner-manager might even waste capital on value-reducing projects or divert funds from the company to him at the expense of minority shareholders. In most countries such private control benefits short of theft are legal and can take the form of on-the-job consumption, above-market levels of salary, subsidized personal loans or empire-building behavior (Johnson, La Porta, Lopez-de-Silanes and Schleifer, 2000). Given that the owner-manager receives 100% of these private control benefits but bears less than 100% of related costs, he has strong incentives to exploit minority shareholders that buy shares in the IPO.

In this chapter we examine board structures at the time of the IPO. The power of the controlling owner-manager to take advantage of small shareholders may be moderated when an 'independent' board of directors monitors his actions. An independent board consists of a substantial fraction of independent directors that do not have any business or family relationships with the owner-manager. These independent directors are legally bound to their fiduciary duty to monitor the owner-manager. They also have incentives to build reputations as expert monitors who limit the expropriation of minority shareholders (Fama and Jensen, 1983). What is more, independent directors may be appointed by and represent large pre-IPO non-management shareholders, such as venture capitalists, that have strong reasons to scrutinize the actions of the owner-manager¹⁷.

¹⁷ Throughout the chapter pre-IPO non-management shareholders refer to shareholders, other than management, that own shares in the IPO firm immediately before it went public. Examples of pre-IPO non-management shareholders include venture capitalists, industrial and commercial companies and institutional investors.

But independent boards are not easily established in IPO firms. Minority shareholders cannot exercise any real influence on the fraction of independent outsiders that serve on the IPO firm's board. More precisely, small shareholders are subject to free-riding problems that prevent them from coordinating their actions in relation to the owner-manager. In the extreme case, the owner-manager has the power to appoint a board of directors that matches his personal preferences. This is unlikely to result in a large fraction of independent directors that are not indebted to the owner-manager for their positions.

On the assumption that the owner-manager is not in full control, large pre-IPO non-management shareholders may exercise sufficient power vis-à-vis the owner-manager and have an opportunity to coordinate their actions. Although these large pre-IPO shareholders bear 100% of monitoring expenditures they also internalize financial benefits that result from their monitoring actions to the extent they own stock in the IPO firm. This large shareholder monitoring generates positive externalities for minority shareholders. Small shareholders do not incur the monitoring costs, but free ride on the monitoring benefits. Venture capitalists are an example of large pre-IPO shareholders with incentives to monitor. Venture capitalists hold substantial equity stakes in IPO firms and coordinate their actions through syndication. They can therefore *bargain* with the owner-manager on the fraction of independent directors. For example, venture capitalists may appoint active independent directors that represent their interests on the board of directors (Lerner, 1995).

Hermalin and Weisbach (1998) develop a bargaining model to explain board independence. In their model, the owner-manager prefers a less independent board, while the board favors to maintain its independence. When the owner-manager has bargaining power – for example, when he owns more stock or he has longer tenure – the board's independence declines. This predicts a negative association between board independence and the power of the owner-manager. Consistent with this prediction, Baker and Gompers (2001) document an inverse relation between board independence and management stock ownership for a large sample of U.S. IPO firms. Especially venture capitalists play an important role. The fraction of independent directors increases with venture firm reputation. High reputation venture capitalists are able to control a larger fraction of board seats because they have greater bargaining power versus the owner-manager.

Large boards are often believed to be dysfunctional. Jensen (1993) suggests that large boards are associated with communication and coordination problems. Yermack (1996) and Conyon and Peck (1998) have shown a negative relation between firm value and board size for large publicly traded companies in the United States and European countries, respectively. On the assumption that larger boards are easier to control, the owner-manager may thus

prefer a larger than optimal board. Alternatively, larger boards in IPO firms may be larger to accommodate more independent directors on the board. This suggests that the owner-manager may prefer smaller rather than larger boards (Mak and Roush, 2000). Assuming that board size is relevant to firm performance, large outside shareholders, such as venture capitalists, may seek to bargain with the owner-manager on board size as well as board composition.

The purpose of this study is to investigate the determinants of board structure at the IPO. We use a sample of 299 French IPO firms from January 1993 to December 1999. There are important advantages to using French data. In French IPO firms, the owner-manager may maintain control by separating votes from cash flow rights through double voting systems and/or pyramiding. To some degree, this may intensify the potential agency conflict between the owner-manager and minority shareholders in French IPO firms¹⁸. As a side issue, we present a unique insight into shareholder agreements between the owner-manager and other pre-IPO shareholders. These shareholder agreements contain control provisions and restrictions on the sale of shares that typically strengthen the power base of the owner-manager. In the United States, data concerning shareholder agreements in IPO firms is generally unavailable.

As a final point, this study provides one of the first tests of bargaining between the owner-manager and venture capitalists in relation to an IPO firm's board structure. The French venture capital industry provides an interesting testing ground for the bargaining model. In France, as in most other Continental European countries, the venture capital industry is structured differently from that in the United States. Firstly, Sapienza, Manigart and Vermeir (1996) have shown that French venture capitalists often have a financial or banking background and that an important part of the venture capitalists are subsidiaries of one financial institution. In contrast, U.S. venture capitalists typically raise funds from multiple institutional investors and are structured as limited partnerships with predefined lifetimes, usually 10 years. Secondly, the French and wider Continental European venture capital industry is characterized by venture capitalists with varying degrees of monitoring activity (Sapienza, Manigart and Vermeir, 1996). On the one hand, pro-active venture

¹⁸ In an international comparison of corporate law, La Porta, Lopez-de-Silanes, Shleifer and Vishny (1998) show that investor protection in France is weaker than in the United States and the United Kingdom. One major weakness of the French legal doctrine is the broad authority given to a manager, justified by his responsibility to serve the social interest (*intérêt social*). Fanto (1998) contends that a French manager uses the principle of social interest to have a free hand in managing his company. The courts interpret social interest broadly to mean that a manager has a duty to serve the general corporate interest rather than any specific stakeholder interests. Alcouffe (2000) shows that the principle of social interest substantially increases managerial discretion and encourages the owner-manager to pursue his own interests usually at the expense of minority shareholders.

capitalists prefer to buy a substantial equity stake in the company and are motivated by maximizing the return on their investment. On the other hand, passive venture capitalists are often long-term investors, relying on an annual dividend to provide a return on investment. These passive investors as a rule avoid disciplinary actions that are not welcomed by management¹⁹. Our analysis therefore pays special attention to the varying willingness to monitor of French venture capitalists.

The chapter continues with a review of the literature in Section 2. Section 3 presents the data. Section 4 discusses the results. Section 5 concludes.

4.2. Prior literature

4.2.1. Does board composition matter?

This section discusses whether board composition matters to corporate decision making. Fama and Jensen (1983) describe the decision process in public corporations. They write that “an effective system for decision control implies, almost by definition, that the control (ratification and monitoring) of decisions is to some extent separate from the management (initiation and implementation) of decisions” (page 304).

Board composition reflects this separation between decision management and control. *Inside* directors (persons who are currently managers of the company) are specialized in decision management. They submit business proposals for board approval and execute decisions that have been ratified by the board. *Outside* directors are not involved in the day-to-day management of the company. These outside directors focus on decision control. More precisely, they ratify important decisions, monitor management performance and decide on management compensation. But not all outside directors are independent from management. *Affiliated* directors (outside directors that are former managers of the company, relatives of management and persons that have business relationships with the firm) may be perfunctory. In contrast, *independent* directors (outside directors that are not affiliated to management) are often assumed to be experts in decision control (Baysinger and Butler, 1985).

Independent directors have strong incentives to actively monitor management on behalf of shareholders. The demand for their services is dependent upon their reputation as effective decision control specialists (Fama and Jensen, 1983). Kaplan and Reishus (1990)

¹⁹ Also see “Better Exits”, Price Waterhouse Corporate Finance, commissioned survey by the Exits Committee of the European Venture Capital Association (EVCA).

find evidence consistent with this argument. Directors of poorly performing companies, who therefore may be viewed as being poor monitors, are less likely to become directors at other firms. Additionally, in all major legal systems, these directors have a fiduciary duty to monitor managers. Independent directors may also be appointed by and represent large shareholders. As opposed to small shareholders that are subject to a free riding problem, large shareholders have an incentive to monitor managers. Even though they incur 100% of monitoring costs they internalize the financial benefits resulting from monitoring in proportion to their stock ownership (Grossman and Hart, 1988).

Noe and Rebelló (1997) model board composition. Their model predicts that, even if independent directors would be uninformed and unable to monitor management, they can increase the efficiency of the decision process in corporations. In fact, boards with a slight majority of independent directors are more likely to result in improved firm performance than boards that are dominated by either inside or independent directors. In an early study, Baysinger and Butler (1985) report such an inverse U-shaped relationship between firm performance and the fraction of independent directors on the board.

However, Mehran (1995) and Bhagat and Black (2000) are unable to find any relationship between board composition and subsequent firm performance for public corporations in the United States. However, independent directors who hold significant stock in the company may add value. According to the model of Noe and Rebelló (1997) independent directors are especially effective when they can exercise sufficient votes to block management proposals and are able to coordinate their actions. Accordingly, Bhagat and Black (2000) report that firm performance is positively related to an interaction term of the fraction of independent directors and their stock ownership. This implies that independent directors who hold significant stock positions may add value, while other independent directors do not.

Within the IPO context, empirical results are mixed. Frye (1999) reports that U.S. IPO firms with more independent board members have higher stock market returns in the year following the IPO. Mikkelsen, Partch and Shah (1997), on the other hand, find that subsequent operating performance of U.S. IPO firms is unrelated to board composition. Analyzing U.K. IPO firms, Buckland (2001) shows that the fraction of independent directors cannot explain variation in first-year stock returns or post-IPO operating performance. Overall, there exists little evidence to suggest that board composition is related to firm performance. Hermalin and Weisbach (2002) argue that firm performance is a function of that many other factors that it is difficult to believe that the effect of board composition

would be detectable²⁰. Moreover, there is no reason to assume that a specific board composition is optimal for *all* firms ('one size fits all').

Other studies are more successful in controlling for firm-specific effects. Rosenstein and Wyatt (1990) evaluate the impact of *changes* in board composition on firm value. They find a statistically significant 0.2 % increase in stock prices when U.S. companies appoint additional outside directors. This suggests that outside directors increase shareholder wealth. There is also evidence that independent boards (boards with a majority of independent directors) perform better on particular tasks. A study by Weisbach (1988) finds that outsider-dominated boards (boards with at least 60% outsider directors) are more likely to replace the CEO than insider-dominated boards in the wake of poor firm performance. Dherment-Ferere, Köke and Renneboog (2001) find that a higher fraction of outside directors increases the probability of removal of poorly performing managers in Belgium and France. Analyzing U.S. data, Perry (2000) finds that the relationship between CEO turnover and firm performance is stronger when outside directors receive incentive pay. These directors are assumed to be relatively more independent since they have a professional rather than personal relationship with the CEO. Independent directors may therefore be important in performing monitoring tasks and removing poorly performing managers.

4.2.2. *Understanding differences in board composition across firms*

As noted in the previous subsection, there is no reason to assume that majority-independent boards are optimal for *all* firms. One important determinant of board composition is the power that resides with the CEO. Denis and Sarin (1999) find that the fraction of independent directors increases when CEO stock ownership decreases. One explanation is that as CEO stock ownership decreases his voting power vis-à-vis that of other shareholders weakens, which relinquishes his power over board composition. Shivdasani and Yermack (1999) study the role of CEOs in the selection process of directors. They report that when CEOs serve on the selection committee, the number of independent directors on the board is lower. This suggests that CEOs may use their control over the selection process to reduce the board's independence. Denis and Denis (1994) compare board composition in firms with majority owner-managers to that in firms with more diffuse ownership structures. They conclude that

²⁰ In their literature survey, Bhagat and Black (1999) argue that a majority-independent board could be better at monitoring tasks, yet worse at the task of choosing a new CEO or advising the CEO. The reason is that independent directors are likely to know less about the firm than inside or affiliated directors. If so, this negative effect may offset the positive monitoring effects of independent boards. This may explain why it is difficult to link board composition to overall firm performance.

owner-managers value unilateral control which is reflected in a lower number of independent directors.

These findings support the *bargain* model of Hermalin and Weisbach (1998). They model the power struggle between CEO and the board. In the model, CEOs would like to avoid the scrutiny of independent directors that are active monitors of their actions. When the CEO has bargaining power – for example, when he owns more stock or he has longer tenure – the board's independence declines. An alternative explanation for the inverse relation between CEO stock ownership and the fraction of independent directors is provided by *agency* theory. From an agency cost perspective, decreases in CEO stock ownership lower his incentives to act in the interest of outside shareholders. If CEO stock ownership does not address the agency problem, it becomes more important to control the agency problem by a majority-independent board.

Although the agency and bargaining models are not mutually exclusive, Arthur (2001) attempts to distinguish between the two explanations. Agency theory would predict an inverse relation between management stock ownership and board composition across the entire range of ownership levels. But Arthur (2001) finds a relation between management stock ownership and the proportion of independent directors for a sample of Australian companies that is *not* inverse across the entire range of ownership levels. A negative relation between board composition and low levels of management stock ownership (0-10%) is consistent with the effects of increased incentive alignment between managers and shareholders and a decreased demand for monitoring by independent directors. In addition, there exists a negative relation between board composition and management stock ownership at high levels of management stock ownership (20-100%). This can be attributed to potential managerial entrenchment through control of voting rights. In the upper range of stock ownership, managers decide on board composition unilaterally. However, in the middle range of management stock ownership (10-20%) no significant negative relation is found. In this middle range both incentive and entrenchment effects play a role. Since managers are not in unilateral control in this middle range, they need to bargain with outside shareholders on the composition of the board.

Arthur (2001) and Denis and Sarin (1999) have also identified other factors affecting board composition. Arthur (2001) reports that the proportion of outside directors decreases with CEO tenure. He argues that longer tenure gives CEOs more bargaining power vis-à-vis outside shareholders. Denis and Sarin (1999) find that the proportion of independent directors is a negative function of the investment opportunity set. If a firm derives more of its value from assets that are not yet in place, monitoring becomes more difficult for independent

board members who cannot observe all the investment opportunities from which a manager can choose (Smith and Watts, 1992). Denis and Sarin (1999) also find a negative relation between the fraction of independent directors and founder status. If a founder is a member of the top management team they prefer less independent boards.

Beatty and Zajac (1994) adopt an agency perspective when analyzing board composition in U.S. IPO firms. They find an inverse relation between the fraction of outside directors and managerial stock ownership. They conclude that, consistent with agency theory, monitoring structures are used more often when management has lower incentives from their compensation contracts and equity holdings. Mak and Roush (2000) also find a negative relationship between management stock ownership and the fraction of outside directors for a sample of New Zealand IPO firms. In contrast to Denis and Sarin (1999), they report a positive relation between investment opportunities and the fraction of outside directors. Mak and Roush (2000) argue that a higher fraction of independent directors may address greater agency problems in firms with more future investment opportunities. Baker and Gompers (2001) analyze a sample of U.S. IPO firms. Consistent with the bargaining model of Hermalin and Weisbach (1998), they find that representation of independent directors on the board decreases with the power of the CEO – his tenure and voting control – and increases with the power of outside investors – venture capital backing and venture reputation. A discussion of large shareholder monitoring is deferred to Section 4.2.4.

4.2.3. The ambiguous role of board size

Jensen (1993) contends that large boards are less likely to perform their governing task properly. The idea is that coordination and communication problems increase when board size is pushed too far. When boards become too large, directors may free ride on the monitoring efforts of other directors and the board becomes more symbolic and less a part of the decision process (Hermalin and Weisbach, 2002). Accordingly, Yermack (1996) finds a negative correlation between board size and Tobin's Q . Eisenberg, Sundgren and Wells (1998) also report an inverse relationship between board size and profitability for a sample of small and midsize Finnish firms. Conyon and Peck (1998) find a negative relation between firm performance and board size for five European countries. However, Bhagat and Black (2000) find that the inverse relation between board size and performance is not robust to the choice of performance measure.

Board size may also be important in disciplining poorly performing managers. For example, Yermack (1996) finds that U.S. firms with smaller boards have a stronger

relationship between firm performance and CEO turnover than firms with larger boards do. This suggests that smaller boards are more effective in disciplining poorly performing managers and may not be disadvantaged by the problems associated with larger boards. In contrast, Dherment-Ferere, Köke and Renneboog (2001) document that large boards facilitate disciplining poorly performing CEOs in Belgium, Germany and the United Kingdom. They posit that larger boards contain more inside directors that can serve as successor for the departing CEO.

In IPO firms, board size is lower than in larger publicly traded firms. For example, Buckland (2001) reports an average board size of 9 for large U.K. companies versus 7 for U.K. IPO firms. Analyzing U.S. IPO firms, Baker and Gompers (2001) find a median board size equal to 6, which compares to a median board size of 12 reported by Yermack (1996) for large U.S. corporations²¹. Baker and Gompers (2001) study the determinants of board size for a large sample of U.S. IPO firms. They find that board size is a positive function of firm size and asset tangibility – the ratio of plant, property and equipment to total assets. This shows that larger and more complicated firms require larger boards. Board size is smaller for firms where the CEO has founded the company. Mak and Roush (2000) question whether the negative board-size effect reported in Yermack (1996) holds true for IPO firms. They argue that while larger boards may make less timely strategic decisions, larger boards can also make it more difficult for CEOs to obtain consensus for taking actions that are harmful to minority shareholders. What is more, boards may be larger to include more independent directors. Mak and Roush (2000) find a negative relation between board size and management stock ownership for a sample of New Zealand IPO firms. They conclude that the agency problem between management and outside investors in IPO firms can either be addressed through increased management stock ownership or larger boards.

4.2.4. Large shareholders as active monitors

Especially independent directors that represent large non-management shareholders may be active monitors of managers. Large shareholders have strong incentives to monitor management that increase with the value of their shareholdings (Grossman and Hart, 1988). In addition, they are often able to influence company policy reducing the power of management. This may generate positive externalities for small shareholders. For instance, Dherment-Ferere and Renneboog (2002) document that the presence of large outside

²¹ Board size is likely to be a function of firm size. Therefore these differences may easily be attributed to the smaller size of IPO firms compared to the companies studied by Yermack (1996).

shareholders' representatives on the board leads to a higher probability of forced CEO resignations in France. If managers perform poorly, large shareholders tend to intervene and replace them. However, this disciplinary power of large shareholders decreases if they are not represented on the board.

Venture capitalists (VCs) are important shareholders in small and start-up businesses and are expected to be intensive monitors of managers. For example, Jensen (1993) observes that VC-backed firms have small boards with a low fraction of inside directors. Lerner (1995) investigates the monitoring role of VCs in private U.S. firms from the biotechnology industry. He finds that VCs' representation on the board of directors increases around the time of CEO turnover, while the number of other outsiders remains constant. This finding suggests that VCs' representation on boards is greater when the need for oversight is larger. Fried, Bruton and Hisrich (1998) find that boards in VC-backed U.S. firms are more involved in both strategy formulation and evaluation than are boards where members do not have large ownership stakes. In addition, they find that boards who own large blocks of stock are much more powerful than boards with minimal outside stock ownership. Sapienza, Manigart and Vermeir (1996) compare the willingness to monitor for a sample of venture capitalists from the U.S., U.K., France and the Netherlands. They find that CEOs meet more frequently with VCs in the U.S. and U.K. than in France and the Netherlands. Early stage ventures with greater uncertainty receive significantly more face-to-face interaction between the CEO and VCs both in the U.S. and in Europe.

Baker and Gompers (2001) investigate the influence of VCs on the board composition in U.S. IPO firms. They find that VCs shift the board composition away from inside and affiliated directors to independent directors. This is consistent with the bargain model of Hermalin and Weisbach (1998). Board composition is the outcome of a bargain between the CEO and VCs. VCs serve as a counterweight to CEO control with their concentrated stock ownership and reduce the fraction of inside directors. Baker and Gompers (1999) present evidence that VC's efforts and input are critical to the success of the IPO firm. VCs, as large shareholders, reduce the power of the CEO to extract private control benefits in the form of increased fixed salary.

4.3. Data and sample description

4.3.1. Sample criteria

We started with the complete universe of French newly listed firms from January 1993 to December 1999. *L'Année Boursière*, an annual publication of the *Société des Bourses Françaises* (SBF) was used to identify IPO firms. We excluded 21 domestic firms that listed on the *Premier Marché* (the most prestigious listing venue in France), because they generally involved privatization, equity carve-outs or spin-offs. Twenty-eight firms that transferred from the *Marché hors-cote* (an over-the-counter market that existed until 1998), or that previously traded on a foreign stock market, are excluded because their price discovery is straightforward. We excluded 12 financial services firms (SIC codes 6000-6999) because their reporting environments are different from those of other IPO firms. For the same reason, 9 firms that listed either on one of the 6 regional stock exchanges (Bordeaux, Lille, Lyons, Marseilles, Nantes, and Nancy) or on the *Marché Libre* (an unregulated trading platform in France) were removed. The filters resulted in a sample of 299 non-financial French firms that had an IPO on either the *Nouveau Marché* (98 firms) or the *Second Marché* (201 firms) of the Paris Bourse.

Table 4.1: Sample selection criteria

We started with the complete universe of French IPO firms from January 1993 to December 1999. *L'Année Boursière*, an annual publication of the *Société des Bourses Françaises* (SBF), was used to identify IPO firms. We excluded domestic firms that listed on the *Premier Marché* (the most prestigious listing venue in France), firms that transferred from the *Marché hors-cote* (an over-the-counter market that existed until 1998), or that previously traded on a foreign stock market. In addition, we excluded financial services firms and companies that listed either on one of the regional stock exchanges (Bordeaux, Lille, Lyons, Marseilles, Nantes, and Nancy) or on the *Marché Libre* (an unregulated trading platform in France).

Year	Domestic Universe	Exclusions because of				<i>In sample</i>		
		Premier Marché	Transfers	Financial services	Regional exchange	All IPOs	Nouveau Marché	Second Marché
1993	9	0	0	2	0	7	0	7
1994	36	3	1	3	3	26	0	26
1995	21	3	4	1	0	13	0	13
1996	52	4	3	2	1	42	13	29
1997	66	2	7	2	2	53	17	36
1998	119	5	9	1	1	103	38	65
1999	67	4	5	1	2	55	30	25
Total	369	21	28	12	9	299	98	201

The median market value on the first trading day amounts to 41 million Euro with a minimum of 10.7 million Euro and a maximum of 827 million Euro. Gross IPO proceeds, computed as the number of shares sold to the public times the offer price, equal 7.4 million Euro at the median. Newly issued shares make up 58.3% of the shares sold in the median IPO. The median number of shares sold to the public (free float) equals 20% of the shares outstanding after the IPO. First-day returns (underpricing), measured as the percentage difference between the offer price and the first-day closing market price, average 14.4%. Derrien and Womack (2001) analyze the underpricing of French IPO firms from 1992 to 1998. They report an average level of underpricing equal to 13.2%.

