Essays in Empirical Corporate Finance and Governance

Mattias Nilsson

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New Haven, CT, January 2002

Mattias Nilsson

Introduction and Summary

In recent years there has been a great surge in research on international corporate governance structures. One of the main findings is that publicly traded firms outside the US are typically controlled by a few large shareholders. Moreover, these controlling shareholders tend to be families – often the founders of the firm – who actively participate in the management of the firms (see, e.g., La Porta et al. (1999) and Claessens et al. (2000)). This finding sharply contrasts with the Berle and Means (1932) image of the widely-held corporation, in which ownership is dispersed and professional mangers are in control of firms. By virtue of their large vote ownership, the controlling shareholders are more or less protected against pressure from corporate governance mechanisms such as the market for corporate control or monitoring by other shareholders. As a consequence, the controlling owners have the power to expropriate other shareholders and creditors. This power is limited only by the bounds imposed by the legal system and the controlling owners' financial incentives not to engage in expropriation. However, the legal protection of non-controlling shareholders and creditors tend to be weak in the countries where controlling shareholders are common (La Porta et al. (1998)). Furthermore, the controlling shareholders' financial incentives to refrain from expropriation are often weakened by the fact that they achieve their vote control through the use of dual class shares (i.e., shares with differential voting rights) or stock pyramids, which enable them to control the firms with a minority stake of the equity. The combination of concentrated control, separation of equity ownership and control, and poor legal protection of outside investors suggests that the salient agency problem in many countries is between the controlling shareholders and other investors, rather than between professional managers and dispersed shareholders.

This dissertation consists of five empirical essays in the fields of corporate finance and corporate governance. The above described agency conflict between controlling shareholders and other investors is the central theme of three of the essays. The first essay estimates the valuation consequences of concentrated control; in particular, when the control of votes is separated from ownership of equity. The second essay investigates the relation between

concentrated family control and corporate financing decisions. Essay four examines the link between the negative valuation consequences of corporate diversification and family control. Furthermore, family control is also one of the key issues in the third essay, which analyzes public firms' choice of equity flotation method. Finally, the last essay analyzes the difference in acquirer abnormal returns between takeovers of private targets and takeovers of public targets. All essays are self-contained and can therefore be read in any order.

In "Agency Costs of Controlling Minority Shareholders," coauthored with Henrik Cronqvist, we estimate the agency costs of 'controlling minority shareholders' (CMSs); that is, owners who have a control stake of the firm's votes while owning only a minority fraction of the firm's equity. Using a panel of 309 publicly traded Swedish firms over the period 1991-1997, we find that families in control are almost exclusively CMSs through an extensive use of dual-class shares. After adjusting for firm characteristics and fixed firm effects, increased ownership of votes by a controlling owner is associated with an economically and statistically significant decrease in Tobin's q. However, the decrease in q is significantly larger for firms with family CMSs than for firms with financial institutions or corporations in control, indicating that the agency costs of family CMSs are larger than the agency costs of other controlling owners. We also find some tentative evidence on the source of the larger agency costs of family CMSs. We document that family CMSs (i) are significantly less likely to be taken over compared to other firms; and (ii) end up in severe financial distress significantly more often than firms without families in control do. Given that takeovers on average are profitable for target shareholders and that financial distress is costly, this evidence could partly explain a larger ex ante discount on firms with family CMSs. These results are consistent with family CMSs striving to maintain control longer than what is optimal from the non-controlling shareholders' view.

In the second essay, "Family Ownership, Control Considerations, and Corporate Financing Decisions: An Empirical Analysis," I propose and test the hypothesis that controlling family owners make corporate financing decisions based on protection of their control and future extraction of private benefits. If controlling families enjoy significant control rents, they are likely to choose the form of financing that will pose the smallest possible threat to their control, since maintained control is the prerequisite for their consumption of private benefits. This hypothesis suggests that the families will prefer to finance their firms' operations using internally generated funds, since the use of internal funds will not impact the control structure of the firm or put constraints on self-serving behavior. Lacking sufficient internally generated cash flow, controlling families will use debt financing,

since debt financing does not affect the voting structure of the firm. Finally, external equity financing will only be used when internally generated funds are limited, debt capacity has been exhausted, and the value of the project for which the financing is needed offset the dilution of the families' voting power and extraction of private benefits. One implication of the 'control hypothesis' is that controlling family owners will be more likely to use debt financing in firms with many growth opportunities, since such firms are unlikely to generate the cash flow needed to finance the firms' growth. Conversely, controlling families' will be less likely to use debt financing among firms with few growth opportunities, since such firms are more likely to be mature firms that generate a steady cash flow that can be used to finance investments or to retire debt.

Using a panel of 215 listed Swedish firms over the period 1990-1997, I find that there is a significant positive relation between family vote ownership and leverage for firms with few growth opportunities (low market-to-book firms). Furthermore, this negative association seems to be driven by family controlled firms that have a high level of operating earnings. In contrast, for firms with many profitable growth opportunities (high market-to-book firms), there is a significant positive relation between family vote ownership and leverage. However, similar to the low market-to-book firms, I find that family-controlled high market-to-book firms with a high level of operating earnings use less debt in their capital structures. These results are consistent with the proposed control hypothesis. Furthermore, I find that increased use of debt is associated with a lower corporate investment activity in both low market-to-book and high market-to-book firms. Combined, the results suggest that the capital structures chosen by controlling family owners create a potential overinvestment problem in low market-to-book firms and a potential underinvestment problem in high market-to-book firms. Thus, the evidence in this paper suggests that the capital structure choices made by controlling families are part of the agency problem between controlling and non-controlling shareholders.

The third essay, "The Choice between Rights Offerings and Private Equity Placements," coauthored with Henrik Cronqvist, analyzes the choice between rights offerings and private equity placements, which are the two most common equity financing alternatives around the world. Using almost the entire population of rights offerings and private placements conducted by listed Swedish firms over the period 1986-1997, we estimate a nested logit model of the flotation method choice, in which we allow for firms to choose not only between rights offerings and private placements, but also between different subcategories within each of these two basic flotation methods. Firms choosing a rights offering can, in turn, choose between an uninsured rights offering and a rights offering guaranteed by an underwriter.

Firms choosing a private placement can, in turn, choose between a private placement to a current investor (block shareholder or creditor) and a private placement to a new investor.

We find that: (i) Firms controlled by family owners tend to avoid private placements and underwritten rights offerings and instead choose uninsured rights offerings. Private placements and underwritten right offerings are the methods most likely to create a new blockholder or increase the monitoring of the family. Thus, this result is consistent with controlling families choosing flotation method based on control considerations. (ii) Firms with a high degree of asymmetric information about firm value are more likely to make a private placement than a rights offering. Furthermore, there is also some evidence that firms that choose rights offerings tend to use an underwriter as the degree of asymmetric information increases. These results are consistent with undervalued firms seeking certification from private placement investors or underwriters to overcome underinvestment problems. (iii) Private placements, in particular private placements to new investors, are frequently made in conjunction with the establishment of a product market relationship between purchaser and seller. This finding is consistent with equity ownership reducing contracting costs in new product market relationships.

In the fourth essay, "Why Agency Costs Explain Diversification Discounts," coauthored with Henrik Cronqvist and Peter Högfeldt, we reexamine the previously documented negative valuation effect of corporate diversification (see, e.g., Berger and Ofek (1995) and Lang and Stulz (1994)) by studying diversification within the single industry of real estate. We choose the real estate industry because of its relative transparency: portfolio management of assets with well-defined market prices. Diversification is simply over property types and geographical regions. We find that the major cause of the diversification discount is not diversification per se but anticipated costs due to rent dissipation in future diversifying acquisitions. Firms expected to pursue non-focusing strategies do indeed diversify more and are valued ex ante at a 20% discount over firms anticipated to follow a focusing strategy. We also find that firms expected to follow a non-focusing strategy are predominantly family controlled. Corporate diversification is likely to generate private benefits for the controlling family by reducing the risk of the family's wealth and human capital, or by realizing empire building ambitions. Hence, the family may make diversifying investments even if expected returns are lower than the cost of capital. Therefore, we argue that the ex ante diversification discount is a measure of agency costs associated with the conflict between controlling family owners and other shareholders. This essay appeared in *Real Estate Economics* 29, 2001.

In the final essay, "The Difference in Acquirer Returns between Takeovers of Public Targets and Takeovers of Private Targets," I analyze acquirer abnormal stock returns at the announcement of a takeover when the target is a privately held firm compared to when the target is a publicly held firm. The sample is 202 Swedish takeovers (142 private targets; 60 public targets) over the time period 1990-2000. I find that the average acquirer abnormal return is positive and significant when the target firm is privately held but insignificant when the target firm is listed on a stock exchange. Furthermore, I find that the positive acquirer abnormal returns in takeovers of private targets are especially large in stock offers. These results are robust when performing a cross-sectional analysis of acquirer returns for all takeovers, in which I control for sample selection problems and other variables capable of explaining acquirer returns. The evidence is consistent with greater acquirer bargaining power and resolution of information asymmetries in takeovers of private targets.

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Chapter 1

Agency Costs of Controlling Minority Shareholders*

with Henrik Cronqvist (Graduate School of Business, University of Chicago)

1. Introduction

In most countries, publicly traded firms typically have large controlling shareholders (see, for example, Barca and Becht (2001), Claessens, Djankov, and Lang (2000), and La Porta, Lopez-de-Silanes, and Shleifer, or LLS, (1999)). This sharply contrasts with the Berle and Means (1932) image of the widely held corporation, in which ownership is dispersed and control is concentrated in the hands of managers.[1] These large controlling shareholders frequently own much more control rights than cash flow rights, making them *controlling minority shareholders* (henceforth often referred to as "CMSs"), i.e. owners controlling the firm while owning only a minority of the cash flow rights. Although the existence of CMSs in large, publicly traded firms, such as Fiat in Italy and Ericsson in Sweden, has been well documented, the valuation consequences of these ownership structures have not received much attention.

By using dual class shares or other mechanisms to achieve a deviation from one-share-one-vote and by designing corporate charters to facilitate exercise of control, CMSs can entrench themselves considerably against pressure from corporate governance mechanisms such as the market for corporate control or monitoring by other shareholders. As a consequence, CMSs have the power to expropriate other shareholders and this power is limited only by CMSs financial incentives not to engage in expropriation. Perhaps therefore,

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[1] Holderness, Kroszner and Sheehan (1999) show that ownership of capital is often not dispersed among small shareholders even in the US. For instance, the mean percentage of common stock held by a firm's officers and directors as a group was 21 percent in 1995.

ownership structures with CMSs have come under political pressure and stock market scrutiny in the European Union and in many Asian countries. Worldwide, governments are paying increasing attention towards the poor legal protection of non-controlling shareholders' rights, and there is a trend towards regulation of CMSs. For instance, in the European Union, there have been proposals suggesting a prohibition of a deviation from one-share-one-vote. In 1997, Taiwan's legislature approved a law on mandatory disclosure of stock pyramids and cross-shareholdings (see e.g., Financial Times, May 9, 1997). However, before dismantling these hypothesized harmful structures, a priority for research in corporate governance is to thoroughly investigate the actual agency costs of CMSs. This paper is one of the first attempts to analyze the valuation consequences of CMSs.

We carry out a detailed analysis of the agency costs of CMSs using a panel of 309 publicly traded Swedish firms over the period from 1991 to 1997. We use a large sample of firms within one country, rather than using cross-country data, for several reasons. First, while La Porta, Lopez-de-Silanes, Shleifer, and Vishny, LLSV, (1999) find that median q in Sweden and other civil law countries is significantly lower than in common law countries, their research design does not allow them to say anything about the variation around this median q among firms within a civil law country. By contrast, we show that there is actually a considerable variation around the average discount, since firms that have adopted certain structures of ownership and control instruments are discounted much more by the market than other firms are. Thus, firms within a civil law country can reduce agency costs significantly by avoiding certain control structures. Furthermore, while LLSV (1998, 1999) study the potential a country's legal rules offer for expropriation of non-controlling shareholders, we examine the valuation effects of the governance structure that a particular firm *actually* has adopted. For instance, the anti-director index developed in LLSV (1998) considers only whether the company law or commercial code allows for certain shareholders' rights and not whether any firms in a country implement them in practice.[2] This paper systematically studies corporate control mechanisms included in firms' corporate charters that facilitate entrenchment by controlling owners. We also have data on publicly known private contracts between large shareholders. These shareholder agreements are legally binding and regulate, for example, how the included coalition members should vote or how future sales of shares by coalition members should be conducted. Thus, we take an alternative approach in that all firms in our sample face the same set of legal rules, but show

[2] For example, although dual-class shares are not prohibited in many countries, many firms nevertheless choose to implement one-share-one-vote.

that they have nevertheless adopted drastically different governance structures. We then analyze the valuation effects of the structures firms de facto have adopted.

Second, Sweden is an excellent research environment because CMSs are common. One indication of this is Table IV in LLS (1999). Sweden is the only country being a "top-three" country in all three of the categories one-share-one-vote,[3] cross-shareholdings, and stock pyramids. Bebchuk et al. (2000) argue that the valuation effects should be independent of whether dual class shares, cross-shareholdings, and stock pyramids are used since these control instruments are effectively substitutes when creating a controlling minority structure. The Swedish case is often referred to by Bebchuk et al., La Porta et al., and others when discussing CMSs.

Finally, by choosing Sweden we are also able to use an internationally unique source of ownership and control instrument data. Since the 1970s, the *Swedish Securities Register Center* keeps a register of all shareholders owning ≥ 500 shares in Swedish publicly traded firms. Swedish law gives the public unconditional access to the *Public Shareholders' Register*, which forms the basis of our source of ownership data; the annual publication "Owners and Power in Sweden's Listed Companies" by *DN Ägarservice* (Sundqvist and Sundin, 1985-1998). Section 4 and the Appendix discuss several unique features of our ownership data. One example is that all shares held by family members -- whether or not they have the same last name -- and other closely related owners are grouped into one single record, where any indirect shareholdings through firms and foundations are also taken into account. Our data thus minimizes the measurement error that is present in the explanatory variables measuring ownership structures in other studies. Another advantage is that the disclosure of the ownership structure guaranteed by Swedish law also eliminates investors' uncertainty about the true ownership structure of a particular firm that they are valuing, which enables us to identify valuation effects with great precision.

We find that families in control are almost exclusively CMSs. In addition to extensive use of dual-class shares, they also implement other control instruments, which facilitate their entrenchment, more often than corporations and financial institutions in control do. After adjusting for firm characteristics and fixed firm effects, increased ownership of votes by a controlling owner is associated with an economically and statistically significant decrease in Tobin's q. However, the decrease in q is significantly larger for firms with family CMSs than for firms with financial institutions or corporations in control. The following example

[3] See Bergström and Rydqvist (1990) for an early study of dual-class shares in Sweden.

illustrates the large valuation effects of family CMSs. Consider a firm with a Tobin's q equal to the median value in our sample (1.095) that has a founder as a controlling owner with the median level of votes of its category (67.8%). If the founder divests its controlling block of votes and no new controlling owner emerges in the firm, our findings imply a resulting increase in Tobin's q of about 25%.

