# Takeover defenses and IPO firm value in the Netherlands

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# Takeover defenses and IPO firm value in the Netherlands

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## Abstract

*The central question of this study involves the relation between the use of takeover defenses and IPO firm value. We report that management frequently uses takeover defenses before taking the firm public. The use of takeover defenses is primarily motivated by managerial entrenchment. IPO investors anticipate potential conflict of interests with management and reduce the price they pay for the IPO shares if takeover defenses are adopted. Although managers internalize this cost of takeover defenses to the degree they own pre-IPO stock, they are likely to gain through private control benefits. Non-management pre-IPO owners lose. Their shares are worth less, but different from managers, they do not get offsetting private control benefits. We infer that managers use takeover defenses to protect private control benefits at non-management pre-IPO owners' expense.*

**Keywords:** *initial public offering, takeover defense, firm valuation.*

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## 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, 2001[1]. 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. Especially the newly adopted takeover law of Germany adds to the controversy. German takeover law allows managers to implement defensive measures even if no takeover is pending.

This paper 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. First, the IPO firm's management adopts takeover defenses, as part of a long-term strategy, not because a takeover is imminent. Second, 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 owners. 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 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 the 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 percent 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

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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, when, in theory, 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 direct 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 percent 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 percent in 51 IPO firms (46 percent 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 benefits[2].

The paper 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.

## 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 percent 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 such circumstances 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) 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. 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 at significantly lower market-to-book ratios.

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 direct 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. Takeover defenses in the Netherlands**

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.

## 3.2. *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 one percent 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. *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.

## 3.4. *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 CEO-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.

3.5. *Authorization to issue preference shares*

The authorization to issue preference shares has a limited time horizon. 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. Third, 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 percent of nominal value. The acquirers of preference shares can even arrange for a loan, where the interest on the loan can be paid from the 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.

## 4. Data and sample description

### 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 Euronext Amsterdam (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 Amsterdam[3]. 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). Figure 1 reveals that clustering exists in time periods corresponding to hot issue periods in 1986/87 and 1998/99. During these years the number of IPO firms was substantially larger than in other periods and investors often heavily oversubscribed the issues.

4.2. *Summary statistics*

Table 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 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 percent 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 percent 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 percent. This compares to an average underpricing of 14 percent reported for the United States in the period before the Internet bubble (Loughran and Ritter, 2002).

The median percentage growth in sales during the financial year before the IPO comes to 24.2 percent. Return on sales is defined as earnings before interest, taxes, depreciation and amortization divided by sales and equals 12.4 percent at the median. Long-term debt in the financial year before the IPO averages 12.3 percent of total assets. The median company age is 15 years. On balance, managers hold 44.3 percent of pre-IPO shares. Managers are often

controlling owners. More precisely, pre-IPO management ownership exceeds 50 percent in 51 IPO firms (46 percent of the sample). In comparison, De Jong, DeJong, Mertens and Wasley (2000) report that management ownership averages only 3.8 percent 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 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. 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 has a value of 6.2, whereas the median market-to-book ratio is equal to 3.6.

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.

[Please insert Table 2 about here]

Panel A of Table 2 shows that 45.1 percent of IPO firms and 42.3 percent of other public firms use priority shares. Share certificates are used by 36.9 percent of listed firms as opposed to 28.8 percent of IPO firms. The difference is significant at the 10 percent level. A total of 4.5 percent of IPO firms and 5 percent of listed firms have voting caps in place. Table 2 also shows that IPO firms are less likely to qualify for the structured regime. Only 32.4 as opposed to 65.1 percent 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 percent of IPO firms and 59.5 percent of other public firms.

Panel B of Table 2 reports on the frequency of the number of takeover defenses. More than 90 percent 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 percent 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

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find that 76 percent 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 percent 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.

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 public[4]. However, IPO firms do use less share 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.

## 5. Methodology and variable measurement

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:

$$TDEF_i = \beta_0 + \beta_1 \ln TA_i + \beta_2 LEV_i + \beta_3 SG_i + \beta_4 ROS_i + \beta_5 MAN_i + \beta_6 ICT_i + \beta_7 NOV89_i +$$

$$\beta_8 MANOWN_i + \beta_9 FOUND_i + \beta_{10} VCB_i + \varepsilon_i \tag{1}$$

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 at 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 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 defenses[5].

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 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 at 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.

## 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 size[6]. 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:

$$\text{VALUE}_i = \beta_0 + \beta_1 \ln \text{TA}_i + \beta_2 \text{LEV}_i + \beta_3 \text{SG}_i + \beta_4 \text{ROS}_i + \beta_5 \text{MAN}_i + \beta_6 \text{ICT}_i +$$

$$\beta_7 \text{MANOWN}_i + \beta_8 \text{TDEF}_i + \varepsilon_i \qquad (2)$$

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 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

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authorization to issue preference shares is typically a temporary measure that 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 3.5. 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 percent 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 percent 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 regressions[7]. In general, no serious 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 the paper.