Panel B of Table 4.3 describes variables that we use as controls in subsequent tests. Total assets have a median value of 18 million Euro. Fixed assets intensity is computed as plant, property and equipment (PPE) divided by total assets. The median IPO firm has 13.5% of total assets put in fixed assets. The ratio of long-term debt to total assets equals 22% at the median. The cash flow margin is defined as earnings before interest, taxes, depreciation, amortization and provision allowances (EBITDA) divided by sales for the last 12 months reported in the prospectus. On average, the cash flow margin is 16.95% of sales. The median age of IPO firms is 16 years.

Not surprisingly, in unreported tests, we find that *Nouveau Marché* IPO firms have significantly lower first-day market capitalization, total assets, fixed tangible intensity, firm age and cash flow margins than *Second Marché* IPO firms. This reflects that the *Nouveau Marché* (established in 1996) attracts younger and smaller start-up firms, mostly operating in high-tech industries. What is more, *Nouveau Marché* IPO firms issue more new shares and sell more shares to the public than do *Second Marché* IPO firms. To a large extent, this can be attributed to the regulatory differences between the two stock markets. *Nouveau Marché* IPO firms are required to have a minimal free float of 20% with at least half of IPO shares being newly issued, whereas *Second Marché* issuers only need to sell 10% of outstanding shares to the public.

4.3.3. Ownership and voting structure

Table 4.4 shows the average pre-IPO and post-IPO cash flow ownership (C) and voting (V) structure²³. The table reports unconditional averages and averages conditional on that particular class of shareholder owning stock in the IPO firm. In France, it is possible to

²³ Pre-IPO refers to the situation immediately before the firm goes public. Post-IPO refers to the situation immediately after the IPO. Both pre-IPO and post-IPO ownership and voting structures are reported in the prospectus.

separate voting rights and cash flow rights using a double voting rule (*droit de vote double*). Under this rule, shares carry double votes after holding them for 2, 3 or 4 years, depending on the provisions in the company's statutes. In our sample, 83% of IPO firms apply a double voting rule where double votes take effect after 2 years (39.5%), 3 years (8.7%) or 4 years (34.8%). For comparison, double voting rules are applied by two-thirds of the 200 largest listed companies in France (Financial Times, 26 July 1999).

Table 4.4: Pre-IPO and post-IPO cash flow ownership and voting structure

This table shows the average cash flow ownership (C) and voting (V) percentages for different categories of shareholders. The shares and votes may be held directly and indirectly via a pyramiding structure. Ownership and voting percentages are averaged unconditional and conditional on that particular category of shareholder being present (N denotes the number of IPO firms in which that category of shareholder owns stock). Cash flow ownership and voting structure are different because of pyramiding and/or double voting systems. The *Président Directeur Général* (PDG) in the one-tier board structure and the *Président du Directoire* in the two-tier structure are classified as Chief Executive Officer (CEO). Inside directors are current managers of the company (other than the CEO). Affiliated directors are outside directors that are former managers of the company, relatives of management and persons that have business relationships with the firm. Independent directors are outside directors without such affiliations. Institutional investors include banks, insurance companies and pension funds.

Panel A: Average pre-IPO cash flow ownership (C) and voting (V) structure

Shareholder identity	Unconditional		Conditional			
	C (%)	V (%)	C (%)	V (%)	V/C	N
CEO/owner-manager	48.13	50.99	52.33	55.44	1.07	275
Inside directors	15.26	14.28	21.41	20.05	0.92	213
Affiliated directors	2.90	2.68	13.33	12.31	1.01	65
Independent directors	2.95	3.21	17.62	19.19	0.99	50
Venture capitalists	13.24	12.59	28.68	27.28	0.92	138
Industrial companies	6.81	6.44	40.74	38.50	0.89	50
Institutional investors	4.88	4.57	23.18	21.67	0.93	63
Other shareholders	5.83	5.25	7.30	6.57	0.86	239

Panel B: Average post-IPO cash flow ownership (C) and voting (V) structure

Shareholder identity	Unconditional		Conditional			
	C (%)	V (%)	C (%)	V (%)	V/C	N
CEO/owner-manager	39.23	44.32	42.50	48.01	1.14	276
Inside directors	12.09	11.91	16.97	16.72	0.96	213
Affiliated directors	2.43	2.29	11.18	10.53	1.00	65
Independent directors	2.14	2.43	12.77	14.51	1.05	50
Venture capitalists	8.86	8.65	19.19	18.75	0.94	138
Industrial companies	5.21	5.15	32.47	32.09	0.94	48
Institutional investors	3.36	3.28	16.22	15.80	0.95	62
Other shareholders	4.53	4.24	5.48	5.13	0.87	247

Another method to separate cash flow and voting rights is a pyramiding structure. In a pyramiding structure of two companies, a shareholder holds a controlling stake in one company that, in turn, holds a controlling stake in another corporation. For example, if a shareholder owns 50% of company A that in turn, owns 50% of company B, that shareholder would control both company A and B. However, the ultimate ownership in company B is only 25% (0.5×0.5) of the shares. Adoption of a three-tier pyramiding structure would reduce the minimal capital investment to 12.5% ($0.5 \times 0.5 \times 0.5$). In our sample, 17.4% of IPO firms apply a two-tier pyramid structure. The appendix shows an example of two-tier pyramiding in our sample. Faccio and Lang (2002) report that 17.8% of controlling owners in France exercise control through a pyramiding structure.

Panel A of Table 4.4 shows the CEO/owner-manager owns 48.1% of pre-IPO cash flow rights and controls 51% of pre-IPO votes, on average²⁴. Conditional on a CEO/owner-manager owning stock in the IPO firm, he owns 52% of pre-IPO cash flow rights and controls 55.4% of pre-IPO votes. When we compute the ratio of voting to cash flow rights (V/C), we observe that the CEO/owner-manager derives 1.07 votes per pre-IPO cash flow right. This reflects the use of double voting rules and two-tier pyramiding structures that increase the number of voting rights per cash flow right. Especially the CEO/owner-manager benefits from the separation of cash flow and voting rights. This has the potential to increase the conflict between the owner-manager and minority shareholders because the owner-manager may maintain a lock on control while holding fewer cash flow rights than voting rights. For instance, CEOs in IPO firms that adopt two-tier pyramiding structures own 36.4% of cash flow rights, but exercise 48.2% of pre-IPO votes, on average. Other important pre-IPO shareholders are inside directors (other than the CEO), owning 15.3% of pre-IPO shares, and venture capitalists that own 13.2 % of pre-IPO shares, on average. It is worth noting that 138 (46.2%) IPO firms have received venture financing when they were private.

Panel B of Table 4.4 reports on the average post-IPO ownership and voting structure. The CEO/owner-manager owns 39.2% of post-IPO cash flow rights and exercises 44.3% of post-IPO votes. Conditional on the CEO/owner-manager owning stock in the IPO firms, the ratio of post-IPO voting rights to post-IPO cash flow rights equals 1.14 compared to 1.07 pre-IPO²⁵. This implies that the CEO/owner-manager obtains more votes per post-IPO cash flow right than votes per pre-IPO cash flow right. The reason is that most double voting rules are

²⁴ The *Président Directeur Général* (PDG) in the one-tier board structure and the *Président du Directoire* in the two-tier structure are classified as Chief Executive Officer (CEO). The following subsection discusses board structure in more detail.

²⁵ Analyzing a sample of 604 French listed firms, Faccio and Lang (2002) report an average ratio of voting to cash flow right that is equal to 1.08.

adopted at the time of the IPO and take effect retroactively. That is, only the shares of pre-IPO owners that are held for the last 2, 3 or 4 years qualify for double votes at the time of going public. Other large post-IPO shareholders include inside directors (other than the CEO) with 12.1% of post-IPO shares and venture capitalists that own 8.9% of post-IPO shares.

In unreported tests, we investigate whether differences exist between the ownership and voting structures of *Nouveau Marché* and *Second Marché* IPO firms. We find that the CEO/owner-manager owns more cash flow rights and exercises more votes in *Second Marché* than in *Nouveau Marché* IPO firms. In addition, VC-backing is more widespread on the *Nouveau Marché*. More precisely, 56 (57.1%) *Nouveau Marché* IPO firms have received venture financing against 82 (40.8%) *Second Marché* IPO firms. There are no other significant differences between the two stock markets.

4.3.4. Board structure

Panel A of Table 4.5 shows CEO/owner-manager characteristics. We are able to retrieve CEO tenure from the prospectus for 278 IPO firms. CEO tenure (the number of years the CEO has been employed by the IPO firm) averages 13 years with a median value of 12 years. The majority of CEOs has (co-) founded the IPO firm. In particular, 69.6% of CEOs/owner-managers have (co-) founded the company.

A majority of French companies choose to adopt a one-tier board structure (*Conseil d'Administration*). The one-tier board is composed of at least 3 and no more than 24 members and combines the positions of CEO and chairman into that of the *Président Directeur Général* (PDG). According to French corporate law, the PDG is elected by the board, which in turn is appointed by the shareholders. In practice, it is often the PDG that selects the board members, a choice that is then ratified by the shareholders.

Alternatively, French companies may choose to adopt a two-tier board structure. The two-tier board consists of a management board (*Directoire*) and a supervisory board (*Conseil de Surveillance*). The management board consists of 2 to 5 inside directors, who are appointed by the supervisory board, but dismissed by the vote of a simple majority at the shareholders' meeting. Supervisory board members are outside directors that are appointed and dismissed by the shareholder's meeting. In our sample, 266 (89%) IPO firms have adopted a one-tier board structure against 33 (11%) IPO firms with a two-tier board structure. Given this small number of companies we do not consider two-tier board structure as a dependent variable in subsequent tests.

Table 4.5: CEO characteristics, board structure and shareholders with board representation

Panel A shows CEO characteristics. CEO tenure is measured as the number of years the CEO has been employed by the company at the time of the IPO. 'CEO is founder' is a dummy variable that equals one if the CEO founded the IPO firm, 0 otherwise. Panel B describes board structure. Board size is the number of board members. If the IPO firm applies a two-tier board structure, board size is the sum of the number of management board (*Directoire*) members and supervisory board (*Conseil de Surveillance*) members. Inside directors are current managers of the company (including the CEO). Affiliated directors are outside directors that are former managers of the company, relatives of management and persons that have business relationships with the firm. Independent directors are outside directors without such affiliations. VC directors are independent directors that represent venture capitalists. Shareholder representatives are independent directors that represent non-management shareholders (venture capitalists, commercial companies and institutional investors). Inside, affiliated, independent and VC directors and shareholder representatives are expressed as a percentage of board size. Panel C shows the pre-IPO and post-IPO ownership and votes of board represented shareholders. These shareholders include venture capitalists, commercial companies and institutional investors that are board represented by one or more independent directors.

Panel A: CEO characteristics

Variable	Mean	Min	Percentiles			Max	Std.dev.
			25 th	50 th	75 th		
CEO tenure (years)	13.18	1.00	6.00	12.00	17.00	42.00	8.24
CEO is founder (dummy)	69.57	0.00	0.00	1.00	1.00	1.00	0.46

Panel B: Board structure

Variable	Mean	Min	Percentiles			Max	Std.dev.
			25 th	50 th	75 th		
Board size (#)	5.30	3.00	4.00	5.00	6.00	15.00	2.32
Inside directors (%)	46.88	0.00	30.38	42.86	66.67	100.00	23.08
Affiliated directors (%)	18.91	0.00	0.00	16.67	33.33	75.00	21.08
Independent directors (%)	34.21	0.00	0.00	33.33	60.00	100.00	28.49
VC directors (%)	6.50	0.00	0.00	0.00	3.33	83.33	13.20
Shareholder representatives (%)	13.45	0.00	0.00	0.00	25.00	100.00	20.83

Panel C: Cash flow ownership and votes of shareholders with board representation

Variable	Mean	Min	Percentiles			Max	Std.dev.
			25 th	50 th	75 th		
Pre-IPO ownership (%)	17.11	0.00	0.00	0.00	24.86	100.00	29.24
Pre-IPO votes (%)	16.33	0.00	0.00	0.00	20.06	100.00	29.03
Post-IPO ownership (%)	12.09	0.00	0.00	0.00	15.47	86.30	21.37
Post-IPO votes (%)	11.96	0.00	0.00	0.00	14.12	91.70	22.00

For comparison, Alcouffe (2000) reports that 18% of top 120 listed French companies and less than 3% of all French companies adopt the two-tier board structure²⁶.

²⁶ In general, French companies adopt the two-tier board structure for two reasons. First, a company may adopt a two-tier structure in the case of succession, when a new generation of directors rises to power. The second scenario involves the merger scenario. Here the two-tier board structure provides each of the former CEOs of

In France, no annual re-election of the entire board is required. In our sample, 138 (46.2%) IPO firms have classified boards where only a part of the board is up for election in any given year. The median director's term is the legal maximum of 6 years. Outside investors that buy shares in the IPO, may therefore need to wait up to 6 years after the IPO before current board members come up for re-election.

Panel B of Table 4.5 shows that the median board consists of 5 members. Board size ranges from a minimum of 3 to a maximum of 15 members. When the IPO firms applies a two-tier board structure, we define board size as the sum of the members of the management board and supervisory board. In comparison, Conyon and Peck (1998) find that the average board in large French listed companies consists of 10.5 members. This shows that board size in IPO firms is much lower than in large public corporations.

On average, the board consists of 46.9% inside directors (current managers), 18.9% affiliated directors (outside directors that are former managers of the company, relatives of management and persons that have business relationships with the firm) and 34.2% independent directors (outside directors without such affiliations). Analyzing 323 large French listed firms, Dherment-Ferere, Köke and Renneboog (2001) report that the board consists of 14.6% inside directors with the remaining 85.4% as outside directors. Not surprisingly, this shows that IPO firms tend to have more inside directors and less outside directors than large publicly traded companies²⁷.

Venture directors are independent directors that represent the interests of venture capitalists on the board. On average, 6.5% of the board consists of venture directors. Shareholder representatives are independent directors that represent non-management shareholders (venture capitalists, commercial companies and institutional investors). On average, these shareholder representatives hold 13.5 % of board seats. It is important to emphasize that no material differences exist between *Nouveau Marché* and *Second Marché* IPO firms in relation to board structure.

Panel C of Table 4.5 describes the pre-IPO and post-IPO cash flow ownership and voting power of shareholders with board representation. These shareholders include venture capitalists, commercial companies and institutional investors that are board represented by one or more independent directors. On average, shareholders with board representation own

the merger companies with leadership positions, one as head of the directorate and the other as head of the supervisory board.

²⁷ The COB (*Commission des Opérations de Bourse*), the French equivalent of the SEC, and the Viénot Committee on corporate governance have advocated that companies name at least two independent directors to their boards. In our sample, 137 (45.8%) IPO firms have at least two independent directors on the board.

17.1% of pre-IPO shares and 12.1% of post-IPO shares. They exercise 16.3% of pre-IPO votes and 12% of post-IPO votes. This shows that shareholders with board representation generally own a substantial fraction of the IPO firm's shares and therefore have incentives to monitor managers²⁸.

4.4. Empirical results

4.4.1. Incentive, entrenchment and bargaining effects

At the time of the IPO, the owner-manager often remains in charge and cannot be disciplined by powerless minority shareholders. This prompts a potential conflict of interest between the owner-manager and minority shareholders. Whereas small shareholders want the owner-manager to maximize shareholder value, the owner-manager may have his own (possibly conflicting) interests to pursue that benefit him at minority shareholders' expense. The power of the owner-manager to take advantage of small shareholders may be moderated when an independent board monitors his actions. In this section, we investigate the cross-sectional determinants of board composition and board size at the time of going public.

Agency theory predicts an inverse relation between ownership of the owner-manager and the fraction of independent directors that serve on the board across all levels of ownership. If the owner-manager retains stock in the post-IPO firm, he internalizes the value effects of his decisions, which makes private benefits of control more costly to him (Jensen and Meckling, 1976). This reduces the incentives to expropriate minority shareholders and decreases the need for monitoring by independent directors. We call this the *incentive* effect.

Hermalin and Weisbach (1998) develop a bargaining model. The owner-manager prefers a less independent board, whereas the board wants to maintain its independence. When the owner-manager has sufficient bargaining power – for example, when he owns more stock and thus votes – board independence declines. We call this the *entrenchment* effect. However, as long as the manager is not in unilateral control (he does not own full control), large pre-IPO non-management shareholders, such as venture capitalists, are expected to bargain with the owner-manager on the fraction of independent directors. This acts as a

²⁸ The decline in post-IPO cash flow ownership of shareholders with board representation is partly because of the issuance of new shares and partly due to selling existing shares in the IPO. On average, shareholders with board representation sell a relatively small fraction (19.3%) of their pre-IPO shareholdings. Evaluated at the median, they sell 14.9% of their pre-IPO stock ownership. They therefore experience incentives to monitor managers, even after the IPO.

counterweight to managerial entrenchment and prevents a further decline of the fraction of independent directors on the board. We call this the *bargaining* effect. If bargaining effects are important the inverse relation between the fraction of independent directors and management ownership does not prevail across the entire range of ownership levels (Arthur, 2001).

In Table 4.6 we regress the fraction of independent directors (expressed as a percentage of board size) on the post-IPO cash flow ownership of the CEO/owner-manager. We include three independent variables to describe CEO ownership; the percentage of post-IPO shares owned by the CEO/owner-manager, its square and its cube. This allows us to test whether the relationship between board composition and post-IPO cash flow ownership of the CEO/owner-manager is negative across the entire range of ownership²⁹. If the form of the relationship were negative across all levels of ownership, as predicted by agency theory, we would expect that the coefficients of the three variables are negative and significant. If not, bargaining effects may explain board composition.

Model (1) of Table 4.6 shows the results of an OLS regression using White (1980) heteroskedastic-consistent standard errors to compute *t*-statistics³⁰. The coefficient on the square of CEO stock ownership is positive and significant. This suggests that the relation between the fraction of independent directors and post-IPO cash flow ownership of the CEO/owner-manager is not negative across the entire range of ownership. The fraction of independent directors is subject to *dominating* incentive, bargaining and entrenchment effects as the post-IPO cash flow ownership of the CEO/owner-manager increases. If the CEO owns a relatively low percentage of post-IPO shares, incentive effects outweigh entrenchment effects. This results in an agency costs trade-off between CEO ownership and the fraction of independent directors. If CEO/owner-manager ownership reaches a critical level (resulting in unilateral control) representation of independent directors will decline. CEO/owner-managers are entrenched and prefer less independent boards. In the middle range of CEO ownership, entrenchment and incentive effects are both important.

²⁹ Short and Keasey (1999) use the cubic form of managerial ownership to examine the relation between management stock ownership and firm performance. They prefer the cubic form of management ownership to a piecewise linear regression model. A problem with the piecewise linear regression model is that it allows the coefficients on management stock ownership to change at pre-determined levels of ownership with little theoretical guidance for the choice of turning points. Short and Keasey (1999) argue that the cubic form of management ownership allows the turning points to be determined endogenously.

³⁰ Table 4.5 shows that the fraction of independent directors is not normally distributed. We therefore estimate, but do not report, Tobit regressions with two-sided censoring at zero and one. These yield similar results in terms of sign and statistical significance of the coefficients as the OLS regressions.

Table 4.6: Incentive, entrenchment and bargaining effects

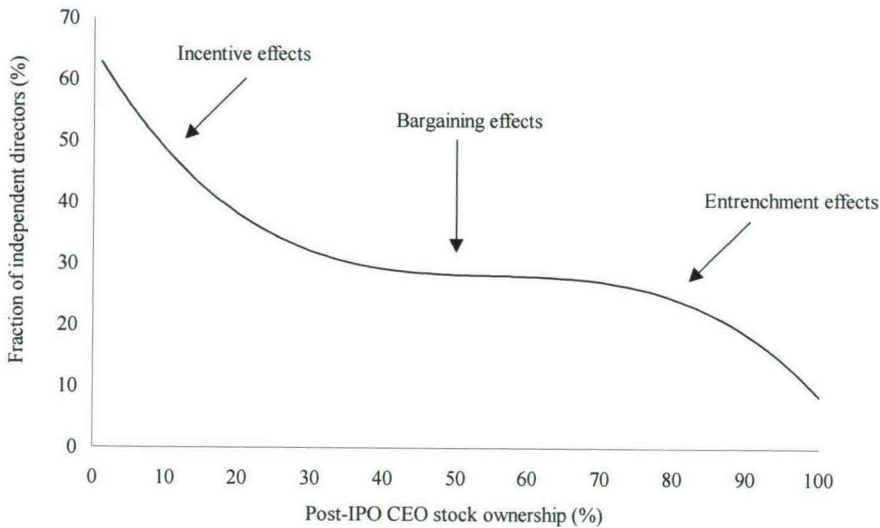
Models (1-2) use the fraction of independent directors (expressed as a fraction of board size) as the dependent variable. Model (1) is estimated using OLS, Model (2) is estimated using a piecewise linear regression technique (see footnote 31). Model (3) has a binary dependent variable that equals one if the fraction of independent directors is larger than one-third, 0 otherwise. Model (3) is estimated using a logit regression technique. Model (4) uses board size as a dependent variable. Since board size is integer count data we estimate Model (4) using a Poisson regression technique. CEO ownership refers to post-IPO cash flow ownership of the CEO/owner-manager. Other independent variables are defined as in previous tables. The R^2 measure refers to a pseudo- R^2 for the Poisson regression and the McFadden R^2 for the binary logit analysis. Heteroskedastic-consistent t -statistics are within parentheses. * significant at the 10% level; ** significant at the 5% level; *** significant at the 1% level.

	Dependent variable			
	Model (1) Independent directors	Model (2) Independent directors	Model (3) Independent board	Model (4) Board size
CEO ownership	-1.876 (-4.561)***		-17.636 (-3.700)***	-0.335 (-0.542)
CEO ownership ²	3.412 (2.937)***		38.007 (2.977)***	-0.727 (-0.431)
CEO ownership ³	-2.092 (-2.375)**		-26.800 (-2.756)***	0.671 (0.539)
CEO ownership (0-25%)		-1.306 (-5.785)***		
CEO ownership (25-50%)		0.047 (0.225)		
CEO ownership (50%+)		-0.256 (-1.723)*		
CEO is founder (dummy)	-0.070 (-1.659)*	-0.072 (-1.682)*	-0.741 (-1.538)	-0.063 (-1.062)
VC-backing (dummy)	0.087 (2.965)***	0.087 (2.988)***	0.499 (1.722)*	0.110 (2.713)***
<i>Control variables</i>				
Log (Firm size)	0.033 (2.362)**	0.034 (2.414)**	0.340 (2.471)**	0.130 (6.080)***
PPE intensity (%)	0.221 (2.248)**	0.224 (2.288)**	2.080 (1.983)**	0.297 (2.128)**
Long-term debt (%)	-0.066 (-0.685)	-0.071 (-0.735)	-0.519 (-0.525)	-0.436 (-3.250)***
Cash flow margin (%)	-0.053 (-0.371)	-0.049 (-0.338)	-1.297 (-0.802)	-0.242 (-1.066)
Log (1+Firm age) (years)	-0.034 (-1.583)	-0.036 (-1.672)*	-0.425 (-1.661)*	0.004 (0.114)
Intercept	0.605 (6.798)***	0.600 (6.807)***	3.030 (2.718)***	1.497 (11.866)***
R^2 adjusted	0.361	0.365	0.221	0.426
F -value/ LR -value	17.824***	18.159***	91.260***	120.385***

Because the CEO is not in unilateral control, he needs to bargain with other pre-IPO shareholders on board composition. These pre-IPO shareholders oppose a further decline in the fraction of independent directors, as reflected in the positive coefficient of squared CEO

stock ownership. Figure 4.1 depicts the estimated relationship between the fraction of independent directors and CEO stock ownership. It is important to emphasize that the figure shows which of the effects *dominate* in which regions of cash flow ownership.