How can we explain this magnitude of value destruction? One explanation could be that firms with CMSs generate lower cash flows for investors. We find evidence that increased ownership by all controlling owner categories is associated with a decrease in operating performance, as measured by the return on assets. However, there is no significant difference in the magnitude of the negative effect between different controlling owner categories. This evidence may therefore explain the general discount associated with controlling ownership rather than the larger agency costs of family CMSs. It is important to realize that the lower operating performance is not likely to be explained by "stealing", i.e. outright diversion of the firm's cash flow into the pockets of the controlling owners. While stealing may be an explanation for agency costs in the developing economies studied in, for example, Johnson et al. (2000), we consider it unlikely to be the main explanation in developed countries.[4] Instead, we argue that the lower operating performance is likely to stem from inefficient investment decisions.[5]

Finally, we find some evidence on the source of the larger agency costs of family CMSs. We document that family CMSs (i) are significantly less likely to be taken over compared to other firms; and (ii) end up in severe financial distress significantly more often than firms without families in control do. Given that takeovers on average are profitable for target shareholders and that financial distress is costly, this evidence could explain a larger ex ante discount on firms with family CMSs. These results are consistent with family CMSs striving to maintain control longer than what is optimal from non-controlling shareholders' view.

An empirical study related to ours is a paper by Claessens, Djankov, Fan, and Lang (1999). Using a data-set of 2,658 East-Asian corporations in 1996, they find that, for the largest blockholder, and in particular for family blockholders, higher concentrations of control and deviations of control rights from cash-flow rights are negatively associated with market valuation. Their results complement our findings by showing costs of CMSs in what

[4] Sweden is typically top-ranked in international comparisons of legal enforcement and accounting standards (see, e.g., LLSV, 1998).

[5] See Nilsson (2001) for evidence that suggests that the family owners' corporate financing choices lead to suboptimal investment decisions.

is mainly emerging markets, where expected agency costs are likely to be larger than in a developed country such as Sweden.

One important issue when empirically examining the relation between ownership structure and firm valuation is the possibility that the ownership structure is one dimension of the contracts chosen cooperatively by the shareholders to maximize firm value. This argument implies that there should be no exogenous effects of ownership structures on firm value (see Demsetz and Lehn, 1985). Considering this argument, Himmelberg, Hubbard, and Palia (1999) recently re-examined the seminal work by Morck, Shleifer and Vishny (1988a) on the relation between managerial ownership and firm performance. When running fixed firm effects regressions, and thereby controlling for unobservable firm heterogeneity in the contracting environment that can otherwise cause endogeneity problems, they do not find a relation between a firm's ownership structure and Tobin's q.[6] However, using similar panel data techniques we find a significant association between family ownership (which is equivalent with insider ownership) and Tobin's q. We argue that this difference in results is due to institutional differences. The family CMSs have not been awarded their ownership as a part of a compensation scheme aimed at aligning their interests with those of other shareholders. Instead, they optimize their own level of ownership such that the sum of their utility from private benefit extraction and their fraction of the cash flow is maximized. This is obviously not a sufficient condition for cash flow value maximization.

The remainder of the paper is organized as follows. Section 2 presents hypotheses regarding costs and benefits of CMSs. The sample is described in Section 3. A characterization of controlling owners and to what extent they are CMSs are presented in Section 4. In Section 5, we present our empirical evidence on the agency costs of CMSs. Section 6 concludes the paper.

2. Hypotheses

In this section, we discuss some theoretical arguments regarding potential costs and benefits of controlling minority shareholders. We also discuss the importance of controlling owner identity for the magnitude of the potential agency costs.[7]

[6] Cho (1998) and Aggrawal and Knoeber (1996) also find that insider ownership and firm performance is endogenously determined when employing simultaneous regression methods on US data.

[7] The arguments in this section build upon the assumption of an existing CMS. See Grossman and Hart (1988) for an analysis of differential voting rights in the case where ownership is initially dispersed.

2.1 Costs and benefits of controlling minority shareholders

Bebchuk et al. (2000) argue that a controlling minority structure has the potential to create large agency costs. The structure combines the agency problem of the firm being controlled by an insider who owns a fraction of the equity (see Jensen and Meckling, 1976), with the agency problem of the firm being controlled by an insider who is insulated from the influence of other shareholders and the market of corporate control (see Stulz, 1988). Bebchuk et al. further show that a CMS structure can distort decisions regarding firm size, choice of projects, and transfers of control. In a related paper, Bebchuk (1999) shows that when there are significant private benefits of control, a controlling owner fearing a control grab by outsiders will strive to maintain her control, regardless of it being efficient or not for other shareholders. When the size of control benefits makes it desirable to maintain a lock on control, a CMS structure enables the controlling party to maintain such a lock without incurring risk bearing costs or liquidity costs. A controlling minority structure also means that a controlling owner is less likely to relinquish control even if it is efficient, since a majority of the efficiency gains will go to other shareholders whereas the controller will fully internalize the loss of private benefits if relinquishing control. The implications of these arguments are that it is mainly controlling owners who derive large private benefits of control who will be CMSs and that CMSs can exist even if their control over firms are costly. Finally, LLSV (1999) model how outside shareholders will be expropriated by controlling shareholders in countries with lax minority shareholder protection and that this expropriation will be more extensive if the controlling party owns less cash flow rights.

The arguments above suggest that CMSs are associated with significant agency costs. There are however opposing arguments. In an environment with low investor protection, concentrated ownership may be the only disciplining factor that limits expropriation by managers. For example, Gomes (2000) models how retaining a controlling share of votes enables managers to gain a reputation for treating non-controlling shareholders well, and therefore can get a higher price when selling shares in the future. Concentrated ownership then provides a guarantee for not expropriating minority shareholders, because of the prospect of selling additional shares for a higher price in the future. The use of dual class shares would improve the effect of this mechanism, since managers can start divesting shares while still retaining control. An incumbent owner's lock on control could also be beneficial to minority shareholders if a potential acquirer is a "bad raider" in the sense that the raider would produce less cash flow benefits and/or expropriate more than the incumbent controlling owner does. The likelihood of bad raiders should be larger in an environment of

lax non-controlling shareholder protection. A CMS structure is beneficial in this case since it enables "good" incumbent owners to retain control with a smaller equity stake.

We conclude that there are both potential costs and benefits associated with a CMS structure for non-controlling shareholders. It is therefore left as an empirical exercise to determine if there are actual agency costs of CMSs, which is the purpose of the present paper.

2.2 Controlling owner identity and agency costs

Due to possible differences in the potential for self-serving behavior and extraction of private benefits, the agency costs of CMSs can differ between different types of controlling owners. For example, controlling family owners are likely to be involved in the management of the firm as executive officers and/or directors, giving them a large discretion over the firms' decisions, which facilitate expropriating behavior. This direct involvement in the management of the firm may therefore lead to agency costs of CMSs being larger for family CMSs than for other categories of CMSs. However, agency costs may also differ between different family categories. Outside the US and the UK, the controlling owner is often the original founder of the firm or his descendants (LLS, 1999). On the one hand, founders, especially descendants of the founders, can easily entrench themselves and thus deviate from maximization of firm value (Morck et al., 1988a). By setting up the firm in the first place, the founder can optimally design the organization to facilitate his extraction of private benefits. Hence, if the founder at the IPO chooses to retain a certain control stake, which maximizes his private wealth, this does not necessarily coincide with firm value maximization (Zingales, 1995). Moreover, Morck et al. (1988b) find that a firm controlled by the founder is less likely than the average firm to be taken over. On the other hand, founders can contribute with important firm-specific know-how that countervails the potential negative effects from founder control. Because the level of agency costs may be influenced (positively or negatively) by whether the controlling owner belongs to the founding family or not, we distinguish ownership by families that are founders of the firm (or descendants of the founders) from ownership by families who are unaffiliated with the original founders of the firm.

Besides families, widely held corporations and financial institutions may control firms. These organizations are run by professional managers who are not entrenched through a controlling ownership stake. Therefore, agency problems within these organizations should be limited by the threat of dismissal faced by the managers of these organizations. For this reason, we expect corporations and financial institutions in control to aim more at firm value

maximization in the firms they control, for instance, by accepting takeover bids if the bidder increases firm value or by monitoring the management (Shleifer and Vishny, 1986). This could make agency costs of institutional control lower than the agency costs of entrenched family control. On the other hand, a possible cost of large institutional ownership is that fierce monitoring of the management may reduce managerial incentive and non-contractible investments (Burkart, Gromb and Panunzi, 1997). Hence, the actual cost associated with institutional blockholders in control depends on the trade off between potential valuable monitoring on the one hand and potential self-serving behavior and over-monitoring on the other.

It can be argued that corporations as organizations enjoy various private benefits of control, such as making different kinds of deals between parent firm and subsidiary, which may be beneficial to the parent firm but not to the subsidiary's minority shareholders. To control for this possibility, we will also distinguish between controlling ownership by corporations and controlling ownership by financial institutions in the empirical analysis.

3. Sample and firm characteristics

3.1 Sample

Our final sample is a panel of 309 Swedish firms traded on the Stockholm Stock Exchange (SSE) during 1991-1997, with a total of 1,317 firm-year observations. Free entry and exit is allowed. To arrive at the final sample, we have eliminated 62 firm-year observations that are financial institutions, i.e. banks or insurance companies. In addition, we have excluded 55 firm-year observations for which we have incomplete accounting data. Our final sample includes approximately 95% of the Swedish firms publicly traded on the SSE during the time period studied. Data on firms' market value of equity is from December 31. Accounting data is from the end of the fiscal years. This data was collected from the SIX TRUST database.

3.2 Tobin's q and firm characteristics

We use Tobin's *q*, the ratio of the market value of total assets to the replacement cost of total assets, to proxy for firm value in our regression models of the relation between firm value and CMS ownership. Tobin's *q* is a measure of the contribution of intangible assets, e.g. growth options and human capital, to the market value of the firm. CMSs can directly affect the firm's intangible assets through their decisions. Therefore, Tobin's *q* captures the expected capitalized value of the CMSs' discretion; i.e. it captures the hypothesized agency

costs. Our proxy for firm value is a simple q since the replacement cost of total assets and the market value of total debt are approximated by their book values. However, Perfect and Wiles (1994) find that when dealing with *changes* in q, the improvement of using advanced algorithms of q is very limited. Hence, since we are running fixed firm effects regressions, which is equivalent to using the deviations from the firms' mean values as variables, the use of a simple q rather than a more advanced measure should not pose a serious problem. In addition, Swedish accounting standards are internationally in the top position,[8] which suggests that the book values of total assets for Swedish firms reflect the replacement cost of total assets relatively well compared to firms from other countries.[9] For firms with dual-class shares that do not have their high voting shares ("A-shares") traded on the SSE, the stock price of the A-shares is approximated each year by the stock price of the traded low voting shares ("B-shares"), increased with the average premium on traded A-shares for that year (the average premium varies between 2-10% depending on year).

Table 1 contains summary statistics for Tobin's q and other important firm characteristics. We observe that the median q in the sample is approximately equal to one. The high standard deviation of book value of total assets illustrates the large dispersion in company size. The firms in the sample range from multinationals such as Volvo to tiny firms like Havsfrun, which is a real estate firm that owns and manages only one building in Stockholm. The ratio of capital expenditures to total assets is measured including R&D expenditures when they are reported. The mean and median levels of leverage seem to be in line with the levels of similar measures of financial leverage in the US, UK and Canada, but lower than what has been reported for Japan, Germany, France and Italy (see Rajan and Zingales, 1995). The log of size and the other firm characteristics are used as control variables in the regressions on Tobin's q, in which we also include the squared term of the log of size to control for non-linear effects. Similar versions of these variables have previously been used as control variables in regressions of ownership on Tobin's q by, for example, Himmelberg et al. (1999).

[8] See the 1990 survey of accounting standards around the world by the Center for International Financial Analysis and Research (CIFAR).

[9] This argument concerns the validity of our measure. However, the quality of the accounting data also implies that the measurement error in the variable itself, the simple q, should be low; i.e. the variable is statistically reliable.

Table 1. Definitions and summary statistics for Tobin's *q* and other firm characteristics.

The sample consists of 1,317 observations for 309 companies listed on the Stockholm Stock Exchange during the period from 1991 to 1997. The variables were obtained from SIX's FINLIS database, with market value of equity measured as of December 31 each of the years and with balance sheet items defined as of the end of each fiscal year.

Firm Characteristic	Definition	Mean	Median	Std. Dev.	Correlation with Tobin's *Q*
Tobin's *q*	(Market value of equity + Book value of total debt) ÷ Book value of total assets	1.380	1.095	0.860	-
Firm size (1997 MSEK)	Book value of total assets	7,136	1,412	17,094	-0.037
Leverage	Book value of non-equity liabilities ÷ Book value of total assets	0.579	0.605	0.196	-0.322
Return on assets (ROA)	Earnings before interest, taxes, and depreciation ÷ Book value of total assets	0.099	0.098	0.111	0.092
Sales / total assets	Total sales ÷ Book value of total assets	1.058	1.044	0.772	0.164
CAPEX / total assets	Total capital expenditures (including R&D expenditures) ÷ Book value of total assets	0.125	0.085	0.139	0.045
PPE / total assets	Property, plant, and equipment ÷ Book value of total assets	0.492	0.465	0.260	-0.217

4. Description of corporate control structures

In this section, we first describe the overall use of dual class shares and other complementary control instruments in our sample firms. We then classify firms by different controlling owner categories and show to what extent each controlling owner category uses dual class shares to become *controlling minority shareholders*. We also show the extent to which the controlling owners use the complementary control instruments to further entrench their control.

A benefit of studying controlling owners using Swedish data is that all shareholdings of 500 shares or more in any public firm are registered in public records. These records form the basis for our source of ownership data, the book series "Owners and Power in Sweden's Listed Companies" by Sundqvist and Sundin (1985-1998), which reports the 25 largest owners, ranked by voting rights, for publicly traded firms on the Stockholm Stock Exchange. The useful feature of this book series is that the authors group the shares held by relatives or other closely related owners into one single record. They also take into account indirect

shareholdings through firms and foundations when doing so. This feature enables us to identify the ultimate controlling owners of a firm. See the Appendix for a more thorough description of the ownership data used in this paper.