## 6. Empirical results

6.1. *Determinants of IPO firms' use of takeover defenses*

Table 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 regime[8]. This corresponds to 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 they 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 percent level. One interpretation could be that management ownership reinforces the effectiveness of priority shares. Decisions by 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 shareholder' 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.

[Please insert Table 3 about here]

The number of takeover defenses is negatively related to founder status at the 10 percent level of significance. If the founder is a member of the management board, the firm is less likely to adopt takeover defenses. However, founder status lacks statistical significance in the logit regressions for the individual takeover defenses. These findings are inconsistent with our initial expectations. We hypothesized that founders are likely to have firm-specific human capital that would require protection from hostile takeovers. One plausible explanation for the inverse relationship between the use of takeover defenses and founder status is that founders own a larger fraction of their firm's equity than do managers who did not found the company. The correlation matrix shows a correlation coefficient of 0.45 between management stock ownership and founder status. On average, managers that founded the firm own 65.2 percent of the pre-IPO shares as opposed to 28.5 percent of the shares owned by managers that did not found the company (*t*-value for difference=5.27). Management stock ownership may thus act as a substitute for takeover defenses in founder-controlled firms. This result corresponds to the findings of Daines and Klausner (2001). They report a negative relation between founder status and the number of takeover defenses for U.S. IPOs. Our results are contrary to the findings of Taylor and Whittred (1998). They argue that founders in Australian IPO firms are more likely to use dual class equity to protect their firm-specific human capital.

The venture-backing dummy does not relate significantly to the number of takeover defenses. This outcome is surprising. Venture capitalists typically own a substantial amount of the pre-IPO shares and therefore bear part of the costs associated with takeover defenses. For example, in the 48 venture-backed IPOs, the ownership of venture capitalists averages 33.5 percent of pre-IPO shares. If they bear the cost of takeover defenses, venture capitalists are expected to strongly oppose the use of takeover defenses. Coates (2000) offers the following

explanation for the contradictory finding. Venture capitalists are repeat players in the IPO market. If they oppose the use of takeover defenses, entrepreneurs may interpret this as venture capitalists not being sensitive to their interests. These entrepreneurs may then be less likely to look to venture capitalists for pre-IPO financing. Because venture capitalists do not want to jeopardize their good relations with their entrepreneur clientele, they do not object to the use of takeover defenses at the time of the IPO. Correspondingly, Field and Karpoff (2002) and Daines and Klausner (2001) do not find any significant association between the adoption of takeover defenses and venture-backing in U.S. IPOs.

When looking at the control variables, we observe that total assets are positively related to the structured regime. This is largely due to the legal requirement of the structured regime. Only large Dutch corporations qualify for the structured regime. Under the structured regime the incumbent supervisory board elects the new supervisory board members itself. Smaller Dutch firms, which do not qualify for the structured regime, often choose to adopt priority shares instead. Priority shares grant their holders the right to make binding nominations for board positions, provided that the structured regime does not obtain. This may explain the negative coefficient of total assets in the logit regression for priority shares. Leverage is negatively related to the use of takeover defenses, but with the exception of the structured regime, the effect is not statistically significant. This is inconsistent with the 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 percent 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 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. However, one important missing variable from our current analysis concerns management's private benefits of control. 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.

## 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 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 percent 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 one-percent 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. 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.

Panel B of Table 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 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 3 or 4 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 percent level. The median chi-squared tests are significant at the one-percent 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 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 one-percent level when using market-to-book ratios as the dependent variable, the 5 percent level in case of the offer price-to-book ratio and the 10 percent 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 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 one-percent level. 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 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.

## 7. Conclusions

This paper 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 percent 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.

First, 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.

Second, 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. Our results are therefore most concrete for these non-management pre-IPO owners.

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. The widespread use of takeover defenses is thus a clear violation of the proposed European takeover directive.