Figure 4.1: Dominating incentive, entrenchment and bargaining effects



Model (2) of Table 4.6 shows the results of a piecewise linear regression. The coefficient of CEO ownership (0-25%) is significantly negative³¹. This captures the dominating incentive effects. If the CEO/owner-manager owns 25% of post-IPO shares or less, incentives are aligned with those of minority shareholders, which reduces the need for independent board monitoring. The coefficient of CEO ownership (50%+) is also significantly negative. This reflects entrenchment effects. If the CEO/owner-manager owns 50% of post-IPO shares or more, he is in unilateral control and appoints the entire board matching his preferences. This results in decline in the fraction of independent directors. The coefficient of CEO ownership (25-50%) is insignificantly positive. If the CEO/owner-manager owns between 25 and 50% of post-IPO shares, he needs to bargain with other pre-IPO shareholders on board composition. Since incentive effects and entrenchment effects are

³¹ In the piecewise linear regression, CEO ownership (X-Y%) measures post-IPO cash flow ownership of the CEO/owner-manager in excess of X% with a maximum of Y-X%. In particular, CEO ownership (X-Y%) equals the minimum of (CEO stock ownership-X%, Y-X%). CEO ownership (Z%+) measures post-IPO cash flow ownership of the CEO/owner-manager in excess of Z% with a maximum of 100%-Z%. More precisely, CEO ownership (Z%+) equals the maximum of (CEO stock ownership-Z%, 0%).

both important in this middle range of CEO ownership, other pre-IPO shareholders oppose a continued decline of board independence. Although the cut-off points in the piecewise regression are arbitrary, our findings are insensitive to the turning points used. For instance, we have also estimated piecewise linear regressions using turning points equal to 20 and 40 % of post-IPO shares and 30 and 60% of post-IPO shares.

Model (3) of Table 4.6 shows the results of a logit regression. The dependent variable is a dummy variable that equals one if the board consists of 1/3 independent directors (the sample median). We define these boards as independent boards. The logit analysis also provides strong support for a non-linear relation between the presence of an independent board and post-IPO cash flow ownership of the CEO/owner-manager.

We also investigate the influence of venture capitalists on board composition. A VC-backing dummy indicates whether the IPO firm has received venture capital when it was private. Models (1-3) of Table 4.6 show that venture capitalists increase board independence. This may reflect that venture capitalists oppose owner-managers and successfully bargain for more independent boards. In addition, we include a dummy that captures whether the CEO/owner-manager has founded the IPO firm. Models (1-3) of Table 4.6 show that if the CEO has (co-) founded the company, board independence is reduced. This suggests that founding CEO/owner-managers have more bargaining power which results in a less independent board.

Models (1-3) also include five control variables. These control variables are described in Panel B of Table 4.3. Firm size is measured as total assets for the last financial year reported in the prospectus. Larger firms have more complex operations that may require more independent directors to monitor managers (Denis and Sarin, 1999). Mak and Roush (2000) argue larger IPO firms facing greater agency problems are more likely to employ boards that are more effective at monitoring managers. Accordingly, our results suggest that larger IPO firms have a larger fraction of independent directors on the board. We use PPE intensity as our proxy for the investment opportunity set of the IPO firm. PPE intensity is defined as the ratio of plant, property and equipment to total assets from the most recent (interim) balance sheet included in the prospectus. If a firm derives a large part of its value from assets not yet in place (low PPE intensity), it becomes more difficult for independent directors to monitor managers (Smith and Watts, 1992). This predicts that the fraction of independent directors is a positive function of PPE intensity. Models (1-3) of Table 4.6 support this positive relationship.

Long-term debt ratios are measured by the ratio of long-term debt to total assets from the most recent (interim) balance sheet included in the prospectus. Firms with more growth

opportunities versus assets in place also tend to have lower debt ratios and less monitoring by lenders (Smith and Watts, 1992). In highly levered IPO firms, lenders are therefore assumed to monitor managers, which reduces the need for independent board monitoring. This predicts an inverse relation between the fraction of independent directors and the long-term debt ratio. However, Models (1-3) of Table 4.6 do not provide support for this negative relationship. Following Baker and Gompers (2001) we also control for cash flow margin and IPO firm age. These control variables are not significantly related to the fraction of independent directors in any of the estimated regression models.

Model (4) of Table 4.6 shows the results of a Poisson regression using board size as the dependent variable. We use a Poisson regression technique since board size is integer count data as opposed to a continuous variable. Post-IPO cash flow ownership of the CEO/owner-manager is not significantly associated with board size. In contrast to our results for board composition, we do not find support for incentive, entrenchment or bargaining effects in relation to board size. The 'CEO is founder' dummy is not statistically significant. The VC-backing dummy is significantly positive. This suggests that VC-backed IPO firms have larger boards. Assuming that VCs create more effective boards and that smaller boards are more effective, this finding is remarkable. Possibly, VCs require additional board seats for venture directors (see Section 4.4.3. for further tests). Not surprisingly, board size is a positive function of firm size. In addition, IPO firms with higher asset tangibility, measured by PPE intensity, have larger boards. The long-term debt ratio is negatively related to board size. Highly levered firms require smaller boards. Cash flow margin and firm age are not significantly related to board size.

In summary, our analysis provides preliminary support for the bargaining model of Hermalin and Weisbach (1998). Whereas agency theory predicts an inverse relation between the fraction of independent directors and post-IPO cash flow ownership of the CEO/owner-manager across all levels of CEO ownership, our results suggest otherwise. At low levels of CEO ownership, incentive effects reduce the need for an independent board. At high levels of CEO ownership, the owner-manager is entrenched and reduces the proportion of independent directors on the board. In the middle range of CEO ownership, a reduction of the fraction of independent directors is opposed by pre-IPO shareholders. In this middle range, the CEO/owner-manager would like to reduce the level of independent directors further to enjoy potential private control benefits. But non-management pre-IPO shareholders that do not share in these private benefits exercise sufficient power vis-à-vis the owner-manager to prevent such a decline in the fraction of independent directors. We do not find any relationship between board size and post-IPO cash flow ownership of the CEO/owner-

manager. Our findings are robust to the inclusion of an ex-post risk proxy (the standard deviation of stock returns during a 250 trading day period after the IPO), industry dummies, a two-tier board structure dummy, and a *Nouveau Marché* dummy³². We also re-estimated all regression using pre-IPO cash flow ownership and pre- and post-IPO voting power of the CEO/owner-manager. These additional tests produce similar results in terms of sign and statistical significance of the coefficients. The next section investigates the bargaining effects in more detail using voting structures rather than post-IPO cash flow ownership.

4.4.2. Bargaining between the owner-manager and large outside shareholders

In this section, we take a closer look at bargaining between the owner-manager and large non-management pre-IPO shareholders. For this purpose, we divide the sample into two groups; a bargaining sample (CEO/owner-manager exercises less than 50% of pre-IPO votes) and a non-bargaining sample (CEO/owner-manager owns 50% or more of pre-IPO votes)³³. We use pre-IPO votes because board composition and board size are determined *before* going public. Moreover, pre-IPO votes, in contrast to the post-IPO cash flow ownership we analyzed in the previous subsection, reflect the use of pyramiding structures and double voting rules that may increase the power of the CEO/owner-manager. We choose a 50% cut-off point because the CEO/owner-manager is in unilateral control if he exercises 50% or more of pre-IPO votes. As a result, he does not need to bargain with other pre-IPO shareholders on board composition. In fact, Fanto (1998) shows that French corporate law grants controlling shareholders that own more than 50% of the votes the right to appoint the entire board of directors.

The bargaining sample contains 144 IPO firms, while the non-bargaining sample contains the remaining 155 IPO firms. Panel A of Table 4.7 shows the results for the bargaining sample. Model (1) shows the results of an OLS regression using White (1980) heteroskedastic-consistent standard errors to compute *t*-statistics. The coefficient on pre-IPO voting power of the CEO/owner-manager is significantly negative. The fraction of independent directors declines as the CEO/owner-manager wields more power. Other things equal, the fraction of independent directors is reduced by 4.8% for each 10% increase (e.g.

³² The *F*-test testing the null hypothesis that the *Nouveau Marché* and *Second Marché* samples can be pooled does not reject pooling (Chow test). We therefore present pooled estimates only.

³³ We have also used post-IPO votes, pre-IPO and post-IPO cash flow ownership and Shapley values (measuring the probability that the CEO/owner-manager is pivotal in a simple majority voting game with the other pre-IPO shareholders) to construct the bargaining and non-bargaining sample. However, results are qualitatively similar.

from 10 to 20%) in CEO voting power. We have also included three dummy variables to capture the influence of large pre-IPO non-management shareholders (industrial companies, institutional investors and venture capitalists, respectively) that own more than 10% of pre-IPO votes³⁴. This 10% cut-off point corresponds to the threshold that allows shareholders to ask for explanations about managerial actions at the shareholders' meeting or to query auditor reports (Alcouffe, 2000). We find that the regression coefficients of the three dummy variables are significantly positive. For example, if venture capitalists own more than 10% of pre-IPO votes, the fraction of independent directors increases by 17.9%. This supports the bargaining model of Hermalin and Weisbach (1998). The proportion of independent directors increases as non-management shareholders exercise sufficient voting power vis-à-vis the owner-manager. The 'CEO is founder' dummy is significantly negative. Founding CEOs/owner-managers are in a better bargaining position that leads to a lower fraction of independent directors on the board.

Model (2) shows the results of a binary logit regression. The dependent variable is a dummy variable that equals one if the board consists of 1/3 independent directors (the sample median). We define these boards as independent boards. The results are similar to that of Model (1). However, the 'CEO is founder' dummy loses statistical significance.

Model (3) shows the results of an OLS regression using the fraction of inside directors as the dependent variable. Inside directors are current managers of the company and are often dependent on the CEO/owner-manager for their career advancement. Although pre-IPO voting power of the CEO is not significantly related to the fraction of inside directors, the three non-management shareholder dummy variables are statistically negative. This suggests that the presence of non-management shareholders with more than 10% of pre-IPO votes is inversely related to the fraction of inside directors. For instance, if venture capitalists exercise 10% or more of pre-IPO votes, the fraction of inside directors declines by 13.3%, *ceteris paribus*. The 'CEO is founder' dummy is statistically significant. This shows that founders tend to bargain for more inside directors on the board.

Model (4) uses the proportion of affiliated directors (outside directors that are former managers of the company, relatives of management and persons that have business relationships with the firm) as the dependent variable. We observe that pre-IPO voting power of the CEO/owner-manager is positively related to the fraction of affiliated directors. More powerful CEOs succeed to appoint more affiliated directors on the board.

³⁴ We have also replaced the three dummy variables with the percentage of pre-IPO votes in the hands of industrial companies, institutional investors and venture capitalists. Results are qualitatively similar.

Table 4.7: Bargaining between the CEO/owner-manager and large outside shareholders

The bargaining sample contains 144 IPO firms, the non-bargaining sample contains the remaining 155 IPO firms. Dependent variables are independent directors in Model (1), inside directors in Model (3) and affiliated directors in Model (4), all expressed as a percentage of board size. Model (2) has a binary dependent variable that equals one if the fraction of independent directors is larger than one-third, 0 otherwise. Model (5) uses board size as the dependent variable. Industrial companies>10%, institutional investors>10% and venture capitalists>10% are dummy variables that equal one if industrial companies, institutional investors or venture capitalists exercise 10% or more of pre-IPO votes. Other variables are defined as before. Models (1, 3 and 4) are estimated using OLS, Model (2) is estimated using a logit regression analysis and Model (5) is estimated using a Poisson regression technique. Heteroskedastic-consistent *t*-statistics are within parentheses. * significant at the 10% level; ** significant at the 5% level; *** significant at the 1% level. The R² measure refers to a pseudo-R² for the Poisson regression and the McFadden R² for the binary logit analysis.

Panel A: Bargaining sample (pre-IPO votes of CEO/owner-manager less than 50%)

	Dependent variable				
	Model (1)	Model (2)	Model (3)	Model (4)	Model (5)
	Independent directors	Independent board	Inside directors	Affiliated directors	Board size
CEO pre-IPO voting power (%)	-0.482 (-3.447)***	-3.759 (-2.232)**	0.201 (1.541)	0.281 (2.551)**	-0.458 (-2.145)**
Industrial companies>10%	0.152 (3.300)***	2.528 (3.334)***	-0.125 (-3.305)***	-0.027 (-0.818)	0.031 (0.531)
Institutional investors>10%	0.110 (2.201)**	2.606 (1.987)**	-0.110 (-2.443)**	0.001 (0.006)	0.100 (1.509)
Venture capitalists>10%	0.179 (4.574)***	1.679 (3.022)***	-0.133 (-4.010)***	-0.046 (-1.661)*	0.171 (3.191)***
CEO is founder (dummy)	-0.126 (-2.487)**	-1.241 (-1.466)	0.126 (2.814)***	0.001 (0.010)	0.013 (0.164)
<i>Control variables</i>					
Log (Firm size)	0.014 (0.774)	0.408 (1.539)	0.008 (-0.842)	-0.022 (1.548)	0.124 (4.525)***
PPE intensity (%)	0.006 (0.049)	1.519 (0.604)	-0.083 (-0.842)	0.077 (0.801)	0.104 (0.576)
Long-term debt (%)	-0.019 (-0.131)	0.433 (0.219)	0.055 (-0.434)	-0.036 (-0.37)	-0.433 (-2.460)**
Cash flow margin (%)	0.061 (0.331)	-1.340 (-0.481)	-0.024 (-0.134)	-0.038 (-0.294)	-0.256 (-0.842)
Log (1+Firm age) (years)	-0.027 (-1.158)	-0.758 (-1.946)	-0.011 (-0.484)	0.038 (2.269)**	0.017 (0.433)
Intercept	0.513 (4.840)***	2.059 (1.623)	0.441 (4.800)***	0.046 (0.714)	1.442 (9.647)***
R ² adjusted	0.423	0.383	0.325	0.098	0.089
F-value/LR-value	11.495***	66.654***	7.889***	2.554***	58.095***

Table 4.7: Bargaining between the CEO/owner-manager and large outside shareholders (continued)

Panel B: Non-bargaining sample (pre-IPO votes of CEO/owner-manager 50% or more)

	Dependent variable				
	Model (1) Independent directors	Model (2) Independent board	Model (3) Inside directors	Model (4) Affiliated directors	Model (5) Board size
CEO pre-IPO voting power (%)	0.050 (0.416)	0.065 (0.056)	-0.261 (-2.495)**	0.212 (1.694)*	-0.008 (-0.045)
Industrial companies>10%	0.389 (5.939)***	37.066 (37.996)***	-0.235 (-2.990)***	-0.153 (-4.851)***	-0.158 (-0.781)
Institutional investors>10%	0.054 (0.649)	-0.185 (-0.191)	-0.039 (-0.367)	-0.016 (-0.200)	0.217 (1.510)
Venture capitalists>10%	0.046 (0.988)	0.573 (1.213)	0.016 (0.322)	-0.063 (-1.313)	0.089 (1.081)
CEO is founder (dummy)	-0.027 (-0.429)	-0.423 (-0.726)	0.012 (0.220)	0.014 (0.257)	-0.163 (-1.904)*
<i>Control variables</i>					
Log (Firm size)	0.024 (0.983)	-0.423 (-0.726)	0.017 (0.761)	-0.041 (-2.126)**	0.101 (2.914)***
PPE intensity (%)	0.351 (2.407)***	2.688 (2.053)**	-0.289 (-2.412)**	-0.061 (-0.477)	0.495 (2.157)**
Long-term debt (%)	-0.029 (-0.211)	-0.257 (-0.203)	-0.048 (-0.377)	0.076 (0.587)	-0.339 (-1.506)
Cash flow margin (%)	-0.128 (-0.624)	-1.734 (-0.788)	0.259 (1.254)	-0.131 (-0.601)	-0.379 (-1.319)
Log (1+Firm age) (years)	-0.040 (-0.957)	-0.388 (-1.046)	-0.010 (-0.264)	0.050 (1.475)	-0.025 (-0.408)
Intercept	0.207 (1.193)	0.290 (0.182)	0.707 (4.189)***	0.087 (0.571)	1.424 (6.850)***
R ² adjusted	0.059	0.062	0.048	0.026	0.033
F-value/LR-value	1.970**	12.588	1.786*	1.404	20.159**

Consistent with the bargaining model, venture capitalists that own more than 10% of pre-IPO votes reduce the fraction of affiliated directors by 4.6%. However, industrial companies and institutional investors do not successfully oppose the appointments of affiliated directors. We do not find a founder effect. Firm age is positively associated with the fraction of affiliated directors. This implies that boards of older IPO firms contain more affiliated directors.

Model (5) reports the results of a Poisson regression using board size as the dependent variable. We observe that board size is a negative function of pre-IPO votes in the hands of the CEO/owner-manager. This is consistent with Mak and Roush (2000). They find a negative relation between board size and management stock ownership for a sample of New Zealand IPO firms. Venture capitalists that exercise more than 10% of pre-IPO votes increase board size. One reason may be that venture capitalists appoint additional independent directors to represent their interests on the board. Consistent with Model (4) of Table 4.6, we

in the non-bargaining sample. In the non-bargaining sample, all contracting parties (including the CEO/owner-manager) own an average of 67.2% of post-IPO votes versus 85.4% of post-IPO votes in the non-bargaining sample.

In conclusion, this section has shown that CEO/owner-managers that own less than 50% of pre-IPO votes bargain with large outside shareholders (industrial companies, institutional investors and venture capitalists) on board composition. When the CEO/owner-manager is in unilateral control (he owns 50% or more of pre-IPO votes) he does not need to bargain with other pre-IPO owners. Accordingly, we find little evidence of bargaining in the regressions. Looking at shareholder agreements, we observe that board composition is relatively more contracted and bargained upon between pre-IPO shareholders in the bargaining sample. To check the robustness of our results, we have performed similar robustness checks as in the previous section. In addition, we have included CEO tenure as an additional independent variable. Arthur (2001) argues that longer tenure strengthens the bargaining position of the CEO versus other pre-IPO shareholders. However, we do not find any significant relationship between CEO tenure and board composition in the bargaining sample or the non-bargaining sample. We also estimate an OLS regression model using the fraction of shareholder representatives as the dependent variable and the standard set of control variables. For this purpose, we restrict the analysis to 113 IPO firms with large shareholders with board representation. Consistent with the bargaining model, we find that the fraction of shareholder representatives increases with the voting power of board represented shareholders and decreases with the pre-IPO voting power of the CEO/owner-manager. In the next section we more closely examine the role of venture capitalists.

4.4.3. Bargaining in VC-backed IPO firms

Venture capitalists (VCs) are important and active pre-IPO non-management shareholders. Baker and Gompers (1999) argue that VCs have strong incentives to improve corporate governance because they are repeat players in the U.S. IPO market. They have an interest in limiting expropriation of minority shareholders by an owner-manager, because expropriation makes it more difficult to convince the public to buy shares in its other portfolio companies in the future. For this purpose, VCs in the United States typically design compensation schemes and take board seats (Baker and Gompers, 2001). Whether these findings can be imputed to France is an empirical matter. In our sample, 138 IPO firms have received venture financing when they were private. In this section, we analyze a sample of 135 VC-backed IPO firms³⁶.

³⁶ We could not identify VC-related data for three IPO firms.

We examine whether bargaining takes place between the CEO/owner-manager and VCs on board composition and board size.

Table 4.9 introduces four VC-related independent variables. VC pre-IPO voting power is the percentage of pre-IPO votes controlled by venture capitalists as a group. For the 135 VC-backed IPO firms, pre-IPO voting power of VCs averages 25.8%. Syndication measures the number of VCs that have provided finance to the IPO firm. Syndication allows venture firms to share the risk associated with an investment in a portfolio company and to coordinate their actions. On average, 2.4 VCs have financed the IPO firm. The last two VC-related variables are measured for the lead VC. The lead VC is defined as the venture firm with the largest pre-IPO voting stake. VC monitoring passivity equals the ratio of portfolio companies to the number of professionals of the venture firm³⁷. In other words, it measures the number of portfolio companies that one professional has to monitor. This variable is assumed to capture the varying degree of monitoring ability of French VCs (Sapienza, Manigart and Vermeir, 1996). On average, one professional monitors 10.4 portfolio companies with a minimum of 0.4 to a maximum of 40.7. The 'independent VC' dummy indicates one if the lead VC is not affiliated with a financial institution. This controls for potential differences between independent VCs and VCs that are subsidiaries of banks or insurance companies. Independent VCs constitute one-third of the sample.

Model (1) of Table 4.9 shows the results of an OLS regression using the proportion of independent directors as the dependent variable. As before, we observe that pre-IPO voting power of the CEO/owner-manager reduces the fraction of independent directors on the board. Consistent with the bargaining model, an increase in VC pre-IPO voting power increases board independence. The 'independent VC' dummy loads up with a statistically significant coefficient. It appears that independent VCs are particularly successful in increasing the fraction of independent directors. None of the other VC-related independent variables are statistically significant.

Model (2) examines the relation between the fraction of inside directors and VC-related independent variables. However, none of the VC-related variables are significant. As before, the proportion of inside directors increases as the CEO/owner-manager becomes more powerful or has (co-) founded the IPO firm.

³⁷ We obtain this data from AFIC (*Association Française des Investisseurs en Capital*) yearbooks.

Table 4.9: Bargaining in VC-backed IPO firms

The sample consists of 135 VC-backed IPO firms. Models (1-5) include VC-related independent variables. VC pre-IPO voting power is the percentage of pre-IPO votes owned by venture capitalists as a group. Syndication measures the number of VCs that have financed the IPO firm. VC monitoring passivity equals the ratio of portfolio companies to professionals of the VC. Independent VC dummy is a dummy variable that equals one if the IPO firm is financed by a VC that is not affiliated with a financial institution. Other dependent variables are defined as before. Models (1-4) are estimated using OLS and Model (5) is estimated using a Poisson regression technique. Heteroskedastic-consistent *t*-statistics are within parentheses. * significant at the 10% level; ** significant at the 5% level; *** significant at the 1% level. The R^2 measure refers to a pseudo- R^2 for the Poisson.