4.1 Description of control instruments

Table 2 shows definitions and summary statistics for the main control instruments used in listed Swedish firms over our sample period. The data was collected from Sundqvist and Sundin (1991-1998), the corporations' own company charters or web pages, and the commercial telegram and news-article database *Affärsdata.* To our knowledge, this paper is the first paper outside the US to obtain complete information on control instruments in order to determine the degree of entrenchment of different shareholder categories. For a comparison, see Field (1999) for a detailed description of the control instruments implemented by a large sample of newly introduced US firms.

A vast majority, 75.7%, of the firm-year observations have issued dual-class shares, where most firms have high voting shares with ten votes per share ("A-shares") and low

Table 2. Definitions and summary statistics for control instruments

This table reports definitions of control instruments and their proportions for the full sample of 1,317 firm-year observations. The data was collected from the book series "Owners and Power in Sweden's Listed Companies" (Sundqvist and Sundin (1991-1998)), the corporations' own company charters or web pages and the commercial telegram and news-article database *Affärsdata.*

Variable	Definition	*N*	Proportion
Dual-class shares	The firm has issued shares with different voting rights, i.e. there is a deviation from one-share-one-vote: A-shares = high voting shares (10 votes); B-shares = low voting shares (1 vote).	997	75.7%
Non-traded high voting shares (conditional on that the firm has dual-class shares)	The high voting shares are not publicly traded on the Stockholm Stock Exchange, and hence closely held.	703	70.5%
Right of preemption (conditional on that the firm has non-traded high voting shares)	The owners of non-traded high voting shares have the option to buy back non-traded high voting shares sold by a coalition member to a third party. Allowed only if high voting shares are non-traded.	246	35.1%
Shareholder agreement	Large shareholders have a legal agreement between them deciding on how to vote (a voting pact) or restrict a coalition member's sale of (listed) high voting shares to a third party.	290	22.2%
Voting restriction	No shareholder can vote for more than 20% of the *number* of shares represented at the general meeting.	119	9.0%

voting shares with one vote per share ("B-shares").[10] The A- and B-shares only differ with respect to voting rights; there is no difference in cash flow rights. If a firm has dual-class shares, there are two control instruments that can be used to restrict an owner coalition member's sale of high voting shares to a third party. First, the controlling owner can decide to have *non-traded high voting shares,* i.e. all the high voting shares are closely held. To take over the firm, an acquirer must thus negotiate directly with the owners of the non-traded A-shares. Among the firm-year observations with dual-class shares, 70.5% have non-traded A-shares. If the high-voting shares are not traded, the controlling owner can in addition put a *right of preemption* amendment in the corporate charter. This amendment means that the owners of non-traded A-shares have the option to buy back non-traded A-shares sold by a coalition member to a third party. Among the firm-year observations with non-traded high voting shares, 35.1% have right of preemption amendments in their company charters.

Furthermore, 9.0% of the firms-year observations have a *voting restriction* included in their company charters, meaning that no shareholder can vote for more than, typically, 20% of the *number* of shares represented at the general meeting. Thereby, it is impossible for shareholders with low voting shares to take over the firm even if the CMS controls less than 50% of the votes since it is sufficient that the CMS owns the high voting shares.[11]

By focusing only on control provisions in the company charters, we would fail to recognize the existence of a legal arrangement between two or several blockholders. Table 2 shows the importance of such *shareholder agreements.* Almost a quarter, or 22.2%, of the firm-year observations have two or more blockholders with a publicly known shareholder agreement between them. A shareholder agreement is possible regardless of the high-voting shares being traded or not and typically regulates how to vote (a voting pact) or restricts a coalition member's sale of high voting shares to a third party (a right of preemption similar to the corporate charter amendment).

4.2 Description of controlling owners

We consider an owner with ≥ 25% of the firm's votes to be a *controlling owner.* Controlling 25% of the votes should be enough for an owner to exert the main influence on

[10] Among the firms with dual-class shares, 5.9% have a voting relationship between A-shares and B-shares of 5:1 (31 firm-year observations), 1000:1 (21 firm-year observations), and 100:1 (7 firm-year observations).

[11] Consider the following firm with voting rights to cash flow rights = 10:1. Shareholder A owns the only A-share and shareholder B owns, say, 20 B-shares. Without a voting restriction, shareholder B wins a control contest. However, with a voting restriction, B can only vote for 20% of the *number* of shares represented at the general meeting ($=0.2 \times 21 = 4.2 \approx 4$). Thus – if 100% of the total number of shares is represented at the general meeting – A can use his A-share to get 10 votes, while B can only vote for 4 of his 20 B-shares. Hence, A has entrenched himself and wins a control contest.

the firm's decisions.[12] Note that we do not mean that an owner has full control once she has 25% of the votes. In fact, we hypothesize that the actual power and entrenchment of a controlling owner is an increasing function of her vote ownership. For example, although owning 50% of the votes is enough to exert full control in most circumstances, some changes to the corporate charter require a supermajority (typically two-thirds or three-fourths of the votes, but in some cases 90% of the votes). Also, if the controlling owner consists of several allied individuals, the controlling coalition may want to own more votes in total than what is actually needed for control of the firm to hedge against deviations by single coalition members. Furthermore, controlling a surplus of votes today allows dilution tomorrow, which is important for wealth-constrained controlling owners that cannot take part of future equity issues, and it also enables paying with shares in future acquisitions of other firms.

We split the controlling owners into four categories: founder families, non-founder families, corporations, and financial institutions. If two or more owner categories each control 25-50% of the voting rights, the largest owner is considered to be the controlling owner. If there is no controlling owner, the firm-year observation is considered to have a dispersed ownership structure. Family ownership is defined as the fraction of the firm's votes owned (i) directly by the family members and (ii) indirectly by trusts and other organizations, e.g. corporations, controlled by the family. We use this definition of control to identify the *ultimate owner* of a firm. Henceforth, we use the term 'family ownership' although it sometimes includes only a single individual or a close-knit group of individuals who are not relatives. We define 'founder family' ownership as ownership by the founder (or descendants of the founder) and families and individuals affiliated with the founder. Non-founder family ownership is defined as the total block ownership (≥5% of the votes) by families unaffiliated with the founder's family. When the latter category consists of more than one distinct coalition, we assume that the coalitions have aligned interests. However, in most cases the non-founder family category consists of only one family coalition. Corporate ownership is classified as total block ownership by corporations lacking an ultimate owner. In a few cases, this category also includes ownership by the government and other public organizations, e.g. labor unions. We group these owners together to limit the number of different owner categories, with the assumption that the non-corporate owners have the same incentives to expropriate non-controlling shareholders as the corporate owners.[13] Controlling

[12] As a comparison, LLS (1999) use 20% vote ownership as their definition of a controlling owner.

[13] Our empirical results are not sensitive to whether the non-corporate organizations are treated as a separate controlling owner category.

Table 3. Description of corporate control structure for different controlling owner categories

This table reports descriptive statistics regarding vote and capital ownership, the use of dual class shares, deviation from one-share-one-vote, and frequency of control instruments for different controlling owner categories. In order for a firm-year observation to be classified as having a controlling owner of a specific identity, the owners of that category need to together control ≥ 25% of the voting rights. If there are two or more owners from different categories that each control ≥ 25% of the voting rights, the firm is classified according to the identity of the largest owner. If there is no controlling owner, the firm is classified as having dispersed ownership. Founder family ownership is defined as total block ownership (≥ 5% of votes) by the founder (or descendants of the founder) and families and individuals closely affiliated with the founder. Non-founder family ownership is defined as the total block ownership by families and individuals unaffiliated with the founder. Corporate ownership is defined as total block ownership by widely held corporations, government agencies, and other public organizations (e.g. labor unions). Ownership by financial institutions is defined as total vote blockholdings by mutual funds, pension funds, and widely held insurance companies and banks. Panel A reports the number of firm-year observations per controlling owner category and also the average (median) ownership of votes by the respective controlling owner group. Panel B reports the deviation from one-share-one-vote in the different controlling owner categories by documenting the frequency of dual-class shares and the average (median) controlling owner votes-to-capital for observations with dual-class shares. Panel C reports the frequency of various other control instruments. See Table 2 for definitions of the different instruments.

	Controlling owner (≥ 25% of votes)				
	Founder family	Non-founder family	Corporation	Financial institution	Dispersed ownership
Panel A: Frequency of controlling owners and controlling owners' ownership of votes and capital					
Number of firm-year observations (Proportion of total number of observations)	452 (34.3%)	323 (24.5%)	255 (19.4%)	120 (9.1%)	167 (12.7%)
Average (median) ownership of votes	65.0% (67.8%)	55.4% (52.6%)	57.0% (53.3%)	48.8% (42.1%)	N/A
Average (median) ownership of capital	41.0% (39.9%)	33.6% (31.1%)	44.1% (42.6%)	41.5% (38.5%)	N/A
Panel B: Use of dual class shares					
Dual-class shares	92.5%	86.4%	66.7%	55.0%	40.2%
Controlling shareholder's mean (median) votes-to-capital ratio (conditional on that the firm has dual-class shares)	1.83 (1.65)	2.66 (1.77)	1.69 (1.45)	1.58 (1.29)	N/A
Panel C: Frequency of complementary control instruments					
Non-traded high voting shares (conditional on that the firm has dual class shares)	85.7%	57.7%	68.2%	69.7%	34.4%
Right of preemption (conditional on that the firm has non-traded high voting shares)	38.0%	39.1%	25.9%	28.3%	18.2%
Shareholder agreement	30.3%	24.2%	20.8%	13.3%	3.6%
Voting restriction	9.3%	10.2%	9.4%	5.0%	8.4%
At least one of right of preemption, shareholder agreement, or voting restriction (calculated for all firm-year observations in a category)	69.7%	53.9%	31.4%	25.0%	13.1%

ownership by financial institutions is classified as total block ownership by mutual funds, pension funds, insurance companies, and banks.

Panel A of Table 3 reports the number of firm-year observations and the mean (median) vote and capital ownership for each of the controlling owner categories. A majority (58.8%) of the 1,317 firm-year observations has one of the family categories as the controlling owner. Only 167 (12.7%) of the firm-year observations in the sample lack a controlling owner. From panel A, we also infer that most families and corporate owners in control are actually majority owners in terms of votes, whereas less than half of the financial investors in control own a majority of the votes. As a comparison, Holderness and Sheehan (1988) find that approximately 13% of listed firms in the US have a majority shareholder. We also note that all four categories of controlling owners have a lower ownership of capital than votes, but that the family categories achieve a larger degree of control with a smaller equity stake than the other two categories.

Panel B of Table 3 provides further descriptive evidence on the use of a controlling minority structure across the owner categories. The two family categories use dual-class shares more often than the institutional owner categories; 92.5% and 86.4% for the founder and non-founder family categories, respectively, compared to 66.7% for corporate owners and 55.0% for financial institutions. Only 40.2% of the firm-year observations without controlling owners have dual-class shares. Furthermore, given that a firm has dual class shares, the deviation from one-share-one-vote is larger for the family categories than for the other two categories, especially the financial institution category.

In Panel C, we report the use of the complementary control instruments listed in Table 2. Among the controlling owners, founder families seem the most likely to implement these instruments, whereas financial institutions in control seem the least likely to do so. Altogether, the frequency of control instruments is much lower for firms in the dispersed owner category, which is evidence of the control motive behind implementing these instruments.

Because the use of dual class shares and the other control instruments could be influenced by firm heterogeneity other than the identity of the controlling owner, we perform probit analyses on the incidence of firms implementing the different control instruments. We control for two variables potentially impacting the use of control instruments: firm size (i.e., the book value of total assets) and firm age. Firm size may be related to the use of control instruments, for example, if controlling owners are financially constrained. The larger the firm is, the more likely it is that financially constrained owners have to rely on dual class shares and

other control instruments to maintain control. The age of the firm may be related to the use of control instruments because of historical differences in regulation and market trends.

Table 4 reports average and median firm size for the different controlling owner categories. Because average firm size is highly influenced by the existence of a few very large firms and a few very old firms likewise influence average firm age, we comment on the differences in the median values rather than the average values. The median founder controlled firm is less than half the size of the median firms in the other categories. Widely held corporations seem to control the largest firms. However, it is interesting to note that the median size of firms controlled by family blockholders is at par with firms controlled by financial institutions or firms without controlling shareholders. Hence, it is not mainly the small firms on the SSE that are family controlled. Turning to firm age, we see that median firm age is the lowest in the group without controlling owners. This result could indicate a trend towards market pressure on owners of newly introduced firms to divest more of their ownership, assuming that newly introduced firms are young firms. But the result is also supportive of Bebchuk's (1999) prediction that dispersed ownership structures are unstable in environments with large private benefits of control and will not last as time passes. Finally, we note that non-founder families and corporations control the oldest firms.

Table 4. Firm age and size for different controlling owner categories

This table reports average and median firm age and size for different controlling owner categories. In order for a firm-year observation to be classified as having a controlling owner of a specific identity, the owners of that category need to together control ≥ 25% of the voting rights. If there are two or more owners from different categories that each control ≥ 25% of the voting rights, the firm is classified according to the identity of the largest owner. If there is no controlling owner, the firm is classified as having dispersed ownership. Founder family ownership is defined as total block ownership (≥ 5% of votes) by the founder (or descendants of the founder) and families and individuals closely affiliated with the founder. Non-founder family ownership is defined as the total block ownership by families and individuals unaffiliated with the founder. Corporate ownership is defined as total block ownership by widely held corporations, government agencies, and other public organizations (e.g. labor unions). Ownership by financial institutions is defined as total vote blockholdings by mutual funds, pension funds, and widely held insurance companies and banks. Firm age is defined as years since incorporation and is censored above at 100 years to limit the impact of a few very old firms. Firm size is measured as book value of total assets measured in 1997 SEK.

	Controlling owner (≥ 25% of votes)				
	Founder family	Non-founder family	Corporation	Financial institution	Dispersed ownership
Average (median) firm size (MSEK)	3,412.7 (795.4)	10,385.6 (1,779.3)	7,640.1 (3,411.0)	5,019.0 (1,584.7)	11,681.5 (1,972.2)
Average (median) firm age (years)	35.9 (30.0)	44.0 (40.0)	43.8 (42.0)	35.7 (24.0)	37.9 (22.0)

Table 5. Probit analyses of the choice of dual class shares and other control instruments.