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**Table 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 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 | 1,476.563 | 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 |

**Table 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 do 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% |
| *t*-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 |

**Table 3: Determinants of takeover defense adoption**

Table shows the results of the Poisson regression and binary logit analyses. Founder status is a dummy variable that takes on the value one if the founder is still a member of board of management. Venture-backing is a dummy variable that takes on the value one if the IPO firm has been backed by a venture capitalist before going public. November 1989 regulation is a dummy variable that has a value of one if the firm went public after November 1989, otherwise zero. See Table 1 for definitions of the other independent variables. In parentheses are the $z$-statistics using Huber/White robust standard errors. *** significant at the 1% level; ** significant at the 5% level; * significant at the 10% level. The $R^2$ measure refers to a pseudo-$R^2$ for the Poisson regression and the McFadden $R^2$ for the binary logit analyses.

| | Dependent variable | | | | | |
|---|---|---|---|---|---|---|
| | Number of takeover defenses | Priority shares | Share certificates | Voting caps | Structured regime | Preference shares |
| Pre-IPO management ownership | -0.08 (-0.64) | 1.35 (1.94)* | -0.96 (-1.32) | -3.40 (-2.71)*** | -1.79 (-2.63)*** | 0.48 (0.70) |
| Founder status | -0.17 (-1.71)* | -0.70 (-1.39) | -0.45 (-0.60) | -0.76 (-0.79) | -0.61 (-0.87) | 0.17 (0.32) |
| Venture-backing | 0.06 (0.59) | -0.22 (-0.49) | 0.18 (0.31) | -0.64 (-0.40) | 1.10 (2.22)** | 0.46 (1.02) |
| *Control variables* | | | | | | |
| Total assets | 0.04 (0.95) | -0.34 (-1.84)* | 0.25 (0.90) | -0.04 (-0.13) | 0.86 (2.41)** | 0.06 (0.33) |
| Leverage | -0.20 (-0.52) | 2.04 (1.18) | -1.34 (-0.57) | -4.25 (-0.80) | -5.96 (-2.13)** | -0.20 (-0.13) |
| Sales growth | -0.12 (-1.15) | 0.51 (0.86) | -0.19 (-0.25) | 0.61 (0.54) | 0.09 (0.11) | -1.53 (-2.50)** |
| Return on sales | -0.10 (-0.33) | 0.84 (0.52) | 5.68 (1.80)* | -1.67 (-0.92) | 3.13 (1.42) | -1.26 (-1.34) |
| Manufacturing industry dummy | -0.09 (-0.85) | -0.60 (-1.17) | -0.07 (-0.11) | -0.87 (-0.91) | 0.64 (0.85) | -0.33 (-0.61) |
| ICT industry dummy | -0.32 (-2.60)*** | -0.06 (-0.11) | -37.54 (-39.34)*** | -0.76 (-0.59) | -0.61 (-0.85) | -0.15 (-0.29) |
| November 1989 Regulation dummy | -0.17 (-1.85) | -0.38 (-0.89) | -1.74 (-2.94)*** | 1.14 (1.11) | -0.73 (-1.20) | 0.47 (1.09) |
| Intercept | 0.65 (2.40)** | 0.95 (0.74) | -0.93 (-0.52) | -1.48 (-0.56) | -3.99 (-1.95)* | 0.01 (0.01) |
| $R^2$ | 0.15 | 0.14 | 0.34 | 0.24 | 0.39 | 0.08 |
| *LR*-value | 11.88 | 21.76** | 45.71*** | 9.85 | 54.46*** | 11.78 |

## Table 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 ratios 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 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 | $t$-test for difference | $z$-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 |
| $F$-test | 3.44** | 2.87** | 1.14 | 2.84** | 2.90** |
| Median $\chi^2$ | 13.39*** | 13.39*** | 16.83*** | 17.67*** | 15.70*** |

**Table 5: Cross-sectional regressions of IPO firm value on takeover defenses**

Table shows the results of estimating equation (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 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 | -0.14 | -0.14 | -0.99 | -0.96 |
| | (-2.68)*** | (-2.06)** | (-1.12) | (-1.69)* | (-1.68) |
| *Control variables* | | | | | |
| Total assets | -0.09 | -0.09 | -0.16 | 0.13 | -0.29 |
| | (-1.76)* | (-1.79)* | (2.17)** | (0.30) | (-0.68) |
| Leverage | 0.33 | 0.25 | 2.62 | 4.00 | 0.44 |
| | (0.62) | (0.46) | (3.76)*** | (0.78) | (0.09) |
| Sales growth | 0.74 | 0.62 | 1.20 | 4.91 | 5.89 |
| | (4.10)*** | (3.51)*** | (4.52)*** | (2.67)*** | (3.39)*** |
| Return on sales | 0.93 | 0.97 | 1.36 | 6.98 | 8.14 |
| | (2.90)*** | (2.92)*** | (3.45)*** | (1.68)* | (2.07)** |
| Manufacturing industry dummy | -0.49 | -0.52 | -0.59 | -1.86 | -2.23 |
| | (-3.08)*** | (-3.33)*** | (-2.70)*** | (-1.55) | (-1.89)* |
| ICT industry dummy | 0.31 | 0.28 | 1.07 | 1.44 | 0.70 |
| | (2.03)** | (1.84)* | (4.25)*** | (0.86) | (0.45) |
| Pre-IPO management ownership | 0.27 | 0.28 | -0.23 | 0.85 | 0.75 |
| | (1.48) | (1.58) | (-0.78) | (0.74) | (0.64) |
| Intercept | 1.60 | 1.53 | 0.42 | 0.95 | 4.01 |
| | (4.38)*** | (4.47)*** | (0.76) | (0.33) | (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*** |