	Dependent variable				
	Model (1) Independent directors	Model (2) Inside directors	Model (3) Affiliated directors	Model (4) Venture directors	Model (5) Board size
CEO pre-IPO voting power (%)	-0.352 (-4.500)***	0.190 (2.647)***	0.162 (2.767)***	-0.092 (-2.131)**	-0.557 (-4.975)***
VC pre-IPO voting power (%)	0.157 (1.990)**	-0.073 (-1.142)	-0.084 (-1.712)*	0.139 (2.350)**	-0.153 (-1.343)
Syndication (dummy)	0.011 (1.251)	0.002 (0.277)	-0.013 (-2.232)**	0.035 (4.315)***	0.020 (1.295)
VC monitoring passivity	-0.002 (-0.779)	0.001 (0.478)	0.001 (0.724)	-0.003 (-1.849)*	-0.001 (-0.349)
Independent VC (dummy)	0.068 (1.683)*	-0.048 (-1.344)	-0.019 (-0.559)	0.029 (1.214)	-0.018 (-0.357)
CEO is founder (dummy)	-0.061 (-1.098)	0.088 (1.723)*	-0.027 (-0.716)	0.004 (0.100)	-0.045 (-0.558)
<i>Control variables</i>					
Log (Firm size)	0.006 (0.269)	0.011 (0.577)	-0.018 (-1.140)	0.013 (1.226)	0.117 (3.937)***
PPE intensity (%)	0.387 (2.493)**	-0.429 (-3.459)***	0.043 (0.413)	0.012 (0.139)	0.556 (3.150)***
Long-term debt (%)	-0.051 (-0.348)	0.114 (0.870)	-0.063 (-0.627)	-0.154 (-1.784)*	-0.387 (-2.038)**
Cash flow margin (%)	0.111 (0.537)	0.187 (0.928)	-0.298 (-1.780)*	0.421 (2.615)**	-0.940 (-2.903)***
Log (1+Firm age) (years)	0.001 (0.040)	-0.043 (-1.796)*	0.041 (2.160)**	-0.028 (-1.420)	0.049 (1.237)
Intercept	0.450 (3.419)***	0.423 (3.678)***	0.127 (1.351)	0.080 (1.041)	1.636 (10.715)***
R^2 adjusted	0.368	0.241	0.158	0.396	0.464
<i>F</i> -value/ <i>LR</i> -value	8.088***	4.873***	3.291***	8.981***	65.004***

Model (3) shows the results of an OLS regression with the percentage of affiliated directors as the dependent variable. Again, we show that pre-IPO voting power in the hands of the CEO/owner-manager is positively related to the fraction of affiliated directors. Pre-IPO voting power exercised by VC and the VC syndication dummy are negatively related to the proportion of affiliated directors. This result suggests that if VCs are able to exercise more power versus the owner-manager, they reduce the fraction of affiliated directors on the board.

Model (4) employs the fraction of venture directors as the dependent variable. Venture directors are independent directors that represent VCs on the board. We find that CEO/owner-managers with more pre-IPO voting power oppose the appointment of venture directors. The fraction of venture directors is positively related to pre-IPO votes owned by VCs and VC syndication. This indicates that if the power of venture capitalists increases, they bargain for more venture directors on the board. Interestingly, the proportion of venture directors is negatively related to VC monitoring passivity. This suggests that VCs with lower monitoring ability are less able or willing to bargain for venture directors.

Model (5) estimates a Poisson regression using board size as the dependent variable. As before, we find an inverse relation between pre-IPO voting power of the CEO/owner-manager and the size of the board. However, none of the VC-related independent variables are statistically significant.

In sum, we find support for the bargaining role of VCs. If the CEO/owner-manager owns more pre-IPO voting power, he shifts board composition away from independent directors to inside and affiliated directors. VCs may successfully oppose the owner-manager. They may bargain for more independent directors, more venture directors and less affiliated directors when their pre-IPO voting power increases. Again, we have checked the sensitivity of these results using the same robustness checks as in Section 4.4.1³⁸. Coefficients are of similar sign and significance.

4.5. Conclusions

This chapter examines the determinants of board structure at the time of the IPO. IPO firms have smaller and less outsider-dominated boards than large publicly traded companies. In addition, owner-managers are influential shareholders in IPO firms. We use a sample of 299 French IPO firms from January 1993 to December 1999. This provides an interesting testing ground for the bargaining model of Hermalin and Weisbach (1998). In their model, the CEO/owner-manager prefers a less independent board, whereas the board wants to maintain its independence. When the owner-manager has more bargaining power – for example, when he owns more stock and thus votes – board independence declines.

³⁸ We also re-estimated the regression models using post-IPO rather than pre-IPO voting power of VCs. Similar results are found. VCs continue to be important shareholders after the IPO (see Table 4.4). For example, the average (median) fraction of shares sold by VCs in the IPO equals only 21.8% (15%) of their pre-IPO shareholdings.

To start, we investigate the relation between the fraction of independent directors and post-IPO cash flow ownership of the CEO/owner-manager. Agency theory predicts a negative relation between the proportion of independent directors that serve on the board and CEO stock ownership across the entire range of ownership levels. If the owner-manager retains stock in the post-IPO firm, he internalizes the value effects of his decisions, which makes private benefits of control more costly to him. This reduces the incentives to exploit minority shareholders and decreases the need for monitoring by independent directors. However, we find a relationship that is not negative across all levels of CEO ownership. Consistent with agency theory, incentive effects reduce the need for an independent board at low levels of CEO ownership. At high levels of CEO ownership, the owner-manager becomes entrenched and reduces the proportion of independent directors on the board. He is in unilateral control and appoints the board in line with his preferences. In the middle range of CEO ownership, pre-IPO owners object to a further reduction of the fraction of independent directors. In this middle range, non-management pre-IPO shareholders exercise sufficient power vis-à-vis the owner-manager to prevent a continued decline in the fraction of independent directors. Our results support the presence of bargaining effects. We do not find any relationship between board size and post-IPO cash flow ownership of the CEO/owner-manager.

Next, we show that CEO/owner-managers that own less than 50% of pre-IPO votes bargain with large outside shareholders (industrial companies, institutional investors and venture capitalists that own 10% or more of pre-IPO votes) on board composition. When the CEO/owner-manager is in unilateral control (he owns 50% or more of pre-IPO votes) he does not need to bargain with other pre-IPO owners. Accordingly, we find little evidence of bargaining in the regressions. Looking at shareholder agreements, we observe that board composition is relatively more contracted and bargained upon between pre-IPO shareholders in the bargaining sample.

As a final point, we investigate bargaining in IPO firms that have received venture capital when they were private. As before, if the CEO/owner-manager owns more pre-IPO voting power, he shifts board composition away from independent directors to inside and affiliated directors. VCs successfully oppose the owner-manager. They may bargain for more independent directors, more venture directors and less affiliated directors when their pre-IPO voting power increases. Overall, our results suggest that, next to agency theory, the bargaining model of Hermalin and Weisbach (1998) may explain board composition in an IPO context.

Appendix 4.1: Oxymétal-Laser Techniques' two-tier pyramid

Oxymétal-Laser Techniques operates blast furnances and steel works (SIC code 3312). Shares qualify for double voting rights after holding them for 4 years. Bernard Surgot is CEO and founder of the company. He exercises full control over Financière Oxymétal with 52.68% of the votes. Financière Oxymétal, in turn, controls Oxymétal-Laser Techniques with 86.13% of the votes. This implies that Bernard Surgot is in control over Oxymétal-Laser Techniques while holding only a minority of the cash flow rights. His post-IPO cash flow ownership equals 34.54% (42.85% times 77.01% indirect cash flow ownership via Financière Oxymétal and 1.55% direct ownership in Oxymétal-Laser Techniques). The two-tier pyramid coupled with double voting rights thus yields an effective separation of cash flow and voting rights. This allows the founder to open up the capital of the company without surrendering any control. For example, Expanso S.D.R., a bank-affiliated venture capitalist, participates in the capital of Financière Oxymétal, yet has no voting control over Oxymétal-Laser Techniques.

<i>Oxymétal-Laser Techniques</i>				<i>Financière Oxymétal</i>			
Shareholder Identity	Before IPO		After IPO		Shareholder identity	Before and After IPO	
	C and V	C	V	C		V	
Financière Oxymétal	95.18%	77.01%	86.13%	B. Surgot	42.85%	52.68%	
B. Surgot	3.14%	1.55%	1.00%	Expanso S.D.R.	20.41%	23.22%	
Others	1.68%	0.30%	0.18%	Others	36.74%	24.10%	
Public	0.00%	21.14%	12.69%				

Chapter 5:

Executive Compensation, Management Stock Ownership and Insider Share Transactions in IPO Firms

5.1. Introduction

At the time of an Initial Public Offering (IPO), a large part of firm value depends on managers' investment decisions. Managers have considerable discretion on how to spend the money that has been raised in the IPO. They might invest in negative net-present-value projects to increase the size of the company beyond what is optimal. They might decide to spend the money on projects that increase their private benefits of control at shareholders' expense. Equally problematic, risk-averse managers might decide to pass up positive net-present-value projects that in their view are too risky.

In order to motivate managers to act in the best interest of shareholders, standard principal-agent theory advocates aligning the interests of managers with those of shareholders (Jensen and Meckling, 1976). Managers should bear the wealth consequences of their decisions by holding stock and/or options in the employing company. However, the resulting lack of ability to diversify his or her personal investment portfolio increases managers' risk aversion. When executives become more risk averse, they place a lower value on stock options than the cost to shareholders (Hall and Murphy, 2000; Meulbroek, 2001). This predicts that options should only be granted if the incentive effect (the increased performance created by improved managerial incentives) exceeds the difference between the company's cost and the manager's value. Alternatively, undiversified executives may decide to sell part of their existing stockholdings for consumption or diversification purposes when confronted with further equity-based rewards (Ofek and Yermack, 2000).

One of the main challenges that companies face at the IPO is therefore to harmonize the financial interests of managers with those of outside shareholders in a cost-effective manner. Often executive directors have invested a large part of their personal wealth in shares of the IPO firm. In the months before the IPO, managers generally receive stock options that add to the link between their wealth and shareholder wealth. What is more, managers have their human capital (i.e. employment and income opportunities) invested in the IPO firm.

In this chapter, we investigate the cross-sectional determinants of wealth-to-performance sensitivity of managers at the IPO. Wealth-to-performance sensitivity measures

the increase in the amount of executive wealth (composed of shareholdings, option holdings and human capital) per £1,000 increase in shareholder wealth (Jensen and Murphy, 1990). Additionally, we examine the factors that influence the decisions of executive directors to buy or sell shares in the IPO. Since founders and managers with long tenure and large shareholdings are undiversified with respect to firm-specific risks, we hypothesize that these undiversified executives sell stock in the IPO for wealth diversification reasons. On the other hand, newly hired executives with small shareholdings are likely to hold a larger part of their personal wealth outside the firm. These more diversified executive directors may therefore be willing to retain their shareholdings or even to buy additional shares in the IPO firm to increase their shareholdings. We also analyze whether undiversified executives receive smaller option grants than more diversified managers. We hypothesize that because undiversified executives already have a large exposure to firm-specific risks, they are less willing to bear additional firm-specific risks in the form of equity-based compensation. We use a sample of 188 firms that listed on the Alternative Investment Market (AIM) of the London Stock Exchange from June 1995 to December 1999. The Alternative Investment Market plays a vital role in the United Kingdom, as small companies continue to raise significant amounts of capital on AIM³⁹.

Our study adds to the existing literature in two important ways. Firstly, our analysis is organized surrounding a corporate event, the IPO. At the IPO the average company raises a large amount of capital to pursue its growth plans. Managers often have special knowledge that is crucial to successfully exploit these growth options, whereas outside shareholders are relatively uninformed about the firm's prospects. The IPO therefore presents an interesting opportunity to analyze managerial incentives at small and entrepreneurial companies. A study of managerial incentives in smaller firms is of interest because the factors that influence managerial incentives in this class of firms may differ from the determinants of managerial incentives in large public firms. Although our study provides a snapshot of managerial incentives at the time of the IPO, we argue that our results are representative for at least 12-18 months after the IPO. Typically, managers are subject to lock-up provisions that prevent them from selling their shares in the 12 to 18 months after the IPO. In most cases, they cannot exercise their options during the three years after the IPO. Analyzing U.K. data, Espenlaub

³⁹ The Alternative Investment Market (AIM) of the London Stock Exchange started operations in June 1995. As at 30th September 2001, 569 U.K. and 37 foreign companies are trading on AIM with an aggregate market capitalization of £9.8 billion. Total capital raised from June 1995 to September 2001 amounts to £7.02 billion. This makes AIM one of the most vibrant stock markets aimed at small and entrepreneurial companies within Europe. For example, 77 companies went public on AIM from January to September 2001. For the purpose of comparison, during that same period only 11 companies went public on the Neuer Markt in Germany and 10 on the Nouveau Marché in France.

and Tonks (1998) confirm that directors' dealing in IPO firm's shares and option-related share transactions are generally small in the three years after the IPO.

Secondly, due to data constraints previous studies have largely examined the wealth-to-performance sensitivity of Chief Executive Officers (CEOs). It is not clear whether the results of those studies may be generalized to all executive directors or whether differences exist between CEOs and other executives. Tying executive wealth to shareholder wealth through share ownership and stock options may be particularly important to executive directors just below the CEO level. IPO firms need to ensure that remuneration is competitive compared with comparable publicly traded companies. Otherwise, executive directors may be recruited by other firms or voluntarily leave the IPO firm to pursue more attractive job opportunities elsewhere. As investors that buy shares in the IPO seek stability and continuity in the senior management team in the post-IPO period, stock ownership and options may enhance and maintain loyalty and commitment during this time of change and preparation for future growth and development. A senior management team that is highly motivated, competitively rewarded and has its interests aligned with shareholders will inspire confidence in IPO investors⁴⁰. Accordingly, Welbourne and Andrews (1996) show that the use of stock option programs and profit sharing at U.S. IPO firms improves the firm's chances of survival. To investigate any potential differences between CEOs and other executive directors, we analyze three groups of 188 chief executive officers (CEOs), 137 finance directors and 280 other executive directors that are employed by our 188 sample firms⁴¹.

We document several determinants of wealth-to-performance sensitivity (WPS). WPS is higher if the manager co-founded the firm, chairs the board of directors, and has been employed by the firm for a larger number of years. In addition, we find that the WPS of CEOs is inversely related to board monitoring by large outside shareholders and equity incentives of independent directors. These relations are less pronounced for finance directors and other executive directors. This finding suggests an agency costs tradeoff between incentives and board monitoring unique to CEOs. Consistent with an efficient contracting view, board monitoring reduces the need to tie CEO wealth to firm performance. However, board size relates negatively to the WPS of CEOs. Smaller boards force CEOs to bear more firm-specific risk. Consistent with Yermack (1996), this suggests that small board size together with high-powered CEO incentives may address the agency problem. Growth

⁴⁰ Also see "Directors' Remuneration on Flotation 1999/2000", Arthur Andersen.

⁴¹ 'Other executive directors' include sales executives, technical directors, subsidiary management and managers responsible for manufacturing, etc. Unless explicitly stated otherwise, the terms '*managers*' or '*executive directors*' refer to CEOs, finance directors and other executive directors as a group.

options positively impact the WPS of CEOs. Since these firms derive a large portion of their value from assets not yet in place, they are riskier and controlling agency problems by monitoring managers' efforts becomes difficult. CEO incentive alignment may mitigate these monitoring problems in firms that derive a large part of their value from future investments. Again, these findings do not obtain to the same degree for finance directors or other executive directors.

Managers at IPO firms are typically unable to diversify away the risk associated with their wealth, since their human capital is largely invested in a single position of employment. In addition they often own large shareholdings in the IPO firm. This constraint on the executive's ability to reduce personal risk affects their tolerance for additional risk. When we investigate the changes in managerial incentives due to share transactions at the IPO, we find that managers, other than finance directors, sell more shares at the IPO when their pre-IPO WPS is high (i.e. when they are undiversified through their human capital and substantial pre-IPO shareholdings). Another finding is that managers, other than CEOs, obtain less option grants when their WPS is already high before the IPO. These results are consistent with managers seeking to diversify their wealth and using the IPO as a wealth diversification opportunity.

The rest of the chapter is organized as follows. Section 2 discusses the extant literature. Section 3 describes the data. Section 4 explains the methodology and measurement of variables. Section 5 presents the empirical results. Section 6 concludes.

5.2. Prior literature

5.2.1. *The case for stock options*

The personal wealth of executive directors comprises three main components (Agrawal and Mandelker, 1987). First, executive wealth consists of the stock and option holdings in the employing company. The second part of wealth involves human capital, as measured by the present value of future cash compensation. Third, executive wealth includes assets unrelated to the employing firm, such as real estate or stocks in other companies⁴².

If executive directors hold no stock or options in the employing company, their corporate investment decisions are guided by the impact these decisions have on their human

⁴² The first two components of executive wealth are commonly referred to as firm-specific wealth. Empirical studies focus on this firm-specific wealth, as the ownership of non-firm related assets is typically unobservable.

capital. In this situation, risk-averse managers are likely to forego risk-increasing, positive net-present-value investment projects. They want to avoid the lower salary or even removal from office following a bad outcome of these risky investments. This creates an agency problem with risk-neutral shareholders. Well-diversified shareholders want managers to undertake all positive net-present-value investment projects, regardless of the risks of those projects.

Conceptually, stock options may address this risk-related agency problem. The non-linear payoff of stock options provides downside protection to risk-averse managers. As a result, managers benefit from the upside potential of their investment decisions, but only stand to lose the value of their stock options if the risky projects do not pay off. Accordingly, Guay (1999) finds that stock options significantly increase the sensitivity of executive wealth to equity risk. This sensitivity is positively related to the proportion of the firm's assets that are growth options. Growth options usually have uncertain outcomes and impose more risk on managers. Managers therefore receive equity-based rewards that encourage them to invest in risky projects when the risk-related agency problem is greatest. A large body of literature supports a positive association between growth options and the sensitivity of executive wealth to shareholder wealth (Mehran, 1995; Baber, Janakiraman and Kang, 1996; Kole, 1997; Core and Guay, 1999; Bryan, Hwang and Lilien, 2000; Ryan and Wiggins, 2001).

5.2.2. Poorly diversified managers

Managers tend to be poorly diversified with respect to firm-specific wealth. In addition to the human capital that they have invested in the firm, most managers also own shares of the employing company. Undiversified managers that already own large shareholdings in the firm may not be willing to accept stock options, as it would increase the risk exposure of their wealth beyond acceptable levels (Beatty and Zajac, 1994; Toyne, Millar and Dixon, 2000). Aggarwal and Samwick (1999) argue that principal-agent theory predicts an economic tradeoff between inducing the required amount of observable effort from the manager and minimizing the risk he or she is asked to bear. Consistent with theory, they report that the wealth-to-performance sensitivity for executives at firms with the least volatile stock prices is greater than the wealth-to-performance sensitivity for executives at companies with the most volatile stock prices.

Recent studies document an inverse relation between managerial stock ownership and the use of stock options (Mehran, 1995; Bryan, Hwang and Lilien, 2000; Ryan and Wiggins, 2001). As the executive director owns more stock, his or her incentives are already well

aligned with those of shareholders reducing the need to provide further equity-based rewards. Ofek and Yermack (2000) and Core and Guay (1999) find evidence of executives selling shares of previously held stock during periods in which they are granted new stock options. Ofek and Yermack (2000) report that additional selling of shares occurs over time if options move into-the-money. These effects are strongest for executives who already own many shares, whereas stock options do increase the shareholdings of managers with low ownership. This partially reflects the desire of poorly diversified managers to diversify their firm-specific wealth.

In essence, the economic value of stock options to undiversified managers may be less than the opportunity cost to shareholders. The opportunity cost of granting an option is the monetary amount the company could have received if it were to sell this option to a risk-neutral investor rather than to a risk-averse manager. Hall and Murphy (2000) show that executives place a strictly lower value on options when they are more risk averse and have invested a sizeable part of their wealth in company stock. Meulbroek (2001) estimates that for Internet companies the value of stock options to managers is only 53% of the cost of shareholders⁴³. Analyzing large public firms, Meulbroek (2001) finds that the value of stock options to managers of NYSE firms is 70% of the cost to shareholders. The cost of stock options is therefore particularly large in small, entrepreneurial-based firms. Moreover, stock options do not strictly lead to greater risk taking. Carpenter (2000) formally shows as managers want to lock-in the paper gains on deep in-the-money options, they might invest in *less*, not more risky projects. Brookfield and Ormrod (2000) provide U.K. evidence that supports this theoretical argument. They report that managers with deep in-the-money options become more risk-averse and consequently pursue a risk-reduction strategy.

Since options may cost more to shareholders than they are worth to risk-averse and undiversified executive directors, they should only be granted if the incentive effect (the increased performance created by improved managerial incentives) outweighs the difference between the company's cost and the executive's value (Murphy, 1999). Stock options may therefore not provide a universal solution for agency problems. Tian (2001) finds that the optimal compensation contract only includes stock options if the executive is at most

⁴³ Meulbroek (2001) measures the manager's private value of the stock as follows. She assumes that the market portfolio is a feasible investment strategy for a manager without diversification constraints. Consequently the risk-return profile needed to make a manager indifferent between holding the market portfolio and holding a one-stock portfolio must at least match the risk-return trade-off reflected in the market's Sharpe ratio. Given the employing company's volatility level and the market's Sharpe ratio, she computes the minimum return a manager would demand in compensation for accepting the diversification constraint. This return premium can be translated into a private value that the undiversified manager places on the single stock in his investment portfolio. The manager's private value can then be computed by comparing the market price of the stock, which represents the firm's cost of granting such stock to the manager.

moderately risk averse. Stock options cannot overcome the agency problem if the manager is highly risk averse and effort averse.

5.2.3. Corporate governance and the use of stock options

The board of directors, formally representing the shareholders, is responsible for an efficient use of equity-based compensation. What is more, independent directors may oversee the *observable* actions of managers and thereby reduce the need for expensive stock options. However, the empirical evidence on the influence of board characteristics on the use of stock options is mixed. Mehran (1995) reports a positive relation between the number of independent directors on the board and the use of equity incentives. Milliron (2000) suggests that the board of directors and the use of equity-based rewards are complementary mechanisms working together to mitigate the agency problem. Kole (1997) finds no significant relation between the percentage of independent directors on the board and compensation contracting. Other studies argue that an independent board of directors and equity-based compensation are substitutes. Ryan and Wiggins (2001), Benz, Kucher and Stutzer (2001) and Beatty and Zajac (1994) find an inverse relation between the fraction of independent board members and the use of stock options. Yermack (1996) studies the impact of board size. He finds that the wealth-to-performance relationship declines with board size, suggesting that small boards grant executives larger incentive compensation and thereby force them to bear more firm-specific risk.