Panel A reports the results from probit analyses of the choice of dual class shares and other control instruments. The table displays marginal effects evaluated with respect to the discrete change of going from zero to one for dummy variables and evaluated at the total sample mean for continuous variables. The dependent variables are equal to one if the firm has chosen the respective control instruments. The explanatory variables are dummy variables for type of controlling owner, log of firm size, and log of firm age. Year dummies and a constant are also included, but not reported. In order for a firm-year observation to be classified as having a controlling owner of a specific identity, the owners of that category need to together control ≥ 25% of the voting rights. If there are two or more owners from different categories that each control ≥ 25% of the voting rights, the firm is classified according to the identity of the largest owner. If there is no controlling owner, the firm is classified as having dispersed ownership. Founder family ownership is defined as total block ownership (≥ 5% of votes) by the founder (or descendants of the founder) and families and individuals closely affiliated with the founder. Non-founder family ownership is defined as the total block ownership by families and individuals unaffiliated with the founder. Corporate ownership is defined as total block ownership by widely held corporations, government agencies, and other public organizations (e.g. labor unions). Ownership by financial institutions is defined as total vote blockholdings by mutual funds, pension funds, and widely held insurance companies and banks. *p*-values from double-sided *t*-tests are given in parentheses. Panel B reports *p*-values from Wald-tests of pair-wise differences of the coefficient estimates for the controlling owner dummy variables.

Panel A: Estimated marginal effects

	Dependent variable:		
Explanatory variable:	Dual class shares	Non-traded high voting shares	At least one of Right of preemption, Shareholder agreement, or Voting restriction
Dummy variable for Founder family controlling owner	0.365 (0.000)	0.347 (0.000)	0.409 (0.000)
Dummy variable for Non-founder family controlling owner	0.265 (0.000)	0.138 (0.009)	0.335 (0.000)
Dummy variable for Corporate controlling owner	0.133 (0.000)	0.234 (0.000)	0.264 (0.000)
Dummy variable for Financial institution controlling owner	0.086 (0.021)	0.175 (0.000)	0.178 (0.011)
Log (Firm size)	0.009 (0.240)	-0.168 (0.000)	-0.052 (0.000)
Log (Firm age)	0.078 (0.000)	0.080 (0.000)	0.069 (0.000)
Likelihood Ratio Test Statistic (*p*-value)	353.43 (0.000)	431.3 (0.000)	153.19 (0.000)
Number of firm-year observations	1,317	997	1,317

Panel A of Table 5 presents the estimated marginal effects from a probit analysis of the use of dual class share in which we include dummy variables indicating controlling owner category along with the log of firm size and the log of firm age as explanatory variables. Year dummies for 1992-1997 and a constant are also included but not reported in the table. The dependent variable is equal to one if the firm has implemented dual class. The marginal effects are evaluated with respect to the discrete change of going from zero to one for the dummy variables and evaluated at the total sample mean for the two continuous variables.

Table 5. Continued

Panel B: *p*-values from Wald tests of pair-wise differences of coefficient estimates for controlling owner dummy variables

Dual class shares:

Controlling owner	Founder family	Non-founder family	Corporation	Financial institution
Founder family	-	0.001	0.000	0.000
Non-founder family	0.001	-	0.000	0.000
Corporation	0.000	0.000	-	0.135
Financial institution	0.000	0.000	0.135	-

Non-traded high voting shares:

Controlling owner	Founder family	Non-founder family	Corporation	Financial institution
Founder family	-	0.000	0.264	0.026
Non-founder family	0.000	-	0.000	0.067
Corporate owner	0.264	0.000	-	0.170
Financial institution	0.026	0.067	0.170	-

At least one of Right of preemption, Shareholder agreement or Voting restriction;

Controlling owner	Founder family	Non-founder family	Corporation	Financial institution
Founder family	-	0.021	0.000	0.000
Non-founder family	0.021	-	0.082	0.004
Corporate owner	0.000	0.082	-	0.137
Financial institution	0.000	0.004	0.137	-

We see that the presence of a controlling owner significantly increases the likelihood of dual class shares being used, but that the estimated marginal effects for the family categories, especially the founder category, are much larger than for the institutional categories. After controlling for firm size and firm age, as well as individual year effects, a firm controlled by a family is at least two times more likely to use dual class shares than firms controlled by corporations or financial institutions. The differences in likelihood between the family categories and the institutional categories are significant according to Wald-tests of the pair-wise differences (see Panel B of Table 5). Within the two family categories, firms with founders in control are significantly more likely to have implemented dual class shares than firms with non-founders in control.

Table 5 also reports the results from performing the same probit analysis as above on the incidence of non-traded high voting shares and on an indicator variable for the presence of at least one of right of preemption, shareholder agreement, or voting restriction. We see that if a firm has a controlling owner, the likelihood of non-traded high voting shares and the other control instruments increases significantly. From Panel B, we conclude that founder

controlled firms are the most likely to refrain from listing the high voting shares. They are also the most likely to have at least one of a right of preemption, a shareholder agreement or a voting restriction. We also conclude that the likelihood of non-traded high voting shares is significantly lower if the controlling owner belongs to the non-founder family rather than the other categories. This result does not necessarily mean that non-founder families prefer to have a liquid market for the high voting shares. Instead, it may suggest that non-founder families achieve their control through market purchases of A-shares in firms that already have their high voting shares listed. Regarding the use of a right of preemption, a shareholder agreement, or a voting restriction, non-founder families are significantly more likely (at the 10%-level) to implement at least one of these instruments compared to the institutional controlling owners.

The results above show that families in control almost always use dual class shares to create a controlling minority structure and that given the use of dual class shares, families have a larger deviation from one-share-one-vote compared to other controlling owners. Moreover, the families, especially the founder families, are more inclined to cement their control through the use of complementary control instruments. Hence, we conjecture that it is the family categories that are the most likely to have incentives to expropriate other shareholders, and they are therefore subject to larger agency problems compared to institutional owners. Among the family categories, founders appear to be the most entrenched and may therefore be associated with the largest agency costs.

5. Empirical evidence on agency costs of controlling minority shareholders

5.1 Method

Himmelberg, Hubbard and Palia (1999) demonstrate that if optimal ownership and firm value both are partly determined by unobserved firm heterogeneity, OLS regressions of firm value on ownership could produce spurious results. They also show that to the extent that this heterogeneity makes firm value endogenous in regressions on ownership, it can be controlled for in a fixed effects regression, assuming the unobserved firm heterogeneity is constant over time. To control for this kind of endogeneity problem, we use a fixed effects regression model on our panel data set.[14]

Consider the following regression model for our panel data set:

[14] A thorough description of the econometrics behind panel data analysis can be found in Baltagi (1995).

$$y_{it} = \alpha + X_{it}'B + Z_{it}'C + e_{it} \qquad i = 1,...,N \quad t = 1,...,T_i\,, \tag{1}$$

where y_{it} is the dependent variable, α is the intercept, X_{it} is a 1×K vector of ownership variables, Z_{it} is a 1×K vector of observable firm characteristics, and e_{it} is the error term, for firm i at time t. We can decompose the error term e_{it} in the following way:

$$e_{it} = u_i + v_{it}\,, \tag{2}$$

where u_i is the unobservable firm specific effect and v_{it} is an ordinary white noise term. We then have the following regression model:

$$y_{it} = \alpha + X_{it}'B + Z_{it}'C + u_i + v_{it} \qquad i = 1,...,N \quad t = 1,...,T_i\,. \tag{3}$$

If we assume that u_i is a fixed firm effect, we can include a dummy variable for each firm in the sample. By excluding the intercept term to avoid the dummy variable trap, we get estimates of (α+u_i) for each firm. For the fixed firm effects model, correlation between unobserved time-invariant firm heterogeneity and any of the explanatory variables does not pose a problem, since (unlike OLS) the estimates are still unbiased.

We test the fixed effect model specification by using an F-test for the joint significance of all fixed firm effects. Potential correlation between the firm specific effect and the explanatory variables is tested by a Hausman (1978) test under the null hypothesis of zero correlation. A rejection of the null hypothesis supports the use of fixed effects.

5.2 Results from regressions of Tobin's q on controlling ownership

In this section, we investigate the firm value consequences of CMSs by regressing Tobin's q on ownership variables and a set of control variables. We use two different ownership variables for each controlling owner category. The first variable is the fraction of votes controlled by a certain controlling owner category, which we include because we hypothesize that the actual ability to expropriate other shareholders is an increasing function of the level of votes controlled. The second type of ownership variable is the controlling owner's excess-votes, which is defined as the controlling owner's votes-to-capital ratio minus one. Hence, excess-votes measures the percentage of voting rights in excess of control rights. For firms with no controlling owners, the variable is set to zero, which is also the value when a controlling owner has no deviation from one-share-one-vote. This variable is meant to directly capture the CMSs' increased incentives to expropriate other shareholders. The control variables are the observable firm characteristics described in Section 3.2, fixed firm effects, and year indicators. After adjusting for the control variables, we interpret any negative relationships between Tobin's q and the ownership variables for a certain controlling

owner category as agency costs associated with that category. Table 6 presents the results of this analysis.

In Regression 1 of Table 6, we treat all controlling owners as one category. We see that there is a significant negative relation between Tobin's q and the level of votes owned by controlling owners. There is no significant effect of controlling owner excess-votes on firm performance, suggesting that investors care more about the actual level of control achieved by controlling owners than the deviation from one-share-one-vote per se. However, as we described in Section 4, the degree of entrenched control and deviation from one-share-one-vote differs depending on the identity of the controlling owner. In Regression 2, we split controlling owners into the four groups previously defined and include for each individual category the fraction vote ownership and the level of excess-votes as explanatory variables. We find a significant negative effect on firm performance from increased vote ownership by all controlling owner categories except for the financial institution category. The magnitude of the negative effect is the largest for non-founder families and founder families, suggesting that family owners are associated with larger agency costs than corporate owners in control. There is no statistical difference in the coefficients associated with vote ownership by founder and non-founder families in control, and hence we find no support for the hypothesis that founder family controlling owners are associated with larger agency costs than family blockholders in control. In contrast to the other controlling owner categories, the estimated coefficient for vote ownership by financial institutions in control is not statistically significantly different from zero, indicating that this category does not incur any significant agency costs. None of the excess-votes variables are significant. This confirms the result from Regression 1; it is the actual level of vote ownership by controlling owners that investors seem to care about. Hence, the use of dual class shares seems to only have an indirect effect on firm valuation by increasing the level of votes controlled by CMSs.

Even if there is no direct effect of the deviation from one-share-one-vote on Tobin's q, the larger negative effect from family vote ownership is consistent with theories predicting larger agency costs of a CMS structure. This is due to the fact that family controlling owners are almost always CMSs with a large deviation from one-share-one-vote, and it is this large deviation that enables the families to maintain their degree of control in the first place. The following example illustrates the magnitude of the agency costs as estimated in Regression 2. Consider a firm with a Tobin's q equal to 1.095, which is the median value in our sample. If the firm goes from the median level of vote ownership by a founder controlling owner

Table 6. Fixed effects regression analysis of the relation between Tobin's *q* and ownership by different controlling owner categories

Fixed firm effects regression analysis of Tobin's *q* on vote ownership by different categories of controlling owners and control variables. In order for a firm-year observation to be classified as having a controlling owner of a specific identity, the owners of that category need to together control ≥ 25% of the voting rights. If there are two or more owners from different categories that each control ≥ 25% of the voting rights, the firm is classified according to the identity of the largest owner. If there is no controlling owner, the firm is classified as having dispersed ownership. Founder family ownership is defined as total block ownership (≥ 5% of votes) by the founder (or descendants of the founder) and families and individuals closely affiliated with the founder. Non-founder family ownership is defined as the total block ownership by families and individuals unaffiliated with the founder. Corporate ownership is defined as total block ownership by widely held corporations, government agencies, and other public organizations (e.g. labor unions). Ownership by financial institutions is defined as total vote blockholdings by mutual funds, pension funds, and widely held insurance companies and banks. For each ownership category, the variable excess ownership is equal to the controlling owner's votes-to-capital ratio minus one. For observations without a controlling owner this variable is set to zero. See Table 1 for definitions of the control variables. Year dummies for 1992-1997 are included in the regressions, but not reported. *P*-values from double-sided *t*-tests are given in parentheses. The estimated standard errors are consistent in the presence of heteroskedasticity. The F-test tests whether the fixed firm effects are jointly significant. The Hausman-test is a Wald-test under the null hypothesis of zero correlation between the regressors and the firm specific effects.

	Dependent variable: Tobin's *q*	
Explanatory Variable:	(1)	(2)
Controlling owner vote ownership	-0.331 (0.005)	
Controlling owner excess votes	0.012 (0.486)	
Founder family vote ownership		-0.377 (0.017)
Non-founder family vote ownership		-0.478 (0.000)
Corporate owner vote ownership		-0.302 (0.001)
Financial institution vote ownership		-0.147 (0.108)
Founder family excess votes		0.054 (0.279)
Non-founder family excess votes		0.007 (0.657)
Corporate owner excess votes		0.065 (0.355)
Financial institution excess votes		0.019 (0.471)
Log (Company size)	-1.095 (0.467)	-1.094 (0.473)
$(\text{Log(Company size)})^2$	0.027 (0.431)	0.027 (0.438)
ROA	0.754 (0.227)	0.749 (0.235)
Leverage	0.122 (0.683)	0.129 (0.666)
Sales / Total assets	0.150 (0.013)	0.154 (0.011)
PPE / Total assets	-0.286 (0.000)	-0.297 (0.000)
CAPEX / Total assets	-0.001 (0.933)	-0.007 (0.956)
Year dummies	Yes	Yes
Number of firm-year observations	1,317	1,317
Adjusted R^2	0.712	0.712
F-test; fixed effects vs. pooled OLS (*p*-value)	8.281 (0.000)	8.283 (0.000)
Hausman test; fixed vs. random effects (*p*-value)	80.51 (0.000)	80.21 (0.000)

(67.8%) to zero percent controlling owner vote ownership, Tobin's q would increase by 0.256, or 23%, ceteris paribus. Using the same type of calculations for the other controlling owner categories, we get a value increase of 25% if the median non-founder family relinquishes control, a 16.1% increase if the median corporate controlling owner gives up control, and finally a 6.2% increase if financial institutions give up control. Hence, we see that the agency costs of family CMS control are also significantly larger from an economic point of view.

Looking at the F-tests, we see that we can reject the hypothesis that the fixed firm effects are jointly insignificant. We also see that the Hausman tests reject the hypothesis of zero correlation between the independent variables and the unobserved firm heterogeneity. Thus, the fixed effects regression model seems to be the appropriate choice.

In unreported regressions, we have tested the robustness of our results to the choice of cutoff point for controlling ownership (25%), by changing the cutoff to various points between 20-35% of the votes. The results are robust to these changes. We also consider the problem of outliers in Tobin's q. McConnell and Servaes (1990) use a q-value of six as the cut-off point in determining outliers. We re-estimate the regressions excluding six such firm-year observations, but the results remain qualitatively the same.

In summary, the results are consistent with agency costs of controlling ownership in general. We also find support for the hypothesis that CMSs are associated with larger agency costs than other controlling owners, since vote ownership by the family categories, who almost always are CMSs, is associated with the largest negative effects on Tobin's q. As shown in Section 4, not only are families almost always CMSs, they are also more concerned with entrenching their control through multiple control instruments than other controlling owners, suggesting they derive larger private benefits of control than other controlling shareholders. The implication of both these results is that the legal opportunity to create a controlling minority structure is mainly used by owners that have larger incentives to expropriate other shareholders in the first place. Hence, by allowing dual class shares and other entrenchment devices, the legal system may provide excessive incentives for certain groups of controlling shareholders to expropriate other shareholders, which results in larger agency costs.