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

**Figure 1: Time distribution of IPOs in the Netherlands**
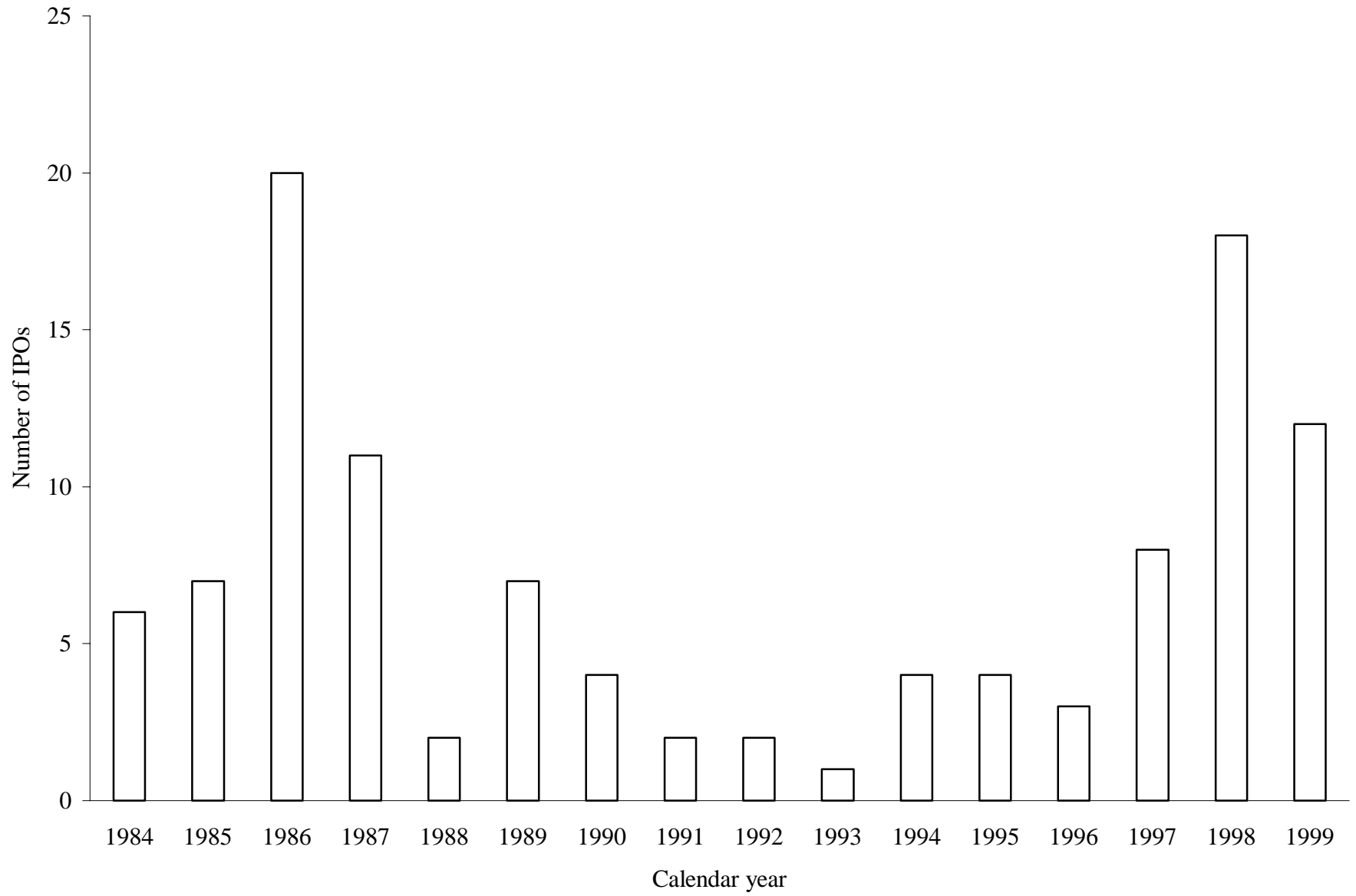
**Footnotes**

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

[2] 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] 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.

[4] 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 the use of dual class shares by Swedish IPO firms, Holmén and Högfeldt (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 Högfeldt (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.

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

[6] 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.

[7] 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.

[8] 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.

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