Several studies examine the role of corporate governance mechanisms other than board structure. Core, Holthausen and Larcker (1999) find that CEOs are able to extract additional compensation from the firm when governance structures are weak and agency problems are greatest. Bertrand and Mullainathan (2000) show that options are add-on compensation in firms with weak governance structures, but are made up for by decreases in cash compensation in companies with stronger corporate governance. In particular, Bertrand and Mullainathan (2000) find that large shareholders charge managers more for their option grants. Ryan and Wiggins (2001) and Mehran (1995) report that outside block ownership is inversely related to the use of options. Baker and Gompers (1999, 2001) study the role of venture capitalists at U.S. IPO firms. They find that venture capitalists improve the effectiveness of both incentive compensation and board supervision.

5.2.4. Summary

In summary, the extant literature has documented several determinants of WPS. Executive wealth is more closely linked to shareholder wealth if a larger part of the firm's assets are growth options. There is mixed evidence concerning the influence of board characteristics on the use of incentive compensation. Several studies show that an independent board of directors limits the need for tying executive wealth to shareholder wealth. In contrast, other studies argue that an independent board and equity-based compensation are complementary mechanisms. Large shareholders appear to be important in monitoring managers, reducing the need for high-powered and costly managerial incentives. Undiversified executives with high initial stock ownership are less likely to accept stock options as compensation. For example, Ofek and Yermack (2000) show that undiversified executive directors have a strong desire to diversify their firm-specific wealth by selling shares of previously owned stock during a period of new stock option grants.

5.3. Sample description and variable measurement

5.3.1. Data and sample selection

The initial sample consists of 553 companies that were admitted to trading on the Alternative Investment Market (AIM) of the London Stock Exchange from June 1995 to December 1999. We exclude companies that transferred from the Unlisted Securities Market (18 firms), Official List (24), Rule 4.2 (85) and OFEX (11)⁴⁴. These firms were previously traded on these stock markets and can therefore not be considered IPO firms. Additionally, re-admissions following cancellation (74) are omitted. The lion's share of re-admissions involve AIM companies that change their name and subsequently resume trading under this new name. Next, we exclude financial services companies (68 firms) and non-U.K. companies (26). The financial reporting and regulatory environment of these companies is different from

⁴⁴ OFEX is an off-exchange share matching and trading facility for shares of U.K. unquoted companies. OFEX was introduced in October 1995 as a replacement trading facility for companies that had previously been trading under Rule 4.2 of the London Stock Exchange. Rule 4.2 allowed for trading in unquoted securities by member firms until the end of September 1995 when the rule was changed for use in relation to trading in London Stock Exchange suspended securities only. Companies that previously traded under Rule 4.2 transferred to OFEX or AIM. Unlisted Securities Market (USM) was set up in 1980 to provide an easier route to the market for small companies. The market closed at the end of 1996 at which USM companies were given the option to move to either the Official List or AIM.

domestic non-financial companies. As a final step, we exclude companies that go public using the introduction method (34 firms). Introductions do not enable companies to raise new equity capital at the IPO, but only to sell existing shares to the public. Moreover, the admission documents that accompany introductions do not include sufficiently detailed information for our research purposes. The prospectuses of 25 IPO firms could not be retrieved. The final sample therefore consists of 188 domestic non-financial firms that went public on AIM from its launch in June 1995 to December 1999.

There is no distinct industry clustering. The sample includes 40 different two-digit Standard Industrial Classification (SIC) industry groups. Computer programming, data processing and other computer-related services is the most important SIC industry group with 30 IPO firms. Other major SIC industry groups are amusement and recreation services (14 firms), management services (10), electronics and other electrical equipment (10), drinking and eating places (9) and printing and publishing (9).

AIM requires no minimum shares to be in public hands, no trading record and no prior shareholder approval for acquisitions or disposals. In addition there is no minimum market capitalization⁴⁵. The key regulation which companies must satisfy is derived from the European Public Offers Directive. Although admission documents do not have to be pre-vetted by the London Stock Exchange, the company is required to appoint a nominated adviser – which is a firm of experienced corporate finance professionals – and a nominated broker. The nominated adviser assists the company in preparing the mandatory admission document. The document must include all relevant information about the company and its activities – including financial information and projections, together with details of all directors. We use this admission document as our primary source of information. Share prices are collected from *Datastream*.

⁴⁵ Companies that go public on the Official List (also called Main Market) of the London Stock Exchange need to satisfy the following admission criteria. A minimum of 25% of shares in public hands, pre-vetting of admission documents by UKLA (U.K. Listing Authority) and a minimum market capitalization. Normally, companies wanting to go public on the Official List are required to have at least a 3-year trading record. The Official List of the London Stock Exchange has less IPO activity than AIM. However, IPOs on the Official List tend to be significantly larger compared to those on AIM. For example, from January to September 2001, 5 non-financial domestic companies went public on the Official List versus 50 on AIM (excluding introductions). During that period, the money raised on the Official List totaled £1,151.8 million whereas IPOs on AIM raised a total of £268.71 million.

5.3.2. Firm characteristics, board composition, and non-management shareholders

Panel A of Table 5.1 shows summary statistics on firm size and risk. Market capitalization is measured as the number of post-IPO shares times the closing market price on the first trading day and amounts to £13 million, evaluated at the median. Pro-forma total assets is taken from the pro-forma statement of net assets included in the prospectus, and its median value equals £6.1 million. In general, the pro-forma assets are determined as the sum of the pre-IPO total assets plus the net IPO proceeds to the company. In the median IPO £3.2 million worth of shares are sold to the public. On average, the shares sold in the IPO represent 32.5% of the number of post-IPO shares. In the average IPO, 85% of shares that are sold in the IPO are newly issued. The company receives the proceeds of these newly issued shares. The remaining 15% of IPO shares are being sold by pre-IPO shareholders.

Table 5.1: Firm characteristics, board composition and ownership structure

Table shows firm characteristics, board composition and ownership structure for a sample of 188 firms that went public on the Alternative Investment Market (AIM) of the London Stock Exchange from June 1995 to December 1999. Panel A shows firm size and risk. We measure market capitalization on the first day of trade as the number of post-IPO shares times the closing market price on the first day the shares start trading on AIM. Pro-forma total assets are taken from the pro-forma statement of net assets included in the prospectus. This pro-forma statement of net assets presents the balance sheet of the IPO firm shortly *after* going public. Gross IPO proceeds is calculated as the number of shares sold in the IPO times the offer price. Net proceeds to the company are the gross proceeds to the company minus the costs of going public. Gross proceeds to the company are calculated as the number of newly issued shares times the offer price. Industry standard deviation equals the industry median annualized standard deviation of monthly returns for the year prior to the IPO. Industries are defined at the 4-digit SIC code level provided that 3 listed firms are available. Otherwise, we shift to a 3-digit or 2-digit SIC code level. Panel B shows other firm characteristics. Tangible fixed assets are expressed as a percentage of pro-forma total assets and are taken from the pro-forma statement of net assets included in the prospectus. The market-to-book ratio is the ratio of first-day market capitalization and pro-forma book value of equity. In general, pro-forma book value of equity is the sum of pre-IPO book value of equity plus the net proceeds to the company. Research and development expenditure is expressed as a percentage of sales in the year prior to the IPO. Firm age is the number of years the firm has been in existence before the IPO. Panel C presents summary statistics concerning the board composition. Executive chairman is a dummy that takes on the value one if an executive director chairs the board. Board size is the number of executive and non-executive directors that serve on the board. Executive directors are expressed as a percentage of total board size. Affiliated directors are defined as those non-executive directors that are co-founders of the company, retired executives, part-time employees, or family of executive directors or founders. Non-executive directors that earn more than £30,000 in fees are also classified as affiliated. Independent directors are non-affiliated non-executive directors and expressed as a percentage of total board size. The number of shares and options held by independent directors is expressed as a percentage of post-IPO shares. Panel D provides information on non-management shareholders. Non-management shareholders include venture capitalists, industrial and commercial companies and institutional investors that own shares in the IPO firm. A dummy indicates whether a non-management shareholder owns more than 5% of pre-IPO shares. Another dummy indicates whether at least one non-management shareholder is represented in the board of directors. All monetary amounts are expressed in 1999 pounds using the Retail Prices Index as inflation adjustment.

Table 5.1: Firm characteristics, board composition and ownership structure (continued)

	Mean	Standard deviation	Minimum	Median	Maximum
<i>Panel A: Firm size and risk</i>					
Market capitalization on first-day of trade (£000)	17,553.88	15,969.52	764.89	13,003.98	113,880.40
Pro-forma total assets (£000)	8,183.00	7,996.16	509.85	6,102.50	51,969.57
Gross IPO proceeds (£000)	4,730.21	5,687.31	300.00	3,223.32	49,171.22
Net proceeds to company (£000)	3,620.25	5,354.77	-885.08	2,292.99	47,532.18
Industry standard deviation (%)	36.09	14.86	15.91	34.54	150.25
<i>Panel B: Other firm characteristics</i>					
Tangible fixed assets (% of assets)	17.47	21.19	0.00	7.83	92.66
Market-to-book ratio	5.74	6.76	0.91	3.99	53.25
R&D expenditure (% of sales)	6.93	33.46	0.00	0.00	280.77
Firm age (years)	16.14	24.69	1.00	8.00	132.00
<i>Panel C: Board composition</i>					
Executive chairman (dummy)	0.36	0.48	0.00	0.00	1.00
Board size	5.37	1.54	2.00	5.00	12.00
Executive directors (% of board size)	60.50	16.67	16.67	60.00	100.00
Affiliated directors (% of board size)	4.24	9.87	0.00	0.00	60.00
Independent directors (% of board size)	35.26	16.25	0.00	33.33	75.00
Stock ownership per independent director (%)	2.79	6.57	0.00	0.22	49.69
Options per independent director (%)	0.10	0.37	0.00	0.00	3.90
<i>Panel D: Non-management shareholders</i>					
Outside shareholder owns more than 5% (dummy)	0.66	0.48	0.00	1.00	1.00
Outside shareholder sits on board (dummy)	0.27	0.45	0.00	0.00	1.00

The net IPO proceeds to the company are substantial compared to firm size. The median company raises £2.3 million by selling newly issued shares to the public. This highlights the importance of the IPO as a corporate event. The typical company raises a large amount of capital to finance its future growth plans.

IPO firms are characterized by an inherent lack of price history. This makes it difficult to measure firm risk *ex ante*. Following Baker and Gompers (1999), we therefore use an industry-matching procedure to assess company risk. First, we gather the names and SIC codes of all U.K. companies that were publicly traded during the sample period from *Worldscope Disclosure*⁴⁶. We then match IPO firms to listed firms in the same industry. We

⁴⁶ Listed firms are defined as companies that are trading on AIM or the Official List of the London Stock Exchange and that did not go public in the previous 12 months. In order to obtain a sufficient number of

define industries at the 4-digit SIC code level provided there are at least three listed firms⁴⁷. Otherwise, we shift to a 3-digit or 2-digit SIC code level. Next, we download the monthly share prices of the industry-matched firms from *Datastream* for the year before the IPO date. As a final step, we calculate the annualized standard deviation of the monthly stock returns for each of the industry-matched firms. We use the median of those standard deviations as our *ex ante* proxy for the IPO firm's risk. Panel A of Table 5.1 shows that the median industry standard deviation equals 34.5% per year.

Panel B of Table 5.1 displays other firm characteristics. The average tangible fixed assets are equal to 17.5% of pro-forma total assets. Market-to-book ratio is calculated as the ratio of first-day market capitalization to pro-forma book value of equity. In general, pro-forma book value of equity is the sum of pre-IPO book value of equity plus the net proceeds to the company. The average market-to-book ratio equals 5.7. The typical IPO firm spends 6.9% of sales on research and development in the year prior to its IPO. The average company age is 16 years with a median of 8 years.

Panel C of Table 5.1 presents information on the composition of the board of directors. In 36% of the sample firms, an executive director chairs the board of directors. This does not only involve CEOs being the chairman. In 17% of the firms, the CEO chairs the board, in the remaining 19% other executive directors serve as chairperson. The median board has 5 members. On average, 60.5% of directors are executives and 39.5% are non-executives⁴⁸. Affiliated directors are defined as those non-executive directors that are co-founders of the company, retired executives, part-time employees, or family of executive directors or founders. Non-executive directors that earn more than £30,000 in fees are also classified as affiliated because they may act as paid advisors to the firm rather than active monitors. We assume that these affiliated directors do not act as independent monitors on account of business or family relationships. On average, 4.2% of all directors are affiliated to management. We classify the remaining 35.3% of directors as independent directors. We assume that these independent directors act as active monitors of top management. The stock

industry-matched firms, we need to consider the Official List. Moreover, in the beginning of our sample period (June 1995) no AIM companies are available since AIM just started operations at that time.

⁴⁷ Evaluated at the median, an IPO firm is industry-matched to 8 other publicly traded firms. A total of 116 IPO firms (61.7%) are matched at the 4-digit SIC code level, 46 IPO firms (24.5%) are matched at the 3-digit SIC code level and 26 IPO firms (13.8%) are industry-matched at the 2-digit SIC code level.

⁴⁸ These findings are qualitatively similar to the results of Buckland (2001). He reports that the board of the average U.K. IPO firm during 1990-1994 has 6.8 members, the majority being executive directors, with an average of 2.9 non-executives. In 40 percent of 1994 IPO firms the board is chaired by an executive director. Buckland (2001) also compares the board structure of IPO firms to that of larger Times 1000 companies. He finds that IPO firms have smaller boards and a lower proportion of non-executives.

ownership per independent director averages 2.8% of post-IPO shares. The mean option holding per independent director is equal to 0.1% of post-IPO shares.

Although the Combined Code of the London Stock Exchange is not specifically applicable to AIM companies, the board structure of 37% of sample firms fully complies with the Code. The Combined Code as published in the Hampel Report in July 1998 specifies that the company should adopt a remuneration committee and separate the roles of CEO and chairman. In addition, the company should have a board that consists of at least one-third of non-executive directors, the majority (>50%) of which should be independent from management. Using a sample of U.K. IPO firms from 1990-1994, Buckland (2001) investigates whether the boards of IPO firms are in accordance with the Cadbury Code of Best Practice published in 1992. Similar to the Combined Code, the Cadbury Code calls for the separation of the roles of CEO and chairman, at least three non-executive directors and a majority of non-executive directors that is independent of management. Buckland (2001) finds that only 6% of IPO firms comply with the full Cadbury recommendations.

Panel D of Table 5.1 describes non-management shareholders⁴⁹. Two-thirds of the IPO firms have an outside non-management shareholder that owns more than 5% of pre-IPO shares. In 27% of IPO firms at least one non-management shareholder is represented on the board of directors.

5.3.3. Executives' firm-specific wealth

The unit of analysis in subsequent tests is the individual executive director. In total, the 188 sample firms employ 605 executive directors. We divide these executive directors into three groups on the basis of their job complexity. We distinguish 188 chief executive officers (CEOs), 137 finance directors (comparable to Chief Financial Officers in the U.S.) and 280 other executive directors. Information concerning share and option holdings of each executive director is obtained from admission documents⁵⁰. The admission document also

⁴⁹ Throughout the chapter non-management shareholders refer to shareholders, other than management, that own shares in the IPO firm. Examples of non-management shareholders include venture capitalists, industrial and commercial companies and institutional investors.

⁵⁰ Option holdings include both approved and unapproved options. Inland Revenue approved option schemes cover stock options worth up to maximum of £30,000. Any gain in the value of the options once exercised is subject to capital gains tax at the time of selling the shares. Unapproved schemes involve option arrangements made in excess of £30,000. The tax treatment of unapproved options is less favorable because they are subject to income tax at the executive directors' marginal rate when exercised rather than at the time of the ultimate sale of the shares. The majority of options (85.3%) in our sample are unapproved. There are no major differences in the personal tax regimes in the United Kingdom and the United States (Conyon and Murphy, 2000).

Cash compensation is the sum of base salary and expected bonuses⁵². Panel A of Table 5.2 shows that the mean CEO cash compensation is £99,000. The median CEO is 46 years and has been employed by the company for 6 years.

Panel B of Table 5.2 shows that finance directors own far less equity in the IPO firm. On average, finance directors own 2.6% of post-IPO shares, which represents a monetary value of £0.5 million. The median levels are even lower. The median finance director owns 0.2% of post-IPO equity worth £30,000. Finance directors' option holdings involve 0.6% of post-IPO shares and have a Black and Scholes value of £98,000, on average. With their small shareholdings, finance directors sell only £6,500 worth of shares in the IPO, which converts into 0.1% of post-IPO equity. In total, 51 finance directors (37.2%) are transacting at the time of the IPO. When we distinguish between sellers and buyers of shares, we find that 12 (8.8%) finance directors are selling shares in the IPO and 39 finance directors (28.5%) are buying shares in the IPO. If we condition on selling activity, the average finance director sells shares worth £239,340. Conditional on finance directors buying stock in the IPO, they buy shares worth £71,350, on average. The average base salary earned by finance director comes to £64,000 per year, whereas cash compensation equals £75,000 a year. The median finance director is 41 years old and has only been employed by the IPO firm for 2 years.

Panel C of Table 5.2 shows that the average shareholdings of other executive directors equals 8.4% of post-IPO equity. The mean shareholdings are worth £1.6 million, while the median shareholdings amount to £460,000. The other executive directors own stock options that comprise 0.6% of post-IPO shares and are worth £83,500, on balance. The typical other executive director uses the IPO to sell 0.4% of post-IPO shares with a monetary value of £67,000. When we split the group of 101 (36.1%) other executive directors that are transacting into the subgroup of 63 (22.5%) sellers and 38 (13.6%) buyers, the following picture emerges. Conditional on selling shares in the IPO, other executive directors sell £374,000 worth of shares. Conditional on buying shares in the IPO, other executive directors buy £123,210 worth of shares. The average other executive director is paid a base salary equal to £70,000 per year and cash compensation totaling £82,000 per annum. The median other executive director is 43 years old and has been working at the IPO firm for 4 years.

⁵² Annual bonus schemes are generally subject to performance criteria and a maximum bonus that can be awarded to the executive. We calculate the expected bonus for every director by imposing a 20 percent discount to the maximum bonus level, if this level disclosed in the service agreement. Although this discount of 20 percent is arbitrary, it is widely used in the literature to discount performance-contingent pay (e.g. Conyon and Murphy, 2000). If the maximum level for the director is not specified, but the service agreement mentions that the director qualifies to participate in the bonus plan, we add 32 percent to his or her base salary to arrive at the level of cash compensation. This percentage is based on the sample median of the disclosed maximum bonuses (which is equal to 40 percent of base salary) and the 20 percent discount. If a director does not qualify to receive bonuses, the cash compensation is set equal to his or her base salary.

At this point, we observe important differences in the shareholdings of CEOs, finance directors and other executive directors. CEOs and other executive directors own larger shareholdings in the IPO firm than finance directors. This may be explained by the higher tenure among CEOs and other executive directors compared to finance directors. Finance directors are often hired in the run up to the IPO and have only two years of tenure at the median. As a consequence, finance directors have had less time to build shareholdings in the company through previous option grants. Another explanation for the differences in shareholdings has to do with founder status. A majority of CEOs is the (co-) founder of the company, whereas finance directors are hired at a later stage. More precisely, 55.3% of CEOs has (co-) founded the company against 6.6% of finance directors and 29.3% of other executive directors.

When looking at the share transactions at the time of the IPO, we observe that CEOs and other executive directors are more likely to sell shares of previously owned stock in the IPO than to buy additional shares in the IPO firm. In contrast, finance directors are more likely to buy shares in the IPO firm than to sell shares. This reflects that finance directors are recent additions to the management team and have only a relatively small part of their personal wealth invested in the firm. Conversely, CEOs and other executive directors have invested a large part of their personal wealth in shares of the IPO firm. They are more interested in using the IPO as a wealth diversification opportunity by selling shares of previously owned stock. Although the reported transacting levels may seem small expressed as a percentage of total equity, they are substantial when expressed in multiples of annual salary and bonus. For example, the average CEO sells shares in the IPO worth £610,000 (this is the conditional average of 56 selling CEOs). This converts into 6.6 times his annual salary and bonus. Buying or selling shares in the IPO therefore has a substantial impact on executive wealth.

Table 5.3 reveals that 80 CEOs (42.6%), 86 finance directors (62.3%) and 138 other executive directors (49.3%) hold unexercised stock options at the time of the IPO. The higher incidence of options among finance directors may assist in the recruitment of these directors. The use of options as an instrument to retain and motivate key employees is more widespread than reported by Baker and Gompers (1999). Analyzing U.S. data from 1978-1987, Baker and Gompers (1999) document that only 18.3% of IPO firms grant options to the CEO. We find a frequency of stock options that is more than twice as large. This difference may be attributed to the dramatic increase in the use of stock options from the 1980s to the 1990s.

Table 5.3: Option portfolio characteristics

Table shows option portfolio characteristics. Note we calculate summary statistics only for those executive directors that own unexercised options at the time of the IPO. Out of the 304 executive directors with unexercised option holdings, 226 (74.3%) own options from a single option grant, 61 (20%) own options from two grants and 17 (5.6%) hold options from three grants or more. We calculate the mean offer-price-to-strike ratio of the option portfolio as the simple average of the offer price-to-strike ratio of individual option grants. Offer price-to-strike ratio is the IPO firms' offer price divided by the exercise price of an option. Similarly we determine the mean time-from-grant, mean time-to-maturity and mean time-to-vest. Time-from-grant is defined as the number of years from the option grant to the IPO date. The mean time-to-maturity is the number of years from the IPO date to the date when the option expires. The mean time-to-vest is determined as the number of years from the IPO date to the vesting date (i.e. the date at which the options become exercisable). Some options only become exercisable when performance criteria are satisfied. Performance targets may be specified in terms of earnings per share growth, accounting profits or share price. In some cases, performance targets are present, but unspecified in the prospectus.