5.3 Results from regressions of operating performance on controlling ownership

In the analysis above, we document that there are large negative valuation consequences from increased ownership by families and corporations in control. In this section, we investigate if

Table 7. Fixed effects regression analysis of the relation between operating performance and ownership by different controlling owner categories

Fixed firm effects regression analysis of operating performance, measured by ROA, on vote ownership by different categories of controlling owners and control variables. ROA is measured at time *t*, whereas the ownership variables and firm characteristics are lagged one year. In order for a firm-year observation to be classified as having a controlling owner of a specific identity, the owners of that category need to together control ≥ 25% of the voting rights. If there are two or more owners from different categories that each control ≥ 25% of the voting rights, the firm is classified according to the identity of the largest owner. If there is no controlling owner, the firm is classified as having dispersed ownership. Founder family ownership is defined as total block ownership (≥ 5% of votes) by the founder (or descendants of the founder) and families and individuals closely affiliated with the founder. Non-founder family ownership is defined as the total block ownership by families and individuals unaffiliated with the founder. Corporate ownership is defined as total block ownership by widely held corporations, government agencies, and other public organizations (e.g. labor unions). Ownership by financial institutions is defined as total vote blockholdings by mutual funds, pension funds, and widely held insurance companies and banks. See Table 1 for definitions of the control variables. Year dummies for 1992-1997 are included in the regressions, but not reported. *P*-values from double-sided *t*-tests are given in parentheses. The estimated standard errors are consistent in the presence of heteroskedasticity. The F-test tests whether the fixed firm effects are jointly significant. The Hausman-test is a Wald-test under the null hypothesis of zero correlation between the regressors and the firm specific effects.

	Dependent variable: ROA	
Explanatory Variable:	(1)	(2)
Controlling owner vote ownership	-0.038 (0.002)	
Founder family vote ownership		-0.034 (0.083)
Non-founder family vote ownership		-0.044 (0.010)
Corporate owner vote ownership		-0.037 (0.014)
Financial institution vote ownership		-0.034 (0.027)
Log (Company size)	0.123 (0.219)	0.124 (0.216)
(Log(Company size))^2	-0.003 (0.192)	-0.003 (0.190)
Sales / Total assets	0.129 (0.117)	0.013 (0.107)
PPE / Total assets	-0.031 (0.063)	-0.031 (0.068)
CAPEX / Total assets	-0.007 (0.718)	-0.004 (0.713)
Leverage	0.054 (0.119)	0.054 (0.120)
Year dummies	Yes	Yes
Number of firm-year observations	1,008	1,008
Adjusted R^2	0.722	0.721
F-test; fixed effects vs. pooled OLS (*p*-value)	7.593 (0.000)	7.527 (0.000)
Hausman test; fixed vs. random effects (*p*-value)	56.33 (0.000)	56.89 (0.000)

the negative valuation effects can be explained by an increase in the degree of control leading to lower operating performance, and hence lower expected cash flows to investors. We investigate this issue by running fixed effects regressions of the return on assets (ROA) on the vote ownership variables and a set of control variables. However, because changes in ownership are likely to take longer to manifest in operating performance than in market valuations, we measure the control variables with a lag of one year. That is, we measure

ROA at time *t* and all other variables at time *t-1*. This means that we lose 309 of our firm-year observations (one for each sample firm). As control variables, we include all firm characteristics (except for ROA) that we used in the *q* regressions along with year dummies. The size variables, CAPEX/Total assets, Sales/Total assets, and PPE/Total assets are meant to capture observable changes in the characteristics of the firms' operations that may affect operating performance. Leverage is included because a high level of debt may constrain empire-building tendencies and lead to better investment decisions, which would increase profitability (Jensen, 1986).

Regression 1 in Table 7 shows the regression result when we treat all controlling owners as one category. Consistent with the negative valuation effects from increased vote ownership by controlling owners, we find a significant and negative effect of increased vote ownership by controlling owners on firms' operating performance. Turning to regression 2, where we split controlling owners into different categories, we see that there is a significant (at least at the 10%-level) negative effect on ROA of vote ownership by all controlling owner categories. The effect seems to be largest for the non-founder family category. The effects of controlling ownership are of a significant economic magnitude[15] and could possibly explain part of the large negative valuation effects. However, the differences in the effects on operating performance between the controlling owner categories do not correspond to the differences in the effects on market valuation. Therefore, it is reasonable to believe that there are other factors behind the larger negative valuation effect associated with family CMSs. We further investigate this issue in the next section.

5.4 The likelihood of takeovers or severe financial distress

In this section we provide evidence that can help explain the larger agency costs of family CMSs. We examine the frequency of firms being taken over or undergoing severe financial distress and contrast firms controlled by families (i.e., firms controlled by founder or non-founder families) with firms without families in control (i.e., firms with corporations or financial institutions in control or firms without a controlling owner). The main argument is that if controlling families put a high value on control, they may keep this control inefficiently long from the non-controlling shareholders' perspective, which could materialize as a lower probability of a takeover or a greater probability of ending up in severe financial distress for family controlled firms.

[15] An increase in vote ownership of ten percentage points by a controlling owner is associated with a decrease in ROA of about 0.34-0.44 percentage points, depending on the identity of the owner.

First, we turn to the issue of takeovers. Target shareholders benefit on average from a takeover (see e.g. Jensen and Ruback (1983) for US evidence, and Rydqvist (1993) for Swedish evidence). Hence, a lower takeover probability could help to explain the large negative effect on firm value for firms controlled by family CMSs. A family CMS will only relinquish control if she gets compensated for her private benefits. Unless a potential acquirer receives private benefits equal to the private benefits of the incumbent controlling owner, or is more able in running the firm, the price demanded by a family CMS is likely to be too high for a takeover to be worthwhile for the acquirer, resulting in few takeovers of family controlled firms. Table 8 shows the frequencies of firms being taken over. We conclude that firms controlled by families are taken over significantly less often than firms without families in control. The unconditional probability for a family-controlled firm to be taken over any given year is 4.8% compared to 8.5% for other firms. Because a takeover on average benefit target shareholders, a lower takeover probability should, ceteris paribus, materialize in a lower stock price, which could explain part of the large agency costs of family CMSs.

Table 8. The frequency of takeover or severe financial distress

The table reports the frequencies of severe financial distress and takeovers split by firms controlled by families (i.e., firms with CEOs or family blockholders in control) and firms not controlled by families (i.e., firms with corporations or financial institutions in control, and firms without controlling owners). Severe financial distress is measured by the occurrence of a debt restructuring or the firm filing for bankruptcy. We use the Gilson, John, and Lang (1990) definition of a debt restructuring, i.e. the firm has undertaken a restructuring of its debt if one of the following conditions is fulfilled: (i) the firm has declared a public default on its debt; (ii) the firm has been stopped from trading on the Stockholm Stock Exchange because of debt re-negotiations with its creditors; or (iii) creditors have been granted an equity interest in the firm as a part of a debt restructuring (common stock or securities convertible into common stock). Takeovers are defined as complete takeovers where the stocks are de-listed from the Stockholm Stock Exchange. The frequencies of severe financial distress and takeovers are calculated as a percentage of firm-year observations in each category. The activities are registered during the year following the classification of controlling owner. The proportions can be viewed as estimates of the unconditional probability for a firm in each respective category to end up in severe financial distress or be taken over the year following the ownership classification.

	Family controlled firms	Firms without families in control	*p*-value from test of difference in proportions
Severe financial distress	4.1%	1.6%	0.012
Takeover	4.8%	8.5%	0.007
Number of firm-year observations	765	552	

Next we turn to the frequency of firms undergoing severe financial distress. As a proxy for a firm undergoing severe financial distress, we use the occurrence of a *debt restructuring*[16] or a *bankruptcy*. An increased risk of a financial distress should have a negative effect on firm value, ceteris paribus. For example, Altman (1984) estimates that indirect and direct bankruptcy costs are frequently greater than 20% of firm value. Fama and Jensen (1983) argue that organizations without control on agency problems will not survive in a competitive environment. We hypothesize that the probability of severe financial distress, which can be seen as an inverse survival measure, is highest among firms with CMSs. We have shown that a family CMS is entrenched and face virtually no corporate governance pressure. Unconditionally we would expect a family CMS to try to reduce the risk of financial distress, since private benefits are lost in a bankruptcy. However, given that the firm the family controls is experiencing financial difficulties and that the solution to this difficulty calls for a control change, the trade-off will change. If private benefits are large, which our previous results indicate, the family CMS will not give up control as long as she assigns a large enough probability that the firm will survive and she can continue to extract her private benefits in the future. There is, thus, a possibility that large private benefits may induce the families to maintain control longer than what is ex ante optimal for the non-controlling shareholders, since a control transfer will not occur until the firm is forced to go through a debt restructuring or a bankruptcy (in which control is typically shifted to the firm's creditors).

Table 8 shows that the estimated unconditional probability of undergoing severe financial distress any given year is 4.1% for firms controlled by a family compared to 1.6% for firms controlled by institutions or with a dispersed ownership structure. The difference is statistically significant as indicated by a standard test of the difference between two proportions. This result suggests that an increased risk of severe financial distress can partially explain the higher agency costs of family CMSs, since firms with a greater probability of severe financial distress, ceteris paribus, should reasonably be discounted by the market. It is noteworthy that for firms which went into bankruptcy, constituting 15 of the 40 instances of severe financial distress in the sample, all but one were controlled by family owners during the five years prior to the year when they filed for bankruptcy. The debt

[16] We use the Gilson, John, and Lang (1990) definition of a debt restructuring, i.e. the firm has undertaken a restructuring of its debt if one of the following conditions is fulfilled: (i) the firm has declared a public default on its debt; (ii) the firm has been stopped from trading on the Stockholm Stock Exchange because of debt re-negotiations with its creditors; or (iii) creditors have been granted an equity interest in the firm as a part of a debt restructuring (common stock or securities convertible into common stock).

restructuring or bankruptcies may very well be efficient solutions ex post. However, we argue that, in most cases, shareholders would be better off if appropriate measures were taken at an earlier stage to avoid financial difficulties altogether.

The evidence above points to a possible source of the larger agency costs associated with family CMSs; a greater risk of families not relinquishing control when this would be optimal from non-controlling shareholders view.

6. Conclusion

This paper investigates the agency costs of *controlling minority shareholders* (CMSs), who are very common around the world. Using a panel of 309 publicly traded Swedish firms over the period from 1991 to 1997, we show that it is mainly families that are CMSs. They use dual-class shares and other control instruments to become entrenched and to get complete discretion over the firm's decisions, while owning only a small fraction of the firm's equity. After controlling for firm characteristics and fixed effects, we find that an increase in the ownership of votes by a controlling shareholder is associated with a significant decrease in Tobin's q. However, the negative effect is significantly larger for the family CMSs. We interpret this result as evidence of controlling minority structures increasing the agency costs of control. One potential source of the larger agency costs of family CMSs is that they maintain the control of their firms too long from the non-controlling shareholders' perspective. Tentative evidence shows that firms controlled by families are less likely to be taken over compared to firms with corporate owners or financial investors in control. The firms controlled by families also undergo severe financial distress more often than firms with other types of controlling owners do. We also find evidence that increased controlling ownership is associated with a decrease in operating performance, which could explain the general negative relation between controlling ownership and Tobin's q.

The large negative relation we find between Tobin's q and family CMS ownership, which is equivalent to insider ownership due to the families' involvement in the firms' management, is in stark contrast to a recent study by Himmelberg et al. (1999). Using fixed effects regressions on a sample of US firms, Himmelberg et al. do not find any relationship between insider ownership and firm value. This difference in results is consistent with recent theories by Bebchuk (1999), Bebchuk et al. (2000), and LLSV (1999), which predict that agency costs are larger when the cost for controlling shareholders to expropriate non-controlling shareholders is low and when the controlling owners are CMSs. Large insider owners in the

US are much less often CMSs compared to the family owners in Sweden. It can also be argued that the costs for large controlling owners to expropriate small shareholders are smaller in Sweden. For example, LLSV's (1998) evidence suggests that the legal protection of non-controlling shareholders' rights is weaker in Sweden than in the US. Not only is non-controlling shareholder protection weaker, Swedish law is also aimed at protecting the CMSs' rights by allowing the various control instruments we describe in this paper. In addition, civil court cases where non-controlling shareholders sue controlling owners are very rare in Sweden. These facts suggest that there is a weak legal barrier in Sweden for CMSs to engage in costly extraction of private benefits and, consequently, the market incorporates expected expropriation when valuing firms with CMSs.

It is important to note that a pure re-distribution of utility from non-controlling shareholders to CMSs does not need to be inefficient as long as it does not lead to a distortion in the allocation of resources. However, our evidence suggests that the magnitude of the agency problem between non-controlling shareholders and CMSs is such that it significantly increases the cost of capital for firms with CMSs, which in turn is likely to cause distortions in resource allocation.

Appendix –The Ownership Data

Starting in the 1970s, the *Swedish Securities Register Center* (Värdepappers-centralen, VPC), keeps a register of all shareholders of Swedish firms publicly traded on the Stockholm Stock Exchange. Swedish law gives the public unconditional access to the *Public Shareholders' Register*. All owners with 500 shares or more are included in this register. Therefore, we have internationally unique ownership data in terms of details and accuracy. Since 1985, the ownership data is compiled from this register and published in the book series "Owners and Power in Sweden's Listed Companies" by *DN Ägarservice* (Sundqvist and Sundin (1985-1998)). As of January (sometimes early February) each year, the book series reports the 25 largest owners, ranked by ownership of votes. Thus, for each year t we use Sundqvist and Sundin $(t + 1)$ as our source of ownership data, since this ownership data is a good approximation of the ownership of the firm at the end of year t.

An additional unique feature of Sundqvist and Sundin (1985-1998) is that they aggregate all shares held by family members, whether or not they have the same last name, and other closely related owners, i.e. co-founders, managers who took part in an MBO, and the like, into one single *sfär*, an ownership coalition. They also take into account indirect shareholdings through unlisted firms and foundations controlled by the family when aggregating these ownership coalitions. When calculating a family's ownership, we also take into account its indirect ownership through other public firms they control. We consider a firm to be controlled by a family if it is the largest owner and owns $\geq 25\%$ of the votes. In practice, owning $\geq 25\%$ of a firm's votes is often enough to control a firm. We use this definition of control to identify the ultimate owner of a firm; see La Porta et al. (1998). This implies that a family owning $\geq 25\%$ of votes in firm F_1, which in turn owns $\rho\%$ of the votes of firm F_2, is the ultimate owner of the $\rho\%$ of firm F_2.