	Mean	Standard deviation	Minimum	Median	Maximum
<i>Panel A: Chief executive officers (N=80)</i>					
Mean offer price-to-strike ratio	4.83	17.21	0.40	1.00	133.33
Mean time-from-grant (years)	-0.37	0.90	0.00	-0.05	-5.06
Mean time-to-maturity (years)	6.61	2.45	0.90	6.90	10.00
Mean time-to-vest (years)	1.83	1.46	-1.43	2.89	3.95
With performance criteria (%)	43.54				
Performance criteria relate to:					
Earnings per share growth (%)	16.25				
Profits (%)	7.50				
Share price (%)	3.75				
Unclassified (%)	16.04				
<i>Panel B: Finance directors (N=86)</i>					
Mean offer price-to-strike ratio	6.34	20.75	0.50	1.00	135.00
Mean time-from-grant (years)	-0.37	0.93	0.00	-0.04	-5.06
Mean time-to-maturity (years)	7.13	2.28	0.90	7.00	10.00
Mean time-to-vest (years)	1.92	1.42	-3.20	2.89	3.03
With performance criteria (%)	41.67				
Performance criteria relate to:					
Earnings per share growth (%)	17.44				
Profits (%)	3.78				
Share price (%)	6.40				
Unclassified (%)	14.05				
<i>Panel C: Other executive directors (N=138)</i>					
Mean offer price-to-strike ratio	5.32	12.42	0.75	1.00	75.00
Mean time-from-grant (years)	-0.37	0.85	0.00	-0.05	-5.06
Mean time-to-maturity (years)	6.93	2.17	1.70	6.90	10.00
Mean time-to-vest (years)	2.02	1.31	-1.38	2.87	3.95
With performance criteria (%)	42.27				
Performance criteria relate to:					
Earnings per share growth (%)	17.39				
Profits (%)	6.16				
Share price (%)	3.62				
Unclassified (%)	15.10				

Table 5.3 also shows the option portfolio characteristics. For each executive, we compute the mean offer price-to-strike ratio for the options in his or her portfolio⁵³. Evaluated at the median, stock options are granted at the offer price. No more than 7.5% of option portfolios have a mean offer price-to-strike ratio less than one (i.e. options are in-the-money). These in-the-money options tend to be granted 6 months or more in advance of the IPO. We also compute the mean time-from-grant as the number of years from the date of grant to the IPO date. We observe that most options are granted shortly before the IPO. Only 18% of all options are granted 6 months or more in advance of the IPO date. The mean time-to-maturity of the options in the executive's portfolio is measured as the number of years from the IPO date to the date when the option expires. The mean time-to-maturity is 7 years at the median. The mean time-to-vest is determined as the number of years from the IPO date to the vesting date (i.e. the date at which the options become exercisable). At the median, it takes somewhat less than 3 years for the options to vest. A substantial fraction of the stock options (about 42%) is subject to performance criteria, typically related to earnings per share growth. This implies that these options only become exercisable if specific performance targets are satisfied. In contrast, stock option plans in the United States rarely include performance conditions (Conyon and Murphy, 2000). Interestingly, the option portfolio characteristics are similar across CEOs (Panel A of Table 5.3), finance directors (Panel B) and other executive directors (Panel C).

5.4. Measuring wealth-to-performance sensitivity

5.4.1. Valuing the four components of executives' firm-specific wealth

As noted before, wealth-to-performance sensitivity (WPS) is defined as the monetary change in executive wealth per £1,000 change in shareholder wealth. In this chapter, we identify 4 components of executive wealth: stock ownership, option holdings, cash compensation, and shares transacted at the IPO. Before we can compute WPS, we therefore need to value the four sources of executive wealth. The monetary value of post-IPO stock ownership of executives (E^{ex}) is evaluated at the first-day closing market price⁵⁴. We employ the Black-

⁵³ Out of the 304 executive directors with unexercised option holdings, 226 (74.3%) own options from a single option grant, 61 (20%) own options from two grants and 17 (5.6%) hold options from three grants or more.

⁵⁴ Following Baker and Gompers (1999), we evaluate executive wealth using first-day market closing price. To check the robustness of this approach, we calculate the correlation coefficients between the first-day market price and the market closing prices at 20, 40 and 60 trading days after the IPO. We find correlation coefficients

Scholes (1973) model to value executives' stock options (O^{ex}). The model is specified as follows.

$$O^{ex} = N [P \Phi(Z) - X e^{-rT} \Phi(Z - \sigma\sqrt{T})] \quad (5.1)$$

where

$$Z = \frac{\ln(P/X) + T(r + \sigma^2/2)}{\sigma\sqrt{T}} \quad (5.2)$$

- Φ = Cumulative probability function for normal distribution.
 N = Number of shares covered by option grant.
 X = Exercise price.
 P = First-day closing market price.
 T = Time-to-maturity (in years).
 r = Risk-free rate.
 σ = Annualized median industry standard deviation.

Note that we have not adjusted the Black-Scholes model for dividend yields, as suggested by Merton (1973). It is difficult to reliably estimate expected dividend yields for IPO firms. Additionally, young and entrepreneurial firms are less likely to pay dividends. The risk-free rate is measured as the yield on 7-year U.K. Treasury bills at the IPO date. The 7-year period corresponds to the median time-to-maturity (see Table 5.3). To calculate the median industry standard deviation, we define industries at the 4-digit SIC code level provided at least three industry-matched listed firms could be identified. Otherwise, we define industries at the 3-digit or 2-digit SIC code level. We calculate the annualized standard deviation of the monthly stock returns for each of the industry-matched firms. We then use the median of those standard deviations as our *ex ante* proxy for the IPO firm's risk when calculating the Black-

equal to 0.96, 0.93 and 0.94, respectively. We infer that using these market prices would not materially change our conclusions. Another problem is that first-day market prices may be driven by high first-day returns (underpricing). For example, IPO firms in our sample experience an average first-day return equal to 19% (13.4% evaluated at the median). However, offer prices and first-day closing market prices are highly correlated (correlation coefficient equals 0.97). We believe that using offer prices instead of first-day market prices would not significantly change our cross-sectional regression results.

Scholes value of the option grants⁵⁵. If options are subject to performance criteria, we discount the Black-Scholes value by 20%. Although the performance conditions clearly affect the value of executive options, the 20% discount is arbitrary. However, it is widely used in the literature to discount performance-contingent pay (e.g. Conyon and Murphy, 2000). Moreover, Conyon, Peck, Read and Sadler (2000) show that performance conditions in the U.K. are binding approximately 20% of the time. In calculating the value of option holdings, we consider all unexercised options held by the executive. If executives hold options from more than one option grant, we calculate the Black-Scholes value of each grant using the option specifications for that grant. We then sum the value of the separate option grants to arrive at the total value of the executive's option holdings⁵⁶.

We determine the present value of cash compensation until retirement (C^{ex}) as our proxy for human capital. Cash compensation is defined as the sum of base salary and expected bonus (see footnote 52). We discount the cash compensation until retirement by a real rate of 3%. Years-to-retirement is the highest of 65 minus the executive's age and 3 years. The monetary value of the number of shares transacted (i.e. bought or sold) in the IPO is evaluated at the first-day closing market price. Note that a negative sign indicates that the executive director has bought shares in the IPO.

5.4.2. Empirical specification of wealth-to-performance sensitivity

Next, we compute wealth-to-performance sensitivity (WPS). Murphy (1999) argues that WPS is the only meaningful measure of managerial incentives and the severity of the agency problem. In deciding whether or not to consume perks, the manager's decision will depend solely on his or her percentage ownership and not on the monetary value of his or her stock

⁵⁵ We checked the robustness of Black-Scholes values by using an ex-post risk measure. That is, we determined the standard deviations of daily returns for each of the IPO firms during 250 trading days after going public (excluding the initial 20 trading days). However, results of subsequent tests are qualitatively similar when using this ex-post risk measure to value stock options.

⁵⁶ The use of the Black-Scholes model has several shortcomings (Murphy, 1999; Conyon and Murphy, 2000). First, the Black-Scholes formula works rather well for valuing short-term traded options, but less so for valuing non-traded executive options that expire in multiple years. Second, executive options are forfeited, if the executive leaves the company before the options vest. This probability of forfeiture reduces the cost of granting the option. Third, Black-Scholes valuations are appropriate only for options held until expiration. In contrast, executive options can be exercised immediately upon vesting. Hall and Murphy (2000) demonstrate that risk-averse and undiversified executives tend to exercise early, which reduces the company's cost of granting options. In summary, the Black-Scholes model overstates the value of options to the risk-averse executive recipient, and is, at best, a measure of the firm's opportunity cost of granting executive options. In spite of these limitations, the Black-Scholes method is commonly used in the empirical literature (e.g. Yermack, 1995; Core and Guay, 1999; Bryan, Hwang and Lilien, 2000; Ryan and Wiggins, 2001).

ownership⁵⁷. Moreover, this measure is widely used in the empirical literature and similar to the one developed by Jensen and Murphy (1990).

We compute WPS as a weighted sum of the elasticities associated with shareholdings, option holdings and cash compensation. Shareholdings and option holdings are evaluated at the first-day market closing price. It is easy to compute the elasticity of equity holdings, because stock value increases by 1% for each 1% increase in the stock price. In other words, the elasticity of shareholdings (η_E) equals one. It is more complicated to determine the elasticity of option holdings (η_O). Consistent with Baker and Gompers (1999), we use the partial derivative of option value with respect to first-day market closing price (the option delta). The option delta appears in Equation (5.1) as $\Phi(Z)$, but is commonly denoted as $N(d_1)$. Delta measures the monetary change in value of the option per £1 increase in share price. Hence we need to convert these monetary changes into percentage changes if we want to measure the option's elasticity. The option's elasticity is the product of delta (Δ) times the ratio of the first-day closing market price (P) to the Black-Scholes value of the call option (c).

$$\eta_O = \Delta \frac{P}{c} \quad (5.3)$$

If executives hold options from more than one option grant, we compute the elasticity measure for each grant. Given that IPO firms are characterized by a lack of time-series data, we cannot determine the elasticity of cash compensation (η_C). However, previous research using data for large publicly traded U.K. companies has shown that the elasticity of salary to shareholder wealth is about 0.1 (Conyon and Murphy, 2000). We therefore assume this level of elasticity in our analysis. Executive wealth derived from share transactions in the IPO has no sensitivity to shareholder wealth. For that reason, it is ignored when computing WPS⁵⁸. More formally, WPS is measured as expressed in Equation (5.4). Recall that WPS measures the increase in executive wealth per £1,000 change in shareholder wealth.

⁵⁷ In unreported tests, we have also performed all subsequent analyses using wealth-to-performance elasticity. The wealth-to-performance elasticity measures the percentage increase in executive wealth per 1% increase in stock price. Results of these tests are roughly similar to those using WPS.

⁵⁸ There are three potential differences between our measure of WPS and the one employed by Baker and Gompers (1999). Firstly, Baker and Gompers (1999) ignore the level of expected bonuses. That is, they use base salary and not cash compensation to calculate the present value of future pay. Secondly, we take into account the effect of performance conditions when valuing stock options. Baker and Gompers (1999) do not discuss this issue. Thirdly, our measures of incentives encompass the entire portfolio of unexercised options. Again Baker and Gompers (1999) are silent about this issue.

Table 5.4: Wealth-to-performance sensitivity

Wealth-to-performance sensitivity (WPS) captures the monetary change in executive wealth per £1,000 change in shareholder wealth. It is expressed by the following formula.

$$WPS = \frac{E^{ex}}{E} 1000\eta_E + \sum_{i=1}^j \frac{O^{ex}}{E} 1000\eta_O + \frac{C^{ex}}{E} 1000\eta_C$$

where E denotes first-day market capitalization of equity (i.e. the number of post-IPO shares times the first-day closing market price). Market values of shareholdings (E^{ex}) and shares transacted are also measured using the first-day closing market price. The Black-Scholes value of option holdings (O^{ex}) is calculated as described in Section 5.4.1. The present value of cash compensation (C^{ex}) is calculated by discounting the cash compensation until retirement by a 3 percent real rate. Years-to-retirement is the highest of 65 minus the executive's age and 3 years. The elasticity of shareholdings (η_E) is equal to one. The elasticity of option holdings (η_O) is equal to Black-Scholes delta times the first-day closing price divided by the Black-Scholes option value (see Equation (5.3)). The elasticity of cash compensation (η_C) is set equal to 0.1.

	Percentage of total equity	Elasticity*1,000	Contribution to sensitivity	Percentage of mean sensitivity
<i>Panel A: Chief executive officers (N=188)</i>				
Equity	20.16	1,000.00	201.59	88.67
Options	0.70	1,684.29	11.79	5.19
Cash compensation	13.97	100.00	13.97	6.14
Shares transacted	1.00	0.00	0.00	0.00
Average sensitivity			227.35	100.00
Standard deviation			196.96	86.63
Minimum			0.55	0.24
Maximum			943.98	415.21
Median sensitivity			161.71	71.13
<i>Panel B: Finance directors (N=137)</i>				
Equity	2.65	1,000.00	26.55	58.84
Options	0.55	1,409.91	7.75	17.18
Cash compensation	10.82	100.00	10.82	23.98
Shares transacted	0.08	0.00	0.00	0.00
Average sensitivity			45.12	100.00
Standard deviation			70.81	156.94
Minimum			0.00	0.00
Maximum			554.16	1,228.19
Median sensitivity			22.70	50.31
<i>Panel C: Other executive directors (N=280)</i>				
Equity	8.37	1,000.00	83.70	80.47
Options	0.56	1,521.43	8.52	8.19
Cash compensation	11.80	100.00	11.80	11.34
Shares transacted	0.39	0.00	0.00	0.00
Average sensitivity			104.02	100.00
Standard deviation			123.30	118.53
Minimum			0.49	0.47
Maximum			657.17	631.77
Median sensitivity			52.60	50.57

Table 5.5: Determinants of wealth-to-performance sensitivity (continued)

	<i>Panel A: Chief executive officers (N=188)</i>	<i>Panel B: Finance directors (N=137)</i>	<i>Panel C: Other executive directors (N=280)</i>
Log (Firm size)	-49.40 (-4.16)***	-8.27 (-0.79)	-18.83 (-1.89)*
Firm risk (%)	-88.78 (-1.43)	18.62 (0.60)	-44.13 (-1.42)
Age (years)	-2.19 (-1.68)*	-0.57 (-1.32)	-0.94 (-1.20)
Tenure (years)	4.62 (2.50)**	4.90 (2.32)**	1.28 (1.07)
Founder (dummy)	139.88 (6.17)***	84.89 (2.46)**	65.25 (4.51)***
Chairperson (dummy)	177.79 (5.42)***	27.95 (1.02)	171.82 (4.67)***
<i>Board characteristics</i>			
Board size	-19.30 (-2.66)**	-6.29 (-1.63)	-3.78 (-0.98)
Independent directors (%)	130.18 (1.93)*	14.16 (0.25)	-27.74 (-0.59)
Equity incentives per independent director	-443.59 (-3.38)***	-8.66 (-0.15)	-209.35 (-2.12)**
Blockholder>5% (dummy)	-85.11 (-3.19)***	-0.17 (-0.01)	-57.69 (-3.72)***
Blockholder in board (dummy)	-45.97 (-2.10)**	7.71 (0.40)	-9.40 (-0.69)
<i>Control variables</i>			
Tangible assets (%)	-10.38 (-0.19)	-21.96 (-1.10)	-22.80 (-0.60)
R&D expenditure (%)	1.11 (0.04)	-6.42 (-0.88)	-2.63 (-0.20)
Firm age (years)	-0.03 (-0.08)	-0.08 (-0.57)	-0.34 (-1.01)
Market-to-book ratio	4.76 (2.30)**	-0.33 (-0.60)	-0.18 (-0.24)
Intercept	796.83 (7.00)***	152.83 (1.79)*	380.82 (4.14)***
R ² adjusted	0.51	0.16	0.41
F-value	14.18***	2.74***	13.98***

We use the natural logarithm of pro-forma assets as our proxy for firm size. Demsetz and Lehn (1985) argue that managers at large firms will have lower percentage levels of stock ownership because of the large monetary investment required for a larger ownership stake. Accordingly, Table 5.5 shows that the WPS of CEOs and finance directors is inversely related to firm size. This can be attributed to wealth constraints faced by managers at larger

companies. Using a sample of U.S. IPO firms, Baker and Gompers (1999) report similar findings.

Firm risk is measured by the industry median annualized standard deviation of monthly returns for the year prior to the IPO. Firm risk is expected to negatively relate to WPS. If the firm gets riskier, managers will be less willing to tie their personal wealth to shareholder wealth (Aggarwal and Samwick, 1999). We find that firm risk is not significantly related to WPS. Nonetheless, the negative sign of firm risk is consistent with a trade-off between inducing the required amount of effort from the manager and minimizing the risk he is required to bear.

Older executives have incentives to choose investment projects that pay off before they retire. Because older executives tend to focus on short-term goals, it is important to provide them with high-powered incentives. However, we find that director age is not a significant determinant of WPS. There is even a significant and negative relation between the wealth-to-performance sensitivity and CEO age. This result is puzzling. Older CEOs seem to have lower rather than higher WPS. One possible explanation is that older CEOs have been selling shares to other directors or investors in the pre-IPO period for consumption or diversification purposes. However, we have no data to support this conjecture.

Previous empirical work suggests that tenure is an important determinant of WPS. Executive directors often acquire firm-specific knowledge when the firm has employed them for a longer period. It is important to retain these directors in the post-IPO period through high-powered incentives. Tenure is only significantly related to the WPS of CEOs and finance directors (Panel A and B of Table 5.5). This may point to the importance to retain highly qualified and tenured CEOs and finance directors. CEOs are important to successfully exploit the future growth opportunities the IPO firm may have. Successful finance directors may be heavily recruited by other firms (Mian, 2001). Finance directors are important to IPO firms since they are responsible for all financial affairs of the company, including the IPO. They oversee the preparations of financial reports and serve as a point person for external communication of financial strategy. Alternatively, it is possible that more tenured directors have built larger percentage shareholdings in the company through previous option grants.

Next, we investigate founder effects. We expect founders to forego diversification benefits by holding a larger amount of shares in the company. The reason is that founders derive non-pecuniary private benefits of control from their majority ownership (Denis and Denis, 1994). Accordingly, founder status is highly statistically significant in all regressions. If the executive has (co-) founded the firm he or she is likely to own more stock, which increases WPS. Chairperson status is important as well. If an executive chairs the board, he or

she typically earns more cash compensation because the chairmanship involves additional work. In addition, the chairperson tends to own more stock in the IPO firm. Chairperson status influences WPS of CEOs and other executive directors but not the WPS of finance directors.

5.5.2. The influence of board characteristics and non-management shareholders

Previous empirical studies have produced conflicting findings concerning the relationship between board characteristics and WPS. According to Ryan and Wiggins (2001) an effective board of directors may monitor the executive's observable actions, reducing the need for costly equity-based incentives. Moreover, boards are responsible for a cost-effective use of incentive compensation. Beatty and Zajac (1994) find a negative relation between the fraction of independent directors and the use of incentive compensation in U.S. IPO firms. In contrast, other studies argue that the board of directors and the use of equity-based rewards are complementary mechanisms working together to mitigate the agency problem (Mehran, 1995 and Milliron, 2000).

To start, we examine the role of board size. Small boards are less subject to non-executive directors' free riding behavior and may therefore be more vigilant in exercising their monitoring role. We observe that the size of the board of directors is negatively related to WPS of CEOs, but not to the WPS of finance directors or other executive directors. Consistent with Yermack (1996) we find that smaller board of directors tie CEO wealth more closely to shareholder wealth thereby forcing them to bear more firm-specific risk. These results suggest a complementary instead of a substituting role for small boards. Small boards together with equity-based incentives may thus address the agency problem.

We also investigate the number of independent directors (expressed as a percentage of total board size). A higher fraction of independent directors on the board is expected to be associated with active board monitoring, thus reducing the need for incentive alignment. However WPS is not negatively related to the fraction of independent directors. One possible reason is that the boards of IPO firms are easily 'captured' by management. These boards are often insider-dominated and CEOs of IPO firms may exert substantial influence over the appointment of 'independent' board members (Baker and Gompers, 2001). Possibly, this makes the fraction of independent directors a less appropriate proxy for vigilant board monitoring.

Next, we examine the incentives of independent directors. If independent directors have their incentives aligned with those of outside shareholders they may become more

active monitors of top management. The equity incentives per independent director are measured as the sensitivity of the share and option holdings to a £1,000 change in shareholder wealth. That is, we use Equation (5.4), ignoring cash compensation, to compute the equity incentives for each independent director. We then calculate the average equity incentives (WPS) per independent director employed by the particular IPO firm. Panel A and C of Table 5.5 report a negative relation between the equity incentives per independent director and the WPS of CEOs and other executive directors, but not for finance directors. This is consistent with a monitoring role for independent directors that own stock and/or options in the IPO firm. This is consistent with the findings of Core, Holthausen and Larcker (1999), that also find an inverse relation between equity incentives of independent directors and CEO compensation.

The presence of outside shareholders that own more than 5 percent of pre-IPO equity is negatively related to the WPS of CEOs and other executive directors, but not for finance directors. Outside shareholders that are represented on the board of directors have a negative impact on the WPS of CEOs, but not on the WPS of finance directors or other executive directors. We infer that large shareholder monitoring is a substitute for CEO incentives. Baker and Gompers (1999) find that venture capitalists are important outside shareholders in U.S. IPO firms. In unreported tests, we investigated whether venture capitalists play a special role in monitoring firms. However, we do not find that firms that received pre-IPO financing by venture capitalists have any different incentives than non-venture backed IPO firms.

In summary, our analysis shows that the equity incentives per independent director, the presence of large outside shareholders and large shareholder board monitoring are inversely related to the WPS of CEOs. We interpret this as consistent with a trade-off between board monitoring and percentage management ownership. This suggests that the agency problem at IPO firms can be addressed either by effective board structures *or* by sizable percentage ownership of managers. It is important to stress that these relations are absent in case of finance directors and are less pronounced for other executive directors. Whereas boards can evaluate CEOs by looking at overall firm performance, boards may be less able to evaluate the specific contribution to performance of finance directors and other executive directors.

Board size, on the other hand, is a complement to CEO incentives. Smaller boards of directors force CEOs to bear more firm-specific risk. This suggests that small boards of directors together with high-powered managerial incentives address the agency problem. The fraction of independent directors is not significantly related to WPS. Since CEOs may exert influence over the appointment of non-executive directors, we argue that the fraction of

independent directors may not proxy for independent board monitoring. This contrasts with the findings of Beatty and Zajac (1994). They report an inverse relation between the fraction of independent directors and the use of incentive compensation in U.S. IPO firms.