We now consider a sample firm in the beginning of 1995, Gambro AB. Table A1 shows that the blockholders in terms of capital and votes were (see Sundqvist and Sundin, 1995, p. 108): Incentive, Crafoord-sfären, i.e. the Crafoord family, and Sparbanks-sfären, i.e. a commercial bank and its subsidiaries. The other owners in the table are financial institutions, i.e. funds (mutual, pension) or insurance companies. In total, there were more than 50,000 owners.

Incentive is a closed-end investment company publicly traded on the SSE. In 1995, the Wallenberg family controlled 42.9% of the firm's votes. (The second largest owner of Incentive, Fjärde AP-Fonden -- a Swedish government controlled pension fund -- owned 6.9% of Incentive's votes.) These votes were divided between miscellaneous Wallenberg foundations (7.3%) which are all fully controlled by the members of the Wallenberg family -- and Investor AB (35.6%). Investor AB is another closed-end investment company publicly traded on the SSE. In 1995, the Wallenberg family controlled 41.0% of Investor's votes. (The second largest owner of Investor, Heine Securities Corporation, owned 4.9% of Investor's votes.) These votes were divided between Wallenberg foundations (40.4%) Peter Wallenberg (0.3%), Axel Wallenberg (0.2%), and Marcus Wallenberg (0.2%).

Anna-Greta Crafoord, who died in 1994, was the widow of Gambro's founder Holger Crafoord, who founded the firm in 1964 after having invented the fully automatic renal dialysis machine. The Crafoord foundation is fully controlled by the members of the Crafoord family. Margareta Nilsson (whose maiden name was Crafoord) and Birgitta Crafoord are daughters of the founder. The other members of the Crafoord family are grandchildren of the founder. Lennart and Margareta Nilsson were family board representatives.

Finally, the commercial bank Sparbanken controls 5.6% of Gambro's' votes through its mutual funds and the mutual funds managed by the wholly owned subsidiary Robur.

Given, the information in the ownership table, we code the ownership of Gambro in the following manner: *Founder family blockholdings* = 15.1%, *Non-founder family blockholdings* = 58.1%, *Corporate blockholdings* = 0%, *Financial institution blockholdings* = 5.6%. Hence, Gambro is classified as having a *Non-founder family* with 58.1% of the votes as a controlling owner.

Table A1. Gambro AB.

Ägare *Owner*	Antal A-aktier *Number of A-shares*	Antal B-aktier *Number of B-shares*	Procent andel kap. *Percent of capital*	Procent andel röster *Percent of votes*
Incentive	9,024,180	40,741,336	42.2	58.1
Crafoord-sfären	2,922,484	4,883,616	6.6	15.1
varav *of which*				
Crafoordska stiftelsen	2,538,308	0	2.2	11.3
Nilsson Margareta fam	384,088	1,564,408	1.7	2.4
Crafoord Birgitta fam	88	1,100,000	0.9	0.5
Rosenblad Carl & Ebba	0	718,084	0.6	0.3
Crafoord Anna-Greta dödsbo	0	709,120	0.6	0.3
Börjesson Kristoffer	0	426,668	0.4	0.2
Crönge Annika	0	365,336	0.3	0.2
Sparbanks-sfären	0	12,693,296	10.8	5.6
varav *of which*				
Sparbankernas aktiefonder	0	12,499,736	10.6	5.5
Roburs Förs Premiefond AB	0	193,560	0.2	0.1
Fjärde AP-Fonden	0	8,654,876	7.3	3.8
Utländska ägare	0	7,988,418	6.8	3.5
varav *of which*				
Utländska förvaltare	0	7,988,418	6.8	3.5
SPP	0	4,012,684	3.4	1.8
AMF Pensionsförsäkr AB	0	3,447,600	2.9	1.5
Trygg-Hansa Försäkring	0	2,231,677	1.9	1.0
Skandia	0	1,957,056	1.7	0.9
Wasa Försäkring	0	1,918,720	1.6	0.9
SHB-sfären	0	1,495,826	1.3	0.7
varav *of which*				
SHB:s pensionsstiftelse	0	1,112,000	0.9	0.5
SHB:s aktiefonder	0	383,826	0.3	0.2
Föreningsbanken aktiefonder	0	1,191,276	1.0	0.5
Nordbankens aktiefonder	0	944,516	0.8	0.4
Länsförsäkrings-sfären	0	907,479	0.8	0.4
varav *of which*				
Länsförsäkring Liv	0	234,248	0.2	0.1
Dalarnas Försäkringsbolag	0	160,200	0.1	0.1
Länsförsäkring Jönköping	0	140,000	0.1	0.1
Länsförsäkringsbolagens AB	0	100,763	0.1	0.0
Länsförsäkring Sverige	0	72,267	0.1	0.0
Länsförsäkring Älvsborg	0	55,000	0.0	0.0
Länsförsäkring Halland	0	50,000	0.0	0.0
Länsförsäkring Skåne	0	50,000	0.0	0.0
Länsförsäkring Bergslagen	0	45,000	0.0	0.0
Summa 30 ägare *owners*	11,946,664	93,068,376	89.0	94.2
Övriga *others*	0	13,041,176	11.0	5.8
Totalt *total*	11,946,664	106,109,552	100.0	100.0
Röst per aktie *votes per share*	10	1		

Source: Sundqvist and Sundin (1995). Copyright © SIS Ägarservice AB.

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Chapter 2

Family Ownership, Control Considerations, and Corporate Financing Decisions: An Empirical Analysis*

1. Introduction

Recent empirical research suggests that the salient agency problem in public firms around the world is the conflict of interest between controlling and non-controlling shareholders. In contrast to the US, many firms in Europe and Asia are controlled by large family blockholders that frequently own less cash flow rights than control rights through the use of dual class shares, stock pyramids, and cross-shareholdings (Claessens et al. (2000); La Porta et al. (1999)). The seminal study by La Porta et al. (1998) also suggest that the legal protection of non-controlling shareholders' rights is lower in Europe and Asia than in the US. The combination of concentrated family control, deviation from one-share-one-vote, and weak legal protection of non-controlling shareholders creates an environment which favors extraction of private benefits of control at the expense of shareholder wealth maximization (Bebchuk (1999); Bebchuk et al. (2000); La Porta et al. (2001)). An unexplored issue in the corporate governance literature is how the presence of these large family owners affects corporate financing decisions. In this paper, I develop and test a hypothesis on the relation between family control and corporate financing decisions based on the families' desire to protect their control for future extraction of private benefits.

The main argument of this 'control hypothesis' is that a controlling family will choose the financing alternative among all feasible financing alternatives that has the smallest impact on its control and extraction of private benefits. This argument results in a pecking order of financing alternatives in which a controlling family prefers to finance its firm's operations with internally generated funds before turning to the external financial market. Lacking internal funds, the families will prefer to use debt rather than external equity to limit dilution

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of their control. A possible alternative to debt is to issue low-voting equity, which will not dilute the family's control to any greater extent. However, given the agency conflict between controlling families and other shareholders, new equity owners are likely to require a significant discount to invest in low-voting equity. If the agency costs of issuing low-voting equity are large, controlling families will be more likely to use debt to finance investments. The above control-protection argument for a pecking order among financing choices complements previous explanations for pecking order behavior, such as Myer and Majluf's (1984) adverse selection model.

I provide empirical evidence on the control hypothesis by investigating the relation between family vote ownership and firms' capital structure choices for an unbalanced panel of 215 listed Swedish firms over the period 1990-1997. Sweden is one of the countries identified by La Porta et al. (1998) as having relatively weak protection of minority shareholder rights. Ownership of Swedish public firms is also heavily concentrated, and many firms have a family (or coalition of individuals) as the largest shareholder (Cronqvist and Nilsson (2001)). Members of the large family owners typically participate in the management of the firm as executive officers or directors, making them inside owners with direct influence over the firm's corporate financing decisions. Furthermore, as Cronqvist and Nilsson (2001) show, the large family owners typically achieve their vote ownership through the use of dual-class shares, creating a large separation of ownership from control, thereby increasing the risk of expropriation of non-controlling shareholders (Jensen and Meckling (1976); Bebchuk (1999)). Consistent with this conjecture, Cronqvist and Nilsson find empirical evidence that an increase in family vote ownership is associated with lower firm value, as measured by Tobin's q, which is interpreted as evidence of significant agency costs of family control. The above facts indicate that Swedish data is highly suitable for testing if protection of control rents can explain controlling families' corporate financing decisions.

I estimate the relation between family control and capital structure choice by running fixed effects regressions of leverage on family vote ownership and a set of control variables. I allow the relation between family ownership and leverage to depend on the growth prospects of the firm, because firms with many profitable growth opportunities are less likely to be able to finance investments using internally generated funds compared to firms with few profitable growth opportunities. I use the market-to-book ratio as a proxy of growth opportunities to distinguish between firms with few growth opportunities (low market-to-book firms) and firms with many growth opportunities (high market-to-book firms). I find that leverage is significantly decreasing in the level of family vote ownership for low market-to-book firms.

In contrast, leverage is significantly increasing in the level of family vote ownership for high market-to-book firms. Furthermore, for both types of firms I find that controlling families decrease the level of debt financing as the level of cash flow from operations increases. These results are consistent with the proposed control hypothesis. I also investigate the relation between family ownership and the use of long-term and short-term debt financing, and find that the negative relation between leverage and family ownership for low market-to-book firms is due to a decreased use of long-term debt, whereas the positive relation between leverage and family vote ownership for high market-to-book firms is due to an increased use of short-term debt.

In order to assess whether the controlling families' capital structures choices are costly to non-controlling shareholders, I also analyze the relation between leverage, family ownership, and corporate investment activity. The results show that an increase in leverage is associated with a significant decrease in the future level of corporate investments for both low market-to-book and high market-to-book firms, but that the decrease is almost twice as large for high market-to-book firms. In addition, I find that for low market-to-book firms it is only an increase in the use of long-term debt that is significantly associated with a lower investment activity. In contrast, both long-term and short-term debt seem to significantly constrain corporate investments for high market-to-book firms, although the constraining effect is somewhat greater for long-term debt. Controlling for leverage, there is no marginal effect of family ownership on the level of corporate investments. Hence, the results suggest that the degree of family control only affects corporate investment activity through the use of debt.

Combined, the results suggest that the capital structures chosen by families in control are inefficient (at least from non-controlling shareholders' perspective). First, consider the capital structure choice made by families in control of low market-to-book firms. The disciplining value of debt in terms of constraining investments in unprofitable projects should be relatively larger in firms with fewer growth opportunities (Jensen (1986); Stulz (1990)). Therefore, we would expect non-controlling shareholders to prefer a higher level of debt as the degree of family control increases. Instead, I find the opposite relation. In particular, families in control seem to be averse to long-term debt, which is the type of debt that constrains investment the most for low market-to-book firms. Hence, the capital structure chosen by families in control of low market-to-book firms is likely to increase agency costs by increasing potential overinvestment problems.

Next, consider the capital structure choices made by families in control of high market-to-book firms. If controlling families maximize shareholder wealth, we would not expect firms

with families in control to use more debt than other firms, because the costs related to debt-overhang are likely to outweigh the disciplining benefits of debt for firms with many valuable growth opportunities. However, we observe a positive relation between family control and leverage in high market-to-book firms. Thus, the capital structures chosen by families in control of high market-to-book firms are likely to increase agency costs by increasing potential underinvestment problems. The fact that the controlling families increase leverage through an increased use of short-term debt may indicate an attempt to mitigate the negative effect of a higher level of leverage on investment activity, since short-term debt constrains investments less than long-term debt.

The results of this study suggest that corporate financing policy and its effects on corporate investment activity can be a possible explanation for the agency costs of controlling shareholders that have been previously documented in, for example, Cronqvist and Nilsson (2001) and La Porta et al. (2001). Hence, this study contributes to the growing literature on the role of ownership structure in international corporate governance (Shleifer and Vishny (1997) and La Porta et al. (2000) review this literature). Furthermore, by showing that controlling families may make corporate financing decisions based on control considerations and extraction of private benefits rather than on shareholder wealth maximization, this study also contributes to the general literature on the impact of agency problems and control considerations on firms' capital structure decisions. For example, investigating the choice of investment financing for a sample corporate acquisitions in the US, Amihud et al. (1990) find that the larger the managerial ownership fraction of the acquiring firm, the less likely the use of equity financing.[1] Finally, the results of the effect of leverage on corporate investment activity complements previous empirical results by Lang et al. (1996), who find that leverage reduce future growth and investment for a sample of US firms.

The rest of the paper is organized as follows. Section 2 develops the control hypothesis of large family owners' corporate financing decisions and also presents two alternative hypotheses. Section 3 describes the data and the variables used in the study. The empirical evidence on the relation between family vote ownership and leverage is presented in Section 4. The effects of leverage and family ownership on the level of corporate investments are analyzed in Section 5. Section 6 concludes the paper.

[1] For recent theoretical research, see Hart and Moore (1995) and Zwiebel (1996). For additional recent empirical evidence on US data, see Jung et al. (1996) and Berger et al. (1997).

2. Hypotheses

In this section I present different hypotheses regarding the relation between the degree of family control and the use of debt financing. All hypotheses are based on the underlying assumption that family shareholders are insiders deriving private benefits of control, thereby creating a possible divergence of interests between controlling families and non-controlling shareholders. The focus of this paper is to develop and test hypotheses based on this agency conflict between controlling families and non-controlling shareholders. Although concentrated family ownership may also have implications for the agency costs of debt, developing and testing such hypotheses are beyond the scope of this paper.

2.1 The control hypothesis

A rational controlling family shareholder maximizes the sum of the combined value of the family's equity holdings and the value of the control rents enjoyed by the family. Thus, when control rents are large compared to the value of cash flow rights, protection of the family's control is likely to be a constraint imposed by the controlling family on corporate decision-making, regardless if continued family control is optimal or not from non-controlling shareholders perspective (see Bebchuk (1999)). One corporate policy that will be directly affected by controlling families' desire to remain in control is the firm's financing policy.

From a control perspective, it is reasonable to assume that a controlling family's preferred form of financing is to use internally generated cash flow, since the use of internal funds will have no adverse effects on the family's control. If the firm is lacking internally generated funds, one financing alternative that will not adversely affect the family's control is to make an equity issue in which the family itself participates to such a degree that the family's control remains intact. This could be done by making a rights offering or by placing shares privately to the family. However, in many cases the family cannot or will not participate in an equity issue due to wealth constraints or diversification considerations. In this case the family must seek external equity or debt to finance the firm's operations.