5.5.3. Other firm-specific determinants of WPS

The regression models presented in Table 5.5 also include control variables. Tangible assets proxy for the asset structure of the IPO firm. If a large part of IPO firm's assets is tangible, it is easier to finance with debt and avoid raising outside equity capital. This would allow managers to retain a higher level of stock ownership in the firm, and increase WPS. In contrast, we do not find a significant association between tangible assets (expressed as a percentage of pro-forma assets) and WPS. We also incorporate research and development expenditure (as percentage of sales) as a control variable. If firms spend more on investments in intangible research and development projects, they are less likely to use debt financing. Hence, they need to raise more outside equity capital, reducing the potential stock ownership of managers and thus WPS. However, we do not find any significant relation between research and development expenditure and WPS. We include firm age to control for age differences. Young firms may be liquidity constrained and therefore reward their managers using options. Additionally, young and small firms face less binding wealth constraints, allowing managers to hold larger percentage ownership. Nonetheless, firm age is not significant in any of the regressions. Market-to-book ratios are incorporated to control for growth opportunities. Growth options usually have uncertain outcomes and impose more risk on managers. In addition, when a large part of firm value is derived from assets not yet in place, it becomes more difficult for outside shareholders to evaluate managerial actions. This is expected to increase the need for managerial incentives. Panel A of Table 5.5 shows that the market-to-book ratio is positively related to the WPS of CEOs but not to the WPS of finance directors or other executive directors. In unreported tests, we also investigate any differences related to high-technology firms. When we incorporate a high-tech dummy in the analysis, we find that high-tech IPO firms do not have substantially higher WPS than other IPO firms.

5.5.4. The role of stock option grants

In this section, we examine the role of stock option grants. Beatty and Zajac (1994) argue that undiversified and risk-averse executives may not be willing to accept stock options if they

already own large shareholdings in the IPO firm. Moreover, boards may not grant costly stock options to executives with large shareholdings since their interests are already well aligned with those of other shareholders.

Table 5.6: Wealth diversification and unexercised options

Table shows cross-sectional regression results for 188 CEOs (Panel A), 137 finance directors (Panel B) and 280 other executive directors (Panel C). The dependent variable is the Black-Scholes value of the option holdings divided by first-day market capitalization. We define pre-IPO WPS as in Equation (5.4) but using pre-IPO stock ownership and excluding the option part. That is, executives' pre-IPO WPS depends only on their pre-IPO shareholdings and cash compensation. Other independent variables are defined as before. White (1980) heteroskedastic-consistent *t*-statistics are within parentheses. * significant at the 10% level; ** significant at the 5% level; *** significant at the 1% level.

	<i>Panel A: Chief executive officers (N=188)</i>	<i>Panel B: Finance directors (N=137)</i>	<i>Panel C: Other executive directors (N=280)</i>
Pre-IPO wealth sensitivity/1000	-0.0075 (-0.82)	-0.0267 (-2.54)**	-0.0183 (-2.87)***
Log(Firm size)	-0.0037 (-1.53)	-0.0008 (-0.65)	-0.0043 (-2.30)**
Firm risk (%)	-0.0057 (-1.03)	0.0050 (0.83)	-0.0003 (-0.09)
Age (years)	-0.0001 (-0.01)	0.0001 (0.94)	-0.0001 (-0.66)
Tenure (years)	-0.0004 (-1.91)*	-0.0001 (-0.01)	-0.0002 (-1.58)
Founder (dummy)	-0.0018 (-0.43)	0.0068 (1.63)	0.0023 (1.14)
Chairperson (dummy)	0.0029 (0.82)	0.0125 (2.32)**	0.0006 (0.23)
<i>Control variables</i>			
Tangible assets (%)	0.0027 (0.68)	-0.0022 (-0.81)	-0.0066 (-2.01)**
R&D expenditure (%)	0.0016 (0.51)	-0.0028 (-2.39)**	0.0002 (0.14)
Firm age (years)	-0.0001 (-1.91)*	-0.0001 (-0.67)	0.0001 (0.68)
Market-to-book ratio	0.0002 (1.62)	-0.0001 (-1.76)*	-0.0001 (-0.67)
Intercept	0.0477 (1.88)*	0.0092 (0.68)	0.0522 (2.55)**
R ² adjusted	0.04	0.03	0.08
F-value	1.69*	1.42	3.10***

Table 5.6 shows the empirical results of the OLS regressions. The dependent variable is the Black-Scholes value of the option holdings divided by first-day market capitalization. We define pre-IPO wealth-to-performance sensitivity (WPS) as in Equation (5.4) but using pre-IPO stock ownership and excluding the option part. That is, executives' pre-IPO WPS

depends only on their pre-IPO shareholdings and cash compensation. Table 5.3 shows that the vast majority of stock options (82%) in our sample are granted within 6 months before the IPO date. The pre-IPO WPS therefore *approximates* the situation within 6 months prior to the IPO. Table 5.6 shows that undiversified executives receive smaller option grants, but the effect is not statistically significant for CEOs. We infer that, consistent with expectations, undiversified finance directors and other executives receive smaller option grants.

It is worth noting, that none of the firm-specific characteristics and other executive-specific characteristics have explanatory power. In unreported tests we also include board characteristics. We find that there is no statistically significant influence of board size and board composition on stock option grants. Stock option grants at the IPO therefore seem to be primarily driven by pre-IPO WPS. In general, this is consistent with the results of several other empirical studies. For example, Ryan and Wiggins (2001), Bryan, Hwang and Lilien (2000) and Mehran (1995) all find an inverse relation between the use of stock options and managerial stock ownership.

5.5.5. Using the IPO as an opportunity to buy and sell shares

As a final point, we examine the role of share transactions in the IPO. Undiversified managers may be more likely to use the IPO to diversify their shareholdings by selling shares of previously owned stock. More diversified managers may be willing to buy additional shares in the IPO to show their commitment to the IPO firm. For the period of the next 12-18 months the IPO represents the only opportunity for share transactions. Typically, managers are subject to lock-up provisions that prevent them from selling their shares in the 12 to 18 months after the IPO. Analyzing U.K. data, Espenlaub and Tonks (1998) report that directors' dealing in IPO firm's shares is generally small in the three years after the IPO. Moreover, managers cannot exercise their options until the options vest. Table 5.3 shows that options granted at the IPO vest after a period of three years subsequent to the IPO. By the same token, Espenlaub and Tonks (1998) report few option-related share transactions in the three years after the IPO.

Table 5.7 presents the results. The dependent variable is the market value of the shares transacted in the IPO, divided by first-day market capitalization. Please note that sales have a positive sign, whereas buys have a negative sign. Pre-IPO WPS is defined as before. Panels A and C show that CEOs and other executive directors sell more when their pre-IPO WPS is already high. This effect is significant at the 1% level. The results for finance directors are less clear (Panel C). One explanation could be that finance directors own only

few shares and are therefore less likely to sell. This poses a more general problem to our analysis. Executive directors can only sell stock in the IPO, if they own stock pre-IPO. To address this problem, we re-estimate regressions using data for executive directors that own stock pre-IPO. We find similar results.

Table 5.7: Wealth diversification and shares transacted in the IPO

Table shows cross-sectional regression results for 188 CEOs (Panel A), 137 finance directors (Panel B) and 280 other executive directors (Panel C). The dependent variable is the market value of the shares transacted (i.e. bought or sold) in the IPO, divided by first-day market capitalization. Note that sales have a positive sign, whereas buys have a negative sign. We define pre-IPO WPS as in Equation (5.4) but using pre-IPO stock ownership and excluding the option part. That is, executives' pre-IPO WPS depends only on their pre-IPO shareholdings and cash compensation. Other independent variables are defined as before. White (1980) heteroskedastic-consistent *t*-statistics are within parentheses. * significant at the 10% level; ** significant at the 5% level; *** significant at the 1% level.

	<i>Panel A: Chief executive officers (N=188)</i>	<i>Panel B: Finance directors (N=137)</i>	<i>Panel C: Other executive directors (N=280)</i>
Pre-IPO wealth sensitivity/1000	0.0887 (4.24)***	0.0213 (0.76)	0.0718 (2.98)**
Log(Firm size)	0.0064 (2.23)**	-0.0007 (-0.52)	0.0017 (1.71)*
Firm risk (%)	-0.0111 (-0.73)	-0.0033 (-0.69)	0.0055 (0.70)
Age (years)	0.0001 (0.31)	0.0001 (-0.46)	0.0001 (0.98)
Tenure (years)	-0.0004 (-1.06)	0.0002 (0.74)	0.0003 (0.95)
Founder (dummy)	-0.0048 (-1.36)	0.0085 (1.80)*	-0.0035 (-1.53)
Chairperson (dummy)	-0.0026 (-0.28)	0.0004 (0.20)	-0.0072 (-1.72)*
<i>Control variables</i>			
Tangible assets (%)	-0.0049 (-0.47)	-0.0021 (-0.61)	0.0055 (0.98)
R&D expenditure (%)	0.0024 (0.68)	0.0002 (0.19)	0.0004 (0.26)
Firm age (years)	0.0001 (1.40)	0.0001 (0.11)	0.0001 (0.01)
Market-to-book ratio	-0.0001 (-0.21)	0.0002 (1.27)	0.0001 (0.96)
Intercept	-0.0641 (-2.56)**	0.0073 (0.44)	-0.0278 (-2.56)**
R ² adjusted	0.19	0.10	0.21
F-value	5.07***	2.31**	7.86***

Overall, our findings are consistent with the use of the IPO as a wealth diversification mechanism by some managers. Undiversified and risk-averse executives (i.e. executive

directors with large pre-IPO WPS) are selling more stock in the IPO than executive directors with low pre-IPO WPS do. These more diversified executives are more likely to retain their stock or perhaps even buy additional shares in the IPO. To some extent, this result compares to the results of Ofek and Yermack (2000) and Core and Guay (1999). They find that CEOs sell shares of previously owned stock during periods in which they are granted new stock options. These effects are strongest for executives who already own many shares, whereas stock options do increase the shareholdings of managers with low ownership.

5.6. Conclusions

At the time of the IPO, a large part of firm value depends on management's investment decisions. It is therefore crucial to align the financial interests of managers with those of outside shareholders in a cost-effective manner. In this chapter, we study IPO management's incentives and changes therein for a sample of 188 AIM IPO firms. The Alternative Investment Market (AIM) plays a vital role in the United Kingdom as small companies continue to raise significant amounts of capital on AIM.

The unit of analysis is the individual executive director. In total, the 188 sample firms employ 605 executive directors. We divide these executive directors into 3 groups on the basis of their job complexity. We distinguish 188 chief executive officers (CEOs), 137 finance directors (comparable to Chief Financial Officers in the U.S.) and 280 other executive directors. We employ wealth-to-performance sensitivity (WPS) to capture managerial incentives. WPS measures the increase in executive wealth per £1,000 increase in shareholder wealth.

Firstly, we examine the cross-sectional determinants of WPS. We find that WPS is higher if the manager co-founded the firm, chairs the board of directors, and has been employed by the firm for a larger number of years. The WPS of CEOs is inversely related to board size. This suggests that smaller boards force CEOs to bear more firm-specific risk. This result is consistent with the findings of Yermack (1996) for a sample of large publicly traded U.S. companies. We find that the WPS of CEOs is negatively related to equity incentives per independent director, the presence of large shareholders that own more than 5% of pre-IPO stock and large shareholder board monitoring. We view this as evidence of a trade-off between CEO incentives and board monitoring. It is important to stress that these relations are less striking in case of finance directors or other executive directors. Whereas boards can evaluate CEOs by looking at overall firm performance, boards may be less able to evaluate

the specific contribution to performance of finance directors or other executive directors. Growth options positively impact the WPS of CEOs. Since these firms derive a large portion of their value from assets not yet in place, they are riskier and controlling agency problems by monitoring managers' efforts becomes difficult. CEO incentive alignment may mitigate these monitoring problems in firms that derive a large part of their value from future investments.

Secondly, we investigate the role of stock options. Executive directors often own large shareholdings in the IPO firm. What is more, managers have their human capital (i.e. employment and income opportunities) invested in the IPO firm. We find that managers, other than CEOs, with large pre-IPO WPS receive smaller option grants than managers with low pre-IPO WPS. Thirdly, we report that managers with large pre-IPO WPS sell more shares in the IPO than executive directors with low pre-IPO WPS do. This allows some undiversified executives to seize the IPO as a wealth diversification opportunity and to diversify their personal wealth portfolio. This effect is absent for finance directors.

In conclusion, our study contributes to the literature by investigating the role of managerial incentives at the IPO. Unlike previous studies our analysis is structured around an important corporate event – the IPO. In addition, we investigate not only CEOs but also finance directors and other executive directors. We identify a trade-off relation between board monitoring and incentives specific to CEOs. We show that the IPO may be used as a wealth diversification mechanism. We find that undiversified managers receive smaller option grants than more diversified managers. In addition, undiversified executives sell more shares in the IPO than more diversified executive directors.

Chapter 6:

Summary and Conclusions

In this thesis we have examined the use of corporate governance mechanisms in IPO firms. The IPO often marks the beginning of a more diffuse ownership structure by selling shares to a large group of outside investors. IPO firms thus provide an important event for examining how governance adapts to structural changes. Management of the IPO firm finds itself at a critical juncture. On the one hand, management may strategically decide to ignore minority shareholders' rights and structure corporate governance to its own advantage. This allows the management to pursue his personal interests that are (possibly) conflicting with those of small shareholders. Alternatively, management may choose to mitigate agency costs by adopting an effective corporate governance structure. In this case, corporate governance is organized to limit the potential expropriation of minority shareholders.

In this thesis, corporate governance is therefore viewed as a relevant design issue at the time of the IPO. The thesis merges two strands of literature. With notable exceptions, the IPO literature has focussed on explaining first-day returns (underpricing) and long-term stock price performance. There are relatively few empirical studies that apply an agency perspective to the IPO. The equally extensive corporate governance literature has mainly studied large publicly traded companies. There exist few studies analyzing corporate governance structures in small and closely held firms such as IPO firms. In this thesis, we examine the use of corporate governance mechanisms in IPO firms in the Netherlands, France and the United Kingdom, respectively. We continue with a summary of each of the previous three chapters.

Chapter 3 examines the relation between takeover defenses and IPO firm value in the Netherlands. The use of takeover defenses is particularly widespread. More than 90 percent of IPO firms adopt at least one takeover defense before going public. The median IPO firm adopts two takeover defenses. If protected by a takeover defense, incumbent management might block wealth-creating takeovers, indulge in private benefits and entrench itself at shareholders' expense. In this chapter, we contribute to the literature by examining the valuation impact of takeover defenses at the time of the IPO.

This chapter is motivated by the recent theoretical work of Bebchuk (1999). He analyzes the manager's decision to adopt takeover defenses when taking the firm public. The model predicts that this decision heavily depends on the expected size of the private benefits

of control. These private benefits are the perquisites of control that management appropriates to itself, but that new investors that buy shares in the IPO cannot obtain. If the private benefits of control are large enough, managers decide to use takeover defenses. Managerial entrenchment is expected to come at a price. IPO investors will anticipate conflicts of interest with managers and lower IPO firm value. This reduction in IPO firm value reflects the expected size of private control benefits. To the degree that managers own equity in the firm, they are expected to bear this cost directly in the value of their shares. Although management loses through its pre-IPO stock ownership, it is likely to gain through private control benefits. Non-management pre-IPO owners, such as venture capitalists, stand to lose. Their shares are worth less because of the takeover defenses, but unlike managers, they do not get offsetting private benefits of control.

We analyze a sample of 111 Dutch IPOs that went public on Euronext Amsterdam from January 1984 to December 1999. Managers are often controlling owners. On balance, managers hold 44.3 percent of pre-IPO shares. This shows that managers of IPO firms internalize a large proportion of the potential costs of takeover defenses through their stock ownership. We find that Dutch IPO firms use takeover defenses to the same extent as other listed firms. Even though managers internalize a larger portion of the costs of takeover defenses, the median IPO firm adopts two takeover defenses. Arguably, managers seeking to protect large private benefits are willing to internalize a large fraction of the costs associated with takeover defenses at the IPO. Managers may also decide to adopt takeover defenses before the IPO because at that time they do not need the formal approval of the outside investors that buy their shares in the IPO.

We then examine the relation between takeover defenses and IPO firm value. Our results suggest that takeover defenses are costly to management. Takeover defenses have a negative effect on IPO firm value. The larger the number of takeover defenses the smaller IPO firm value. This reduction in IPO firm value is assumed to reflect the expected size of IPO management's private benefits of control. We therefore infer that private benefits play an important role in the decision to adopt takeover defenses at the IPO. Most types of takeover defenses reduce IPO firm value, but except for share certificates their negative effects lack statistical significance. Share certificates thus seem to play a special role in protecting large private benefits of control. Prior research suggests that votes are an important and valuable tool to influence management (Zingales, 1994, 1995). Principally, share certificates deprive IPO investors of these valuable voting rights and therefore have a strongly negative impact on IPO firm value.

We conclude that managers in Dutch IPO firms adopt takeover defenses to entrench themselves. Three parties are affected by the use of takeover defenses at the IPO. If IPO management (also an important, often controlling owner) adopts takeover defenses, they lose through their pre-IPO stock ownership, but gain through private control benefits. IPO investors are likely to break even. They anticipate conflicts of interest with management and factor takeover defenses negatively into the price paid for the IPO shares. The non-management pre-IPO owners lose. Their shares are worth less because of the takeover defenses and, different from managers, they do not get compensating private benefits.

In Chapter 4 we analyze board composition at the IPO. Independent boards are often believed to moderate the power of the controlling owner-manager to take advantage of minority shareholders. These independent boards consist of a substantial fraction of independent directors that do not have any business or family relationships with the owner-manager. Independent directors are therefore less likely to owe their positions to the owner-manager and are expected to be more vigilant monitors of managerial actions. However, such independent boards are not easily established in IPO firms. Powerless minority shareholders face difficulties in increasing the fraction of independent directors on the board due to a free-rider problem. Large outside shareholders, such as venture capitalists, on the other hand, may bargain with the owner-manager on the fraction of independent directors.

Our study provides a first evaluation of the model developed by Hermalin and Weisbach (1998). Their model predicts that when the owner-manager has more bargaining power – for example, when he exercises more voting power or has longer tenure – the level of board independence decreases. We use a sample of 299 French IPO firms from January 1993 to December 1999. As a side issue, we provide a unique inquiry into the use of shareholder agreements between the owner-manager and other shareholders that own shares in the firm before it went public. We also provide an analysis of the bargaining role of venture capitalists in relation to an IPO firm's board structure.

We find a non-linear relation between the fraction of independent directors and post-IPO cash flow ownership of the owner-manager. If the owner-manager owns a relatively low percentage of shares, we find a negative relation between ownership and the fraction of independent directors. We argue that this is consistent with a dominating incentive effect. There exists an agency cost trade-off between cash flow ownership and the fraction of independent directors at low levels of ownership. If the ownership of the owner-manager reaches a critical level (resulting in unilateral control) we find that the representation of independent director declines. The owner-manager becomes entrenched at high levels of ownership and prefers a less independent board. He appoints the entire board matching his

personal preferences. In the middle range of ownership, entrenchment effects and incentive effects are both important. The owner-manager derives incentives from his ownership but at the same time his ownership may allow him to entrench. In this middle range, however, the owner-manager is not in unilateral control and needs to bargain with other shareholders on the fraction of independent directors. These other shareholders oppose a further decline in the fraction of independent directors that would allow the owner-manager to become more powerful.

Next, we show that if the owner-manager owns less than 50% of the votes before going public, he bargains with large outside shareholders (industrial companies, institutional investors and venture capitalists that own more than 10% of the votes) on board composition. In case the owner-manager owns more than 50% of the votes there is no need to bargain with other shareholders. Accordingly, we find little evidence of bargaining. When we investigate the shareholder agreements we find corroborating evidence that board composition is relatively more contracted upon between shareholders when the owner-manager owns less than 50% of the votes compared to when he owns more than 50% of the votes.

We also investigate bargaining in IPO firms that have been venture-backed. As before, if the owner-manager owns more votes, he shifts board composition away from independent directors to inside and affiliated directors. Venture capitalists successfully resist the owner-manager. They bargain for more independent directors, more venture directors that represent their interests, and less affiliated directors as their voting power increases. Taken together, our results suggest that, next to agency theory, the bargaining model of Hermalin and Weisbach (1998) may explain board composition in an IPO context.

In Chapter 4 we also examine board size at the time of the IPO. Large boards are often believed to be dysfunctional due to coordination and communication problems. For example, Yermack (1996) and Conyon and Peck (1998) have shown a negative relation between firm value and board size for large publicly traded firms in the United States and European countries, respectively. On the assumption that larger boards are easier to control, the owner-manager may therefore favor a larger than optimal board. Alternatively, larger boards in IPO firms may be larger to accommodate more independent directors on the board. This suggests that the owner-manager may prefer smaller rather than larger boards (Mak and Roush, 2000). Assuming that board size is relevant to firm performance, large outside shareholders, such as venture capitalists, may seek to bargain with the owner-manager on board size.

We investigate whether bargaining takes place in relation to board size. We do not find any relationship between board size and post-IPO cash flow ownership of the owner-

manager. Arguably, boards at IPO firms may be larger to allow for the inclusion of more independent directors. This balances potential coordination and communication problems attributed to larger boards and may explain the absence of a significant association between board size and cash flow ownership of the owner-manager. In subsequent tests, we show that venture capitalists that own more than 10% of the votes increase board size. We show that venture capitalists appoint additional independent directors to represent their interests on the board thereby increasing board size.

In Chapter 5 we investigate the wealth-to-performance sensitivity of managers at the IPO. Wealth-to-performance sensitivity measures the increase in the amount of executive wealth (consisting of shareholdings, option holdings and human capital) per £1,000 increase in shareholder wealth. Agency theory advocates that managers should bear the wealth consequences of their decisions by owning stock and/or options in the employing company. But managers tend to be risk-averse and not willing to accept the lack of diversification of their personal wealth. They may seek wealth diversification opportunities rather than increased stock and option holdings. One of the main challenges that IPO firms face is therefore to align the financial interests of managers with those of outside shareholders in an effective manner.

This study advances the literature in two ways. First, the analysis is structured surrounding an important corporate event – the IPO. At the IPO the typical U.K. company raises new equity capital to fund its future growth plans. Managers often have knowledge that is crucial to successfully exploit these future growth options, whereas outside investors are relatively uninformed about the firm's prospects. It is therefore important to give these managers the incentives to act in the best interest of outside shareholders that buy their shares in the IPO. Second, previous studies have restricted their attention to the wealth-to-performance sensitivity of CEOs. However, tying executive wealth to shareholder wealth may be especially important to managers just below the CEO level. These managers may be recruited by other companies or voluntarily leave the IPO firm to pursue more attractive job opportunities elsewhere if they are not rewarded competitively. Investors that buy shares in the IPO firm seek stability and continuity in the senior management team. Stock ownership and stock options may improve and maintain managerial loyalty and commitment to the IPO firm.

We use a sample of 188 small IPO firms that listed on the Alternative Investment Market (AIM) of the London Stock Exchange from June 1995 to December 1999. The unit of analysis is the individual director. We analyze three groups of 188 CEOs, 137 finance directors and 280 other executive directors. We uncover several determinants of wealth-to-

performance sensitivity. Wealth-to-performance sensitivity is higher if the manager has co-founded the firm. Founders forego diversification benefits by holding a larger amount of shares in the company they founded, which increases their wealth-to-performance sensitivity. Founders may be willing to give up diversification benefits because they derive compensating non-pecuniary private benefits of control from their majority ownership. Tenure is positively related to the wealth-to-performance sensitivity of finance directors and CEOs. This may point to the importance to retain and motivate highly qualified and tenured CEOs and finance directors through equity-based rewards.