Issuing full voting equity to non-family investors has obvious drawbacks from the controlling family's perspective, since such an issue will dilute the family's voting power and thus be a direct threat to the family's control. Instead of issuing full voting equity, the family could issue low-voting shares to minimize the dilution of its control. However, the empirical evidence on the existence of large agency costs of family control (for example, Cronqvist and Nilsson (2001)) suggests that investors will demand a discount on an issue of low-voting

shares. Moreover, an issue of low-voting shares will also further increase the controlling families' separation of ownership and control, thereby increasing agency costs, which, in turn, may cause a general devaluation of the firm's equity (Jensen and Meckling (1976); Bebchuk et al (2000)). Thus, an issue of low-voting shares may be too costly for the family. Because of the above reasons, a controlling family may prefer to use debt rather than external equity as a financing alternative. From a control perspective, debt can act as a substitute for low-voting equity by ensuring that the family remains in control for a fixed equity investment (Stulz (1988)). Furthermore, as long as the family's extraction of private benefits does not jeopardize the firm's ability to service its debt, lenders are also unlikely to interfere with the way the family is managing the firm. In fact, the incentives of a controlling family and the firm's lenders are likely to be more aligned than the incentives of lenders and non-controlling shareholders. For example, because a controlling family is likely to have a disproportionate part of its wealth invested in the firm and will lose control rents in the event of a bankruptcy, a controlling family will have weaker incentives to engage in risk-shifting behavior compared to more diversified shareholders. Therefore, agency costs of debt may be lower for firms controlled by family shareholders, which would increase the relative attractiveness of debt financing.

If families prefer to finance investments with debt rather than equity in order to avoid dilution of their control rights or because agency costs make equity issues prohibitively expensive, we should be more likely to observe a positive relation between family control and leverage when firms have many valuable growth opportunities. The reason for this is that firms with many valuable growth opportunities will be less likely to be able to cover their financing needs with internal funds and will therefore have to raise funds from external sources. On the other hand, if the firm has few valuable growth opportunities, internally generated cash flow is more likely to be sufficient to finance investments and consequently there is a lesser need for controlling families to use debt as a financing alternative.

The control hypothesis yields ambiguous predictions for whether a dominant family owner will prefer long-term or short-term debt financing. If controlling family owners extract private benefits of control, they are likely to prefer the type of debt that reduces their private benefits extraction the least. A common assumption in the agency literature is that the agent in control derives private benefits from corporate investment activity (see, e.g., Jensen (1986)). Based on this assumption, families in control are likely to prefer to use short-term debt rather than long-term debt, since short-term debt is associated with less severe debt-overhang problems than long-term debt (Myers (1977)). On the other hand, controlling

family owners may prefer to use long-term debt rather than short-term debt in order to decrease constraints on the amount of cash flow available today for consumption of corporate perks, or to decrease the risk of forced liquidation.

2.2 The voluntary constraint hypothesis

Debt has been proposed as a disciplining device that can reduce the agency conflict between the controlling party and the firm's shareholder in many theoretical papers. In one of the earliest papers, Grossman and Hart (1982) show that because the use of debt entails a risk of financial distress and loss of private benefits of control, leverage act as a commitment device for insiders to engage in value-maximizing behavior. Furthermore, as first argued by Jensen (1986) and later modeled by Stulz (1990) and Hart and Moore (1995), debt payments limits the costs of managerial discretion by reducing the amount of corporate funds that could otherwise be used for investments in unprofitable projects by self-serving, empire-building, managers. The above theories implicitly rely on self-interested managers to implement the optimal capital structure. However, as argued by Novaes and Zingales (1995) and Zwiebel (1996), the capital structure choice that is optimal for the general shareholders is likely to differ from the choice that is optimal for the manager choosing the capital structure. For the optimal debt-level to be implemented, the self-interested manager needs incentives to voluntarily constrain her behavior. Zwiebel (1996) directly models managers' incentives to voluntarily use debt as a credible constraining device by introducing the threat of a takeover. The manager chooses the capital structure that optimally balances her private benefits from empire building against the need to ensure sufficient efficiency to prevent control challenges.

Similar to the professional managers considered in the theories above, the controlling families studied in this paper may also have incentives to reduce agency costs by increasing the level of debt. An increased cost of capital due to agency costs reduces the firm's long-run ability to survive in competitive product markets (Fama and Jensen (1983)), thereby increasing the risk that private benefits are lost altogether in the future. Furthermore, families in control maximize the total utility derived from private benefits and the market value of their equity ownership. If the marginal agency costs of family control put a pressure on the value of the families' equity holdings in excess of the marginal benefit from extracting private benefits, it is rational for the families to voluntary constrain themselves in order to raise the value of their capital stake.

The implication from the capital structure theories by Hart and Moore (1995) and Stulz (1990) (among others) is that potential overinvestment problems are larger for firms with

fewer valuable growth opportunities, and, consequently, the value of debt as a constraint on investment behavior should be larger for such firms. Thus, under the voluntary constraint hypothesis, we should observe a positive relation between family control and leverage for firms with few valuable growth opportunities, whereas there should be no particular relation for firms with many valuable growth opportunities. This prediction contrasts the prediction derived from the control hypothesis.

Regarding the disciplinary role of different types of debt, short-term debt constrains managerial behavior in that it forces managers to disgorge available funds that could otherwise be invested in unprofitable projects, and triggers liquidation when assets are more valuable elsewhere. One problem with short-term debt as a constraint is that even if it reduces free cash flow at hand today, it cannot prevent the manager from borrowing against future earnings. Hart and Moore (1995) show that long-term debt can reduce overinvestment in this case by using up debt capacity, which prevents the firm from issuing new securities against future earnings from assets-in-place in order to finance unprofitable investments. These arguments suggest that short-term debt and long-term debt are complements rather than substitutes as constraints on managerial behavior. Hence, under the voluntary constraint hypothesis, I expect a positive relation between increased family control and the use of both types of debt for low market-to-book firms.

2.3 The debt-aversion hypothesis

There are several theoretical arguments suggesting that families in control may use less debt than optimal from other shareholders' perspective. Families may prefer less debt because they are more risk averse than other shareholders due to underdiversification of their physical and human capital (Fama (1980); Amihud and Lev (1981)), and also because any private benefits they enjoy are lost in a bankruptcy. Family owners that derive private benefits from empire building may also prefer to avoid debt in order to limit the constraints imposed by debt that I discussed in the previous section. More debt also constrains families in control due to the increased restrictiveness of loan covenants and monitoring by bankers and bondholders (Harris and Raviv (1988)). These arguments predict that leverage decreases as the degree of family control, regardless of the firm's growth opportunities, resulting in less debt in the capital structure than outside shareholders would prefer.

Similar to the control hypothesis, because both short-term debt and long-term debt are associated with a potential loss of private benefits, there is no clear cut prediction regarding which type of debt financing a debt-averse family owner is most likely to avoid.

3. Data and variables

3.1 Data

The data set consists of an unbalanced panel of 215 Swedish firms listed on the Stockholm Stock Exchange (SSE) over the time period 1990-1997, with a total of 1,196 firm-year observations. Accounting data and data on the market value of equity is collected from the FINLIS database.[2] Ownership data is collected from the book series "Owners and Power in Sweden's Listed Companies" by Sundqvist and Sundin (1990-1997).[3] See Cronqvist and Nilsson (2001) for a more thorough description of this data source. To reach the final sample I exclude banks, insurance companies, and the Swedish equivalent of closed-end investment funds, *investmentbolag,* due to the regulation and/or the distinct nature of their activities. Because I use fixed-effects regressions in the empirical analysis, I also exclude firms that are listed only one year over the sample period. Finally, I exclude firm-year observations lacking relevant ownership and accounting data the year prior to the sample year. This requirement is imposed because I use explanatory variables in the empirical analysis that are lagged one year (i.e., the explanatory variables are measured using data from the time period 1989-1996).

3.2 Variables

To assist the reader, a summary of all variable definitions is presented in Table 1.

3.2.1 Leverage variables

I calculate firms' total financial leverage (TOTLEV) as the book value of total interest-bearing debt divided by invested capital, which is defined as the sum of book value of total interest-bearing debt and the book value of equity. Rajan and Zingales (1995) argue that this measure captures the effects of financing decisions better than the ratio of total liabilities to the book value of total assets. The latter measure includes items such as accounts payable and pension liabilities, which typically arise as a part of the firm's operations rather than as a part of a deliberate financing strategy. I use book values of debt and equity rather than market values, because I want to capture conscious financing decisions and not recent market re-evaluations of the firm's growth prospects. Survey studies like Stonehill et al. (1975) have

[2] FINLIS is a database maintained by SIX (Stockholm Information Exchange), which contains market value of equity and accounting data for firms listed on the Stockholm Stock Exchange from 1979 to 1999.

[3] The data in this book series have been gathered since 1985 from the *Swedish Securities Register Center* (*Värdepapperscentralen, VPC*) who registers all shareholders owning ≥ 500 shares in Swedish public firms. The unique feature of this book series is that it groups all direct and indirect (through corporations and foundations) ownership by closely affiliated owners into distinct ownership coalitions, which enables a highly accurate measurement of corporate control in Sweden.

Table 1. Definitions of variables

Variable		Definition
SIZE	=	The log of the book value of total assets expressed in terms of end-of-1997 SEK.[a]
Invested capital	=	Book value of total interest-bearing debt + Book value of equity
TOTLEV	=	Book value of total interest-bearing debt ÷ Invested capital.
LTLEV	=	Book value of long-term interest-bearing debt ÷ Invested capital
STLEV	=	Book value of short-term interest-bearing debt ÷ Invested capital
FAMVOTE	=	Aggregate ownership of votes by all family blockholders controlling ≥ 5% of the firm's votes.
FAMCAP	=	Aggregate ownership of capital by all family blockholders controlling ≥ 5% of the firm's votes.
FAM V/C	=	The log of (FAMVOTE÷FAMCAP) if a family blockholder controlling ≥ 5% of the firm's votes is present, 0 otherwise.
TANG	=	(Book value of fixed tangible assets + inventories) ÷ Book value of total assets
ROA	=	Earnings before interest, taxes, and depreciation (EBDIT) ÷ Book value of total assets.
M/B	=	(Market value of equity + Book value of non-equity liabilities) ÷ Book value of total assets
NDTSHIELD	=	Deprecation ÷ EBDIT if Deprecation ÷ EBDIT ∈ [0,1], and 1 if Deprecation ÷ EBDIT>1 or Deprecation ÷ EBDIT <0.
DNONFAM	=	1 if a non-family blockholder controlling ≥ 5% of the firm's votes is present in the firm, 0 otherwise.
Year-adjusted M/B	=	A firm's M/B for a particular year less the median M/B for all sample firms for the same year.
LOWGROWTH	=	1 if the firm's average year-adjusted M/B is equal to or below the median average year-adjusted M/B for all sample firms, 0 otherwise.
HIGHGROWTH	=	1 if the firm's average year-adjusted M/B is above the median average year-adjusted M/B for all sample firms, 0 otherwise.
INVEST	=	Gross investments in fixed assets year *t* ÷ the book value of total assets at the end of year *t-1*.

[a] The $ / SEK exchange rate as of 1997-12-31 was 0.1383.

also shown that managers think of leverage in terms of book value of equity. Panel A of Table 2 presents summary statistics for TOTLEV. We see that, on average, firms use approximately as much interest bearing debt as equity to finance its operations (mean TOTLEV is 49.9%).

Panel A of Table 2 also presents summary statistics for the firms' leverage split into long-term and short-term leverage. Long-term leverage (LTLEV) is defined as the ratio of long-term interest-bearing debt to invested capital, where long-term debt is defined as all debt with a maturity of more than a year. Similarly, short-term leverage (STLEV) is defined as the ratio of short-term interest-bearing debt to invested capital, where short-term debt is all debt with a maturity of a year or less. Panel A shows that the average firm uses more than twice as much

Table 2. Summary statistics for leverage, ownership, and control variables

The data set is a panel of 215 Swedish firms listed on the SSE 1990-1997, with firms allowed to enter and exit the panel over time. In total, the sample includes 1,196 firm-year observations. All variables are defined in Table 1. The ownership and control variables are all lagged one year. The data is from the end of the firms' fiscal years (December 31 for a vast majority) and is collected from the *FINLIS* database or the book series "Owners and Power in Sweden's Listed Companies" by *DN Ägarservice* (Sundin and Sundqvist (1990-1997). For the family blockholder ownership variables in Panel B, the statistics are calculated *only* for family blockholders controlling ≥ 5% of the firm's votes, i.e. Panel B presents summary statistics for family blockholder ownership *conditional on* a family blockholder being present.

Panel A: Leverage variables					
Variable	Mean	25th percentile	Median	75th percentile	Standard deviation
TOTLEV	0.499	0.324	0.510	0.668	0.222
LTLEV	0.344	0.160	0.318	0.497	0.220
STLEV	0.155	0.040	0.103	0.216	0.162

Panel B: Family ownership variables[a]					
Variable	Mean	25th percentile	Median	75th percentile	Standard deviation
FAMVOTE	0.555	0.341	0.617	0.770	0.259
FAMCAP	0.365	0.182	0.356	0.533	0.207
FAM V/C	0.473	0.185	0.390	0.645	0.475

[a] The statistics are calculated conditional on a family blockholder being present. Family blockholders are present in 962 (80.4%) of the 1,196 firm-year observations in the sample.

Panel C: Control variables					
Variable	Mean	25th percentile	Median	75th percentile	Standard deviation
SIZE	21.315	20.107	21.183	22.478	1.745
TANG	0.628	0.506	0.638	0.763	0.198
ROA	0.107	0.064	0.102	0.149	0.074
M/B	1.272	0.957	1.088	1.352	0.634
NDTSHIELD	0.407	0.220	0.335	0.503	0.269
DNONFAM	0.640	0.000	1.000	1.000	0.480

long-term debt as short-term debt in its capital structure. The mean LTLEV is 34.4% and the mean STLEV is 15.5%.

3.2.2 Family ownership variables

In this paper I only consider ownership by family vote blockholders. A family is classified as a blockholder if the votes owned by that family, directly or indirectly through trusts and other organizations controlled by the family, is 5% or more of the votes. The family blockholders typically control the CEO position and/or one or more directorships, making family blockholder ownership more or less equivalent with the terms inside or managerial ownership that are used in ownership studies on US data. I assume that the actual

power exerted by these family blockholders is an increasing function of their vote ownership. Although owning 50% of the votes is typically enough for a shareholder to control a firm from a legal point of view, some shareholder proposals are required by law to be approved by shareholders representing more than 50% of the votes before they can be implemented. For example, according to Swedish corporate law, some changes to the corporate charter require approval by a supermajority of the shareholders (typically two-thirds or three-fourths of the votes). Furthermore, minority shareholders together controlling 10% of the votes can block complete takeovers, and therefore the theoretical vote ownership needed for full control is 90%. For this reason I henceforth assume that the degree of family control is an increasing linear function of family blockholder vote ownership (FAMVOTE). If a firm has more than one distinct family coalition as a blockholder, I make the assumption that the interests of the different family coalitions are aligned. In most cases, however, the family blockholder category consists of only one coalition. Note that by families I also mean a coalition of individuals that are not necessarily related by blood or marriage but that have other strong ties such as being co-founders of the firm or co-owning other firms.