In addition, we report that the wealth-to-performance sensitivity of CEOs is inversely related to board monitoring by large outside shareholders, such as venture capitalists and industrial companies, and the equity incentives of independent directors. These relations are less striking for managers below the CEO level. Independent directors that own stock and/or options in the IPO firm or that represent large outside shareholders, may be more active monitors of CEOs. Consistent with an agency costs trade-off, this decreases the need to tie CEO wealth to shareholder wealth.

We find that smaller boards force CEOs to bear more firm-specific risks. This suggests a complementary rather than substituting role for small boards. Small boards in combination with equity-based incentives may address the agency problem between the CEO and shareholders. We also find that growth options positively relate to wealth-to-performance sensitivity of CEOs. If firms derive a substantial part of their value from assets not yet in place, it becomes more difficult for outside shareholders to monitor the actions of the CEO. It therefore becomes more important to link CEO wealth to shareholder wealth to control the agency problem.

Next, we investigate the role of stock option grants. Managers of IPO firms are typically unable to diversify away the risk associated with their wealth. Their human capital is invested in a single position of employment and they often hold substantial shareholdings in the IPO firm. This constraint on their ability to diversify affects their tolerance for additional firm-specific risk through stock options. Consistent with this argument, we find that managers (other than CEOs) with high pre-IPO wealth-to-performance sensitivity (i.e. when managers are poorly diversified through their human capital and substantial pre-IPO shareholdings) receive smaller option grants than managers with low pre-IPO wealth-to-performance sensitivity.

We conclude by analyzing insider share transactions at the IPO. Managers that have heavily invested in human capital and pre-IPO shareholdings may seek wealth diversification and decide to sell shares in the IPO. Other managers with more diversified personal wealth

portfolios may retain their shareholdings in the IPO firm or even buy additional shares to show their commitment to the IPO firm. Accordingly, we find that managers (other than finance directors) with high pre-IPO wealth-to-performance sensitivity sell more shares in the IPO than managers with low pre-IPO wealth-to-performance sensitivity do.

After summarizing the results of this thesis, several avenues for future research can be thought of. In this thesis we have used a cross-sectional approach and analyzed corporate governance mechanisms at the time of the IPO. It would be interesting to investigate the relation between the changes in board structure and the changes in ownership structure during the years after the IPO. Mak and Ong (1999) have taken the first steps in this direction. Analyzing 88 Singapore IPO firms, they collect characteristics of ownership and board structure at two time periods: the time of the IPO and five years after. They show that board structure changes to include more members and relatively more outside directors. Mak and Ong (1999) find some support for the argument that decreases in management ownership lead to greater board independence. As management relinquishes control the board contains more outside directors. Another interesting research question relates to CEO turnover in the post-IPO period. In IPO firms CEOs are often powerful owners that may block the disciplining power of the board in the wake of poor performance. Mitsuhashi and Welbourne (1999) provide an initial analysis of CEO turnover for 120 U.S. IPO firms. They analyze CEO turnover in the five years after the IPO. Mitsuhashi and Welbourne (1999) report that the presence of outside directors on the board increases CEO turnover, while CEO tenure reduces turnover. However, they do not address the question whether CEO turnover is a function of poor operating performance in the years after the IPO.

Future studies may also want to re-examine the relation between corporate governance mechanisms and subsequent operating performance or stock price performance of IPO firms. The few studies that exist produce conflicting results. Frye (1999) reports that U.S. IPO firms with more independent board members have higher stock market returns in the year following the IPO. Analyzing U.K. IPO firms, Buckland (2001) shows that the fraction of independent directors cannot explain variation in first-year stock returns or post-IPO operating performance. To our knowledge, except for Welbourne and Andrews (1996), there are no other studies that have investigated the relation between the use of stock options and subsequent IPO performance. This may provide a fruitful area for future research as options at the IPO are often thought to align the interests of management and shareholders, which may improve subsequent firm performance. It may also be interesting to investigate the use of options as a mechanism to retain and attract qualified managers.

A final avenue for future research involves private benefits of control. Although private benefits of control play an important role in theoretical models (e.g. Bebchuk, 1999), it is difficult to measure them empirically. Ehrhardt and Nowak (2001) make an effort to develop empirical proxies for private benefits of control. They examine a sample of 105 family-owned German IPO firms. They measure private benefits through excessive management compensation (self-dealing), enjoyment through luxury goods (amenities) and social benefits from being an important employer in a small town (reputation and status). Ehrhardt and Nowak (2001) show that the separation of cash flow and voting rights is used to preserve these private benefits of control. Pontbriand and Breton (1999) conduct 25 case studies of Canadian IPO firms in the computer industry. Wealth transfers to the controlling owner usually take the form of option grants given just before the IPO with an exercise price far below the offer price that is paid for the IPO shares by small shareholders. Other dilution activities include issuing warrants and convertible bonds at a conversion rate substantially lower than the offer price and issuing shares to the controlling owner in the months before the IPO at a price that is far less than the offer price. However, much additional work needs to be done to more fully understand the nature of private benefits of control in an IPO context.

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Samenvatting (Summary in Dutch)

De beslissing om naar de beurs te gaan heeft verstrekkende gevolgen voor de zeggenschapsverhoudingen binnen de onderneming. Door de beursintroductie wordt de besloten kring van grootaandeelhouders uitgebreid met een grotere groep van kleine aandeelhouders. Legde de ondernemingsleiding voorheen rekenschap af aan een beperkte kring van eigenaren, tot wie zij zelf meestal ook behoort, in de toekomst zal ze zich moeten verantwoorden jegens een grote groep van anonieme beleggers.

De beursintroductie manifesteert daarmee een mogelijk belangenverschil tussen de externe aandeelhouders en de ondernemingsleiding. De ondernemingsleiding kan haar eigen doelstellingen nastreven die niet altijd in overeenstemming zijn met de belangen van de externe aandeelhouders. Daarnaast heeft de ondernemingsleiding een informatievoorsprong op de externe aandeelhouders. Bestuurders hebben betere toegang tot informatie over de vennootschap en haar vooruitzichten, terwijl beleggers nauwelijks bekend zijn met een nieuwkomer op de beurs. Deze combinatie van belangen- en informatieverschillen geeft aanleiding tot het vraagstuk van corporate governance ofwel vennootschappelijke besturing.

Corporate governance kent vele facetten. Moerland (1997, pagina 661) hanteert de volgende omschrijving: "Corporate governance is het geheel van structuren, regelingen en conventies dat bepalend is voor de wijze waarop en de effectiviteit waarmee een vennootschap – door middel van een door prikkels en tucht geregeerde interactie tussen stakeholders – wordt bestuurd en gecontroleerd". In deze dissertatie staat het gebruik van corporate governance mechanismen door beursintroducties centraal. Door het ontwerpen van een optimale vennootschappelijk besturing kan de ondernemingsleiding, althans in beginsel, de bovengenoemde belangen- en informatieverschillen met externe aandeelhouders verminderen. Hierbij kan worden gedacht aan beslissingen aangaande het aandelenbezit van bestuurders, het instellen van resultaatafhankelijke beloningssystemen en de grootte en de samenstelling van het toezichthoudend bestuursorgaan. Daarentegen kan de ondernemingsleiding ervoor kiezen om de voordelen van een beursgang te incasseren zonder zeggenschap aan externe aandeelhouders prijs te geven. Bijvoorbeeld door een beursgang waarbij de oorspronkelijke eigenaren meer dan 50% van de stemrechten behouden. Of door middel van beschermingsconstructies die tot doel hebben ingrijpen door de overnamemarkt te bemoeilijken.

Hoofdstuk 3 bestudeert de relatie tussen beschermingsconstructies en de waardering van beursintroducties voor een steekproef van 111 Nederlandse bedrijven die gedurende de

periode 1984-1999 een eerste notering aan Euronext Amsterdam hebben verkregen. Het gebruik van beschermingsconstructies is wijdverbreid in Nederland. Meer dan 90 procent van de beursintroducties heeft één of meer beschermingsconstructies. Deze beschermingsconstructies vormen een beproefd middel tegen vijandige overnames ('oorlogstijd') maar beknotten de zeggenschap van aandeelhouders ook bij afwezigheid van een overnamedreiging ('vredestijd'). De ondernemingsleiding kan mede dankzij beschermingsmaatregelen zonder inmenging van buitenaf haar eigen beleid voeren wat niet altijd in het belang is van de externe aandeelhouders. Op hun beurt zullen rationele beleggers deze mogelijke belangenconflicten voorzien. De verwachting is dat beleggers bij gebruik van beschermingsconstructies alleen tegen een lagere prijs bereid zijn om in te schrijven op de aandelen van de beursintroductie.

De ondernemingsleiding draagt de kosten van het invoeren van beschermingsmaatregelen in de mate waarin zijzelf aandelen in de onderneming bezit. Immers de aandelen in het bezit van de ondernemingsleiding worden mogelijk minder waard door de ingevoerde beschermingsmaatregelen. Hiertegenover staat echter het voordeel dat de ondernemingsleiding ongestoord haar eigen belangen kan nastreven. Door de beschermingsmaatregelen kan de ondernemingsleiding het bedrijf naar eigen inzicht besturen.

Wij vinden dat de ondernemingsleiding een belangrijke aandeelhouder is in de eigen onderneming. Gemiddeld bezit de ondernemingsleiding 44,3 procent van de aandelen voorafgaand aan de beursintroductie. De ondernemingsleiding draagt dus een aanzienlijk gedeelte van de mogelijke waardevermindering door het invoeren van beschermingsconstructies. Desalniettemin besluit de ondernemingsleiding voorafgaand aan de beursgang beschermingsmaatregelen in te voeren. De mediaan beursintroductie voert twee beschermingsconstructies in. De ondernemingsleiding is daarmee bereid om de kosten te dragen in ruil voor de beleidsvrijheid die door de beschermingsconstructies wordt geboden.

We vinden dat het invoeren van beschermingsconstructies voorafgaande aan de beursgang inderdaad gepaard gaat met waardevermindering van de aandelen. Naarmate het aantal beschermingsconstructies toeneemt, neemt de waarde van de aandelen af. De meeste soorten beschermingsconstructies leiden tot een waardevermindering van de aandelen, maar met uitzondering van certificaten zijn de resultaten niet statistisch significant. Certificaten vervullen een bijzondere rol. Certificering houdt in dat het zeggenschapsrecht en het dividendrecht van de aandelen gescheiden zijn. Het stemrecht verbonden aan de aandelen berust bij een administratiekantoor, terwijl aandeelhouders alleen een dividendrecht bezitten. Certificering ontnemt aandeelhouders de mogelijkheid om op de Algemene Vergadering van Aandeelhouders invloed uit te oefenen op de ondernemingsleiding. Beleggers verlagen de

prijs die ze bereid zijn voor de aandelen in de beursintroductie te betalen indien hen dit stemrecht wordt ontnomen.

Hoofdstuk 4 bestudeert de samenstelling en grootte van het toezichthoudend bestuursorgaan voor een steekproef van 299 Franse beursintroducties gedurende de periode 1993-1999. Een onafhankelijk toezicht kan een tegenwicht bieden tegen de macht van de controlerende directeur-aandeelhouder die in Franse ondernemingen een prominente rol speelt. Onafhankelijk toezicht kan worden bereikt door toezichthoudende bestuurders te benoemen die geen familiale of zakelijke verbanden hebben met de directeur-aandeelhouder. Echter dergelijk onafhankelijk toezicht komt niet automatisch tot stand binnen beursintroducties. Minderheidsaandeelhouders hebben vaak onvoldoende macht om onafhankelijk toezicht af te dwingen. Externe grootaandeelhouders zoals participatiemaatschappijen verkeren daarentegen in een betere onderhandelingspositie vis-à-vis de directeur-aandeelhouder. De verwachting is dat zij onderhandelen met de directeur-aandeelhouder over onafhankelijk toezicht.

De onderhandeling tussen directeur-aandeelhouder en externe grootaandeelhouders, zoals participatiemaatschappijen, zal plaatsvinden indien de directeur-aandeelhouder onvoldoende stemrechten bezit om de volledige zeggenschap binnen de onderneming uit te oefenen. Deze situatie doet zich voor als de directeur-aandeelhouder voorafgaande aan de beursintroductie minder dan 50% van de stemmen bezit. De externe grootaandeelhouders zullen onderhandelen voor meer onafhankelijke toezichthoudende bestuurders om te voorkomen dat de directeur-aandeelhouder alle macht binnen het bestuursorgaan naar zich toetrekt. Omdat de directeur-aandeelhouder niet de volledige macht bezit zal hij in onderhandeling moeten treden over de samenstelling van het bestuursorgaan. Wij vinden dat er inderdaad over de samenstelling van het bestuursorgaan wordt onderhandeld. Indien een individuele grootaandeelhouder (participatiemaatschappijen, institutionele beleggers en industriële ondernemingen) meer dan 10 procent van de stemrechten uitoefent worden er meer onafhankelijke toezichthoudende bestuurders benoemd. De grens van 10 procent is belangrijk omdat dit deze aandeelhouders een agenderingsrecht geeft op de Algemene Vergadering van Aandeelhouders. Dergelijke grootaandeelhouders zijn daarmee een machtsfactor van betekenis. We vinden tevens dat deze grootaandeelhouders bepalingen omtrent de samenstelling van het bestuursorgaan opnemen in aandeelhoudersovereenkomsten met de directeur-aandeelhouder. Dit toont dat de samenstelling van het bestuursorgaan in de praktijk van belang wordt geacht.

Wanneer daarentegen het aandelenbezit van de directeur-grootaandeelhouder resulteert in de volledige zeggenschap over de onderneming, zal de directeur-

grootaandeelhouder besluiten onafhankelijk toezicht te vermijden. Er vindt een machtsconcentratie plaats in handen van de directeur-aandeelhouder. De directeur-aandeelhouder zal het bestuursorgaan naar eigen inzicht benoemen. De bestuursleden hebben daarmee hun benoeming te danken aan de directeur-aandeelhouder en zullen waarschijnlijk weinig onafhankelijk opereren. Wij vinden dat indien de directeur-aandeelhouder meer dan 50% van de stemmen in handen heeft er niet langer wordt onderhandeld met externe grootaandeelhouders die individueel meer dan 10 procent van de stemmen kunnen uitoefenen.

We besteden speciale aandacht aan ondernemingen die voor de beursgang mede gefinancierd zijn door participatiemaatschappijen. We vinden dat naarmate de directeur-aandeelhouder ervoor kiest om meer familieleden in het bestuursorgaan te benoemen naarmate hij meer stemrecht kan uitoefenen. Naarmate de participatiemaatschappij meer stemrecht bezit, zorgt deze voor meer onafhankelijke toezichthoudende bestuurders en meer bestuurders die het belang van de participatiemaatschappij binnen het bestuursorgaan vertegenwoordigen. Daarnaast neemt de fractie familieleden van de directeur-aandeelhouder in het bestuursorgaan af naarmate participatiemaatschappijen meer stemrecht uitoefenen.

We vinden dat externe grootaandeelhouders niet of nauwelijks met de directeur-aandeelhouder onderhandelen over het aantal leden van het bestuursorgaan. We vinden alleen dat participatiemaatschappijen die meer dan 10 procent van het stemrecht uitoefenen de omvang van het bestuursorgaan vergroten. Deze grotere omvang valt toe te schrijven aan de benoeming van additionele onafhankelijke toezichthoudende bestuurders door participatiemaatschappijen.

Hoofdstuk 5 bestudeert de mate waarin de ondernemingsleiding meedeelt in een eventuele waardeestijging van de aandelen van de beursintroductie. De steekproef bestaat uit 188 beursintroducties die gedurende de jaren 1995-1999 een eerste notering hebben gekregen aan de Alternative Investment Market van de Londense Effectenbeurs. De Alternative Investment Market richt zich in het bijzonder op kleine en groeiende ondernemingen. De welvaart-tot-prestatie maatstaf meet de verandering van het persoonlijke vermogen van managers als gevolg van een £1000 verandering in marktkapitalisatie van de beursintroductie. Het persoonlijke vermogen van managers bestaat uit de marktwaarde van hun aandelen- en optiebezit alsook de contante waarde van de stroom van toekomstige salarissen (human capital).

Agency theorie stelt dat managers de financiële gevolgen van hun beslissingen moeten dragen door middel van aandelen- en optiebezit in de onderneming waar zij werkzaam zijn. Op deze manier worden de belangen van managers en externe

aandeelhouders met elkaar in overeenstemming gebracht. Echter managers zijn doorgaans risico-avers en niet zonder meer bereid om het gebrek aan diversificatie van hun persoonlijke vermogen te aanvaarden. Ze zijn op zoek hun risico's te spreiden in plaats van hun aandelen- en optiebezit in de onderneming verder uit te breiden. Ten tijde van de beursgang is het daarom zaak om de wensen van managers en aandeelhouders op een effectieve manier met elkaar te verenigen.

We onderzoeken drie groepen van managers, 188 topmanagers (CEOs), 137 financieel directeuren en 280 andere directeuren welke werkzaam zijn bij de 188 beursintroducties. We vinden dat de welvaart-tot-prestatie maatstaf hoger is als de manager een (mede-)oprichter van de onderneming is geweest. Oprichters zijn vaak bereid zich de voordelen van diversificatie te ontfemen en een aanzienlijk aandelenbelang in de onderneming aan te houden. Oprichters ontfemen status en niet-geldelijke voordelen aan het leiden van de onderneming in ruil waarvoor ze bereid zijn de diversificatievoordelen op te geven. Topmanagers (CEOs) en financieel directeuren met een groter aantal dienstjaren hebben eveneens een hogere welvaart-tot-prestatie maatstaf. Het is voor de onderneming belangrijk deze managers aan zich te binden vanwege hun kennis en ervaring. Beloning door middel van aandelen en opties biedt een mogelijkheid om te voorkomen dat deze managers de onderneming voortijdig zullen verlaten.

Verder vinden we dat de welvaart-tot-prestatie maatstaf van topmanagers (CEOs) een negatieve associatie vertoont met de aanwezigheid van externe grootaandeelhouders en aandelen- en optiebezit van onafhankelijke toezichthoudende bestuurders. Onafhankelijke toezichthoudende bestuurders en grootaandeelhouders zorgen ervoor dat topmanagers meer handelen in het belang van de externe aandeelhouders. Om die reden hoeven risico-averse topmanagers minder aandelen- en opties te bezitten in de eigen onderneming.

We vinden eveneens dat kleinere bestuursorganen meer effectief zijn en topmanagers (CEOs) dwingen om meer bedrijfsspecifieke risico's te dragen door middel van aandelen- en optiebezit. Kleinere bestuursorganen in combinatie met aandelen- en optiebezit van topmanagers bieden daarmee een mogelijke oplossing voor het belangenconflict tussen topmanagers (CEOs) en aandeelhouders. Groeimogelijkheden zijn positief gerelateerd met de welvaart-tot-prestatie maatstaf van topmanagers (CEOs). Als ondernemingen een groter gedeelte van hun waarde ontfemen aan toekomstige groeimogelijkheden wordt het voor externe aandeelhouders moeilijker om de geleverde prestaties van de topmanagers te beoordelen. Het wordt om die reden belangrijk om de belangen van topmanagers en aandeelhouders te verenigen door middel van een groter aandelen- en optiebezit van topmanagers.

Daarnaast bespreekt Hoofdstuk 5 de rol van optietoekenningen. Managers werkzaam bij beursintroducties hebben doorgaans een groot gedeelte van hun persoonlijk vermogen geïnvesteerd in aandelen van de onderneming. Daarnaast hebben deze managers hun human capital aan de onderneming verbonden, gemeten als de contante waarde van toekomstige salarissen tot aan pensioen. Deze risico-averse managers zullen minder geneigd zijn om opties als beloningsinstrument te accepteren. Immers door de opties worden deze managers geconfronteerd met additioneel bedrijfsspecifiek risico. We vinden dat financieel directeuren en overige directeuren die voorafgaand aan de beursgang een hoge welvaart-tot-prestatie maatstaf hebben (door hun aandelenbezit en human capital) minder grote optiepakketten toegekend krijgen in vergelijking tot managers met een lage welvaart-tot-prestatie maatstaf.

Een andere manier waarop managers hun persoonlijk vermogen kunnen diversifiëren is door een gedeelte van hun aandelenbezit te verkopen ten tijde van de beursgang. We vinden dat topmanagers (CEOs) en overige directeuren die voorafgaand aan de beursintroductie een hoge welvaart-tot-prestatie maatstaf hebben (door hun aandelenbezit en human capital) de beursgang aangrijpen om een groter gedeelte van hun aandelenbezit te verkopen in vergelijking tot managers met een lage welvaart-tot-prestatie maatstaf.

Concluderend kunnen we stellen dat corporate governance mechanismen in beursintroducties een belangrijke rol spelen. Deze corporate governance mechanismen kunnen worden ingezet om het belangenconflict tussen de ondernemingsleiding en externe aandeelhouders te mitigeren. Bijvoorbeeld door het instellen van resultaatafhankelijke beloning door middel van opties of het benoemen van onafhankelijke bestuurders in het bestuursorgaan. Anderzijds kan de ondernemingsleiding ervoor kiezen om corporate governance zodanig te structureren dat zij ongestoord haar eigen belangen kan nastreven die niet altijd overeenstemmen met de belangen van de externe aandeelhouders. Bijvoorbeeld door het invoeren van beschermingsconstructies of het behouden van meer dan 50 procent van de stemrechten. Vervolgonderzoek is nodig om de relatie tussen de gekozen corporate governance mechanismen en de financiële prestaties van beursintroducties na de beursgang te onderzoeken.

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Peter Roosenboom graduated in Business Administration (Finance) from Tilburg University in 1998. Between May 1998 and March 2002, he was a Ph.D. student at the Department of Finance and CentER for Economic Research at Tilburg University. As of March 2002, he is an Assistant Professor at Erasmus University Rotterdam. His research focuses on empirical research in corporate finance.

This thesis studies the use of corporate governance mechanisms in IPO firms. The IPO (Initial Public Offering) often marks the beginning of a more diffuse ownership structure by selling shares to a large group of outside investors. In this thesis corporate governance is viewed as a relevant design issue at the time of the IPO. Management may strategically decide to ignore small shareholders' rights and structure corporate governance to its own advantage. This allows management to pursue personal interests that (possibly) conflict with those of small shareholders. Alternatively, management may choose to mitigate agency costs by adopting an effective corporate governance structure. In this case, corporate governance is organized to align the interests of management with those of small shareholders. This thesis consists of three studies that examine the use of corporate governance mechanisms in IPO firms in the Netherlands, France and the United Kingdom, respectively.

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