Family blockholders in Sweden typically control significantly more voting rights than cash-flow rights through the use of dual-class shares (see Cronqvist and Nilsson (2001)). Keeping the level of control constant, an increase in the separation of ownership and control increases the potential agency costs of family control by reducing the family's incentives to maximize the value of the firm's equity (Bebchuk (1999); Bebchuk et al. (2000); Jensen and Meckling (1976)). To capture this effect, I also include the log of the family's votes-to-capital ratio (FAM V/C) as a potential determinant of the capital structure choice in the regression analysis. I use the log of the votes-to-capital ratio, rather than the votes-to-capital ratio to reduce the influence of a few family coalitions with very large votes-to-capital ratios. Furthermore, by using the log of the votes-to-capital ratio, observations without family blockholders or with family blockholders that have no deviation from one share-one vote will have a value of zero for this variable, making interpretations of the results straightforward.

Panel B of Table 2 displays descriptive ownership statistics for family blockholders. As mentioned in Section 3, the ownership variables are measured with a lag of one year compared to the capital structure variables. All statistics are calculated conditional on a family blockholder being present. Family blockholders are present in 962 (80.4%) of the 1,196 firm-year observations. The mean (median) vote ownership when present is 55.5% (60.0%). In comparison, the mean (median) capital share owned by family blockholders is 36.5% (35.6%). The average (median) log of the votes-to-capital ratio for family

blockholders is 0.473 (0.390). Thus, family blockholders exercise a high degree of control at the same time as their incentives are likely to deviate from those of other shareholders. This creates a potentially severe agency problem.

3.2.3 Control variables

In this section I describe other possible determinants of leverage that I use as control variables. Panel C of Table 2 contains summary statistics for these variables.

Firm size, measured as the log of the book value of total assets measured in 1997 SEK (SIZE), is included since larger firms are presumably less risky than small firms, which should enable large firms to use more debt than small firms. Previous empirical studies typically find a positive relationship between firm size and leverage (e.g., Titman and Wessels (1988)). Firm size may also affect the choice of long-term vs. short-term debt. Smith and Warner (1979) argue that smaller firms are more likely to face greater conflicts of interests between shareholders and debtholders. Barnea et al. (1980) argue that these conflicts can be controlled through the use of short-term debt.

I include a measure of the firm's tangible assets (TANG), defined as the sum of the book value of tangible fixed assets and inventories divided by the book value of total assets, because tangible assets can serve as collateral, thereby reducing costs related to risk-shifting and debt overhang (Jensen and Meckling (1976); Myers (1977)). Hence, corporate debt capacity will be increasing in the proportion of tangible assets. Previous empirical evidence also suggests that there is a positive relation between tangible assets and long-term debt financing (Barclay and Smith (1995)).

Return on assets (ROA), defined as earnings before deprecation, interest and taxes (EBDIT) divided by the book value of total assets, is included because of two possible relations between profitability and leverage. First, according to standard pecking order arguments (for example, Myers and Majluf (1984)), firms prefer internal funds to external funds, in which case there should be a negative relation between leverage and profitability. On the other hand, profitable firms generate more free cash flow than unprofitable firms and should, according to Jensen (1986), use more debt to alleviate agency problems.

I include the ratio of the market value of the firm's assets to the book value of its assets (M/B-ratio) as a proxy for growth options. This variable is a commonly used proxy for growth opportunities, where a smaller market-to-book ratio implies fewer growth opportunities. Market value of assets is estimated as the market value of equity plus book value of total liabilities. Due to debt overhang problems, firms with valuable growth

opportunities may limit debt financing and/or employ shorter maturity debt (Myers (1977); Barnea et al. (1980)).

Following, among others, Titman and Wessels (1988), I include a measure of non-debt tax shields as a determinant of capital structure choice. DeAngelo and Masulis (1980) argue that tax deductions for depreciation are substitutes for the tax benefits of debt financing and that firms with large non-debt tax-shields relative to their expected cash flow include less debt in their capital structures. The main non-debt tax shields available to Swedish firms are depreciation expenses. The variable non-debt tax shields (NDTSHIELD) is defined as the ratio of deprecation expenses to EBDIT. For observations with a value of this ratio above one, NTDSHIELD is set equal to one with the interpretation that earnings cannot be more than 100% shielded from taxes. Observations with negative values of EBDIT are also given the value of one, since there is no income to shield from taxes in this case.

Finally, I include a dummy for the presence of non-family blockholders (DNONFAM). Non-family blockholders have incentives to monitor the firm (Shleifer and Vishny (1986)), and may therefore act as a substitute for debt as a disciplining device. The non-family blockholder indicator variable is given the value of one if there is at least one non-family owner controlling five percent or more of the votes present in the firm. A non-family owner is defined as any organization that is not ultimately controlled by a family. I consider an organization to be ultimately controlled by a family coalition if the family is the largest owner of that organization and controls 25% or more of the voting rights.

4. Analysis of family control and corporate financing decisions

4.1 Method

One econometric problem that arises in most corporate finance studies using cross-sectional data is that of endogeneity. In our case, unobserved (to the econometrician) firm characteristics (for example, asset uniqueness) [4] can simultaneously affect the capital structure choice and the explanatory variables. This endogeneity will make cross-sectional OLS estimates biased and inconsistent. However, because I use a panel of firms over time, I can employ panel data techniques to overcome this problem. Assuming that the unobserved firm characteristics are invariant over time, we can consistently estimate the coefficients of the explanatory variables by using fixed-effects regression (see Baltagi (1995)). Furthermore,

[4] Titman (1984) shows how asset uniqueness affects capital structure choice because of its effects on bankruptcy costs.

I also try to limit endogeneity problems by measuring the explanatory variables with a one-year lag. In particular, I estimate the relation between family ownership and capital structure choice using the following model set up:

$$y_{it} = a + X'_{it-1}B + YD'_tC + e_{it} \qquad i = 1,...,N \quad t = 1,...,T_i \tag{1}$$

where y_{it} is a measure of leverage, a is the intercept, X'_{it-1} is a 1×K vector of ownership and control variables measured at time *t-1*, YD'_t a $1\times(T_i\text{-}1)$ vector of year dummies (one time dummy is excluded in order to avoid the dummy variable trap), and e_{it} is the error term, for firm *i* at time *t*. To control for unobservable firm-specific characteristics, the error term e_{it} is decomposed in the following way:

$$e_{it} = u_i + v_{it} \tag{2}$$

where u_i is the unobservable fixed firm specific effect and v_{it} is an ordinary white noise term. We then have the following regression model:

$$y_{it} = a + X'_{it-1}B + YD'_tC + u_i + v_{it} \qquad i = 1,...,N \quad t = 1,...,T_i \tag{3}$$

If we assume that u_i is a *fixed firm effect*, we can include a dummy variable for each firm in the sample, and by excluding the intercept term to avoid the dummy variable trap, we get estimates of $(a+u_i)$ for each firm. I test the fixed effect model specification by using an *F*-test for the joint significance of all fixed firm effects. Potential correlation between the firm specific effect and the explanatory variables is tested by a Hausman (1978) test under the null hypothesis of zero correlation. A rejection of the null hypothesis indicates an endogeneity problem and supports the use of the fixed effects model instead of a random effects model or a simple pooled OLS model. The null hypotheses of the *F*-test and the Hausman-test are rejected for all regressions of this paper, thus supporting the use of fixed firm effects.

4.2 The relation between family ownership and total leverage

Table 3 presents the results from fixed effects regressions of TOTLEV on family ownership. In all regressions, the control variables described in Section 3.3 are included together with year dummies. To conserve space, the results for the year dummies are not reported in the table. Furthermore, I do not comment on the results concerning the control variables to any greater extent, since they are not the primary focus of this study.

The control and the voluntary constraint hypotheses generate different predictions regarding the relation between a firm's use of debt in its capital structure and the degree of family control depending on whether the firms has many profitable investment opportunities or not. Therefore, I allow the relation between the family ownership variables and leverage to differ between firms classified as having few growth opportunities and firms classified as

having many growth opportunities, where I use the M/B-ratio as a measure of growth opportunities.[5] In particular, I interact the family ownership variables with two indicator variables, LOW M/B and HIGH M/B, which are equal to one if the firm is classified as being a low market-to-book or high market-to-book firm, respectively, and are equal to zero otherwise. The classification of firms as low market-to-book or high market-to-book firms is performed according to the following procedure:

First, I adjust the M/B-ratios of the sample firms by deducting the sample median M/B-ratio for a particular year from the firms' M/B-ratios for that year. This adjustment is done because many firms do not exist in the sample for the full sample period. I want to make sure that firms classified as low market-to-book (high market-to-book) are firms with relatively poor (good) growth prospects regardless of the general state of the economy. Without this adjustment, firms that are only included in the sample during years of generally low (high) economic growth would tend to be classified as low market-to-book (high market-to-book) firms, even if they have relatively better (worse) growth prospects than firms that are included in the sample over the entire sample period. After calculating the year-adjusted M/B-ratios, I calculate the average year-adjusted M/B-ratio for each firm. Finally, firms are classified as low market-to-book (high market-to-book) if their average year-adjusted market-to-book ratio is lower than or equal to (larger than) the median average year-adjusted M/B-ratio for the entire sample.

Through this classification procedure, 108 firms are classified as low market-to-book firms and 107 firms are classified as high market-to-book firms. By construction, there is a substantial difference in the average M/B-ratio between the two groups; the mean (median) M/B-ratio is 1.02 (1.00) for the low market-to-book firms and 1.60 (1.37) for the high market-to-book firms (the differences in means and medians are significant at the 1%-level). As a further test of whether this classification captures fundamentally different growth opportunities I compare the one-year real growth rates in sales and total assets between the two groups. Real growth in sales (assets) is defined as the log of sales (assets) year t minus the log of sales (assets) t-1, where sales (assets) have been adjusted for inflation. Because of outliers, I only compare the median growth rates. The median real growth rate in sales is 0.034 for low market-to-book firms and 0.064 for high growth firms. The median real growth

[5] The market-to-book ratio (M/B-ratio) is a very common measure of growth opportunities in the corporate finance literature (see, e.g., Smith and Watts (1992)). I use the M/B-ratio because it is a forward-looking measure that captures the markets perception of the value of the firm's growth opportunities. In contrast, a historic measure of growth, such as sales growth, will not necessarily be a good predictor of the value of the firm's growth opportunities, since it will also capture growth resulting from previous overinvestment.

Table 3. The relation between total leverage and family ownership

Fixed firm effects coefficient estimates from regressing total leverage on family ownership variables and control variables. The data set is an unbalanced panel of 215 Swedish firms listed on the SSE 1990-1997. In total, the sample includes 1,196 firm-year observations. The explanatory variables are all lagged one year. All variables are defined in Table 1. Year dummies for 1991-1997 are included but not reported. *p*-values from *t*-tests using White's heteroskedasticity-robust standard errors are reported within parentheses. The F-test tests whether the fixed firm effects are jointly significant. The Hausman-test is a Wald-test under the null hypothesis of zero correlation between the regressors and the firm specific effects.

	Dependent variable: TOTLEV				
Explanatory variable	(1)	(2)	(3)	(4)	(5)
FAMVOTE	0.003				
	(0.912)				
FAMVOTE × LOWGROWTH		-0.063	-0.048	-0.027	-0.012
		(0.047)	(0.141)	(0.471)	(0.751)
FAMVOTE × HIGHGROWTH		0.063	0.067	0.105	0.109
		(0.037)	(0.031)	(0.004)	(0.003)
FAM V/C × LOWGROWTH			-0.028		-0.027
			(0.101)		(0.107)
FAM V/C × HIGHROWTH			-0.014		-0.018
			(0.554)		(0.432)
FAMVOTE×ROA×LOWGROWTH				-0.441	-0.444
				(0.074)	(0.072)
FAMVOTE×ROA× HIGHGROWTH				-0.414	-0.419
				(0.046)	(0.044)
SIZE	0.072	0.074	0.074	0.074	0.074
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
TANG	0.264	0.257	0.261	0.263	0.267
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
ROA	-0.621	-0.630	-0.631	-0.464	-0.465
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
M/B	-0.010	-0.008	-0.007	-0.008	-0.007
	(0.300)	(0.409)	(0.465)	(0.431)	(0.502)
NDTSHIELD	-0.024	-0.027	-0.023	-0.035	-0.031
	(0.426)	(0.371)	(0.437)	(0.272)	(0.321)
DNONFAM	0.015	0.013	0.015	0.012	0.013
	(0.246)	(0.294)	(0.248)	(0.338)	(0.285)
Adjusted R^2	0.817	0.819	0.819	0.819	0.820
F-test of fixed effects	12.68	12.74	12.76	12.74	12.77
(*p*-value)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Hausman-test	46.59	56.78	58.14	66.71	68.53
(*p*-value)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)

rate in assets is –0.002 for low market-to-book firms and 0.061 for high growth firms. Both differences in median values are highly significant according to Wilcoxon rank-sum tests (*p*-values <0.01). Hence, it seems as if my classification captures differences in firms' growth opportunities reasonably well.

As a baseline model, Regression (1) of Table 3 displays the results of regressing TOTLEV on FAMVOTE without interacting FAMVOTE with the LOWGROWTH and

HIGHGROWTH indicator variables. We see that there is no significant relation between total leverage and the level of family vote ownership. Of the control variables, SIZE, TANG and ROA are significantly related to TOTLEV with signs that are consistent with the results of previous studies (see, for example, Rajan and Zingales (1995)). The result of Regression (1) is inconsistent with the debt-aversion hypothesis. Family owners do not seem to be concerned about reducing leverage in general as their degree of control over firms increase.

In Regression (2) I allow the relation between TOTLEV and FAMVOTE to depend on whether the firm is classified as a low market-to-book or high market-to-book firm as described above. We see that growth opportunities have a significant impact on the relation between family ownership and the total leverage of a firm. There is a significant (p-value = 0.047) negative relation between TOTLEV and FAMVOTE for firms classified as low market-to-book firms. In stark contrast, there is a significant (p-value = 0.037) positive relation between TOTLEV and FAMVOTE for firms classified as high market-to-book firms. The difference in the FAMVOTE coefficients for low-and high market-to-book firms is significant at the 1%-level. The marginal economic impact of the estimated relations is identical in magnitude for both types of firms. An increase in FAMVOTE by 0.10 implies a decrease in TOTLEV with 0.006 for low market-to-book firms and an increase in TOTLEV with 0.006 for high market-to-book firms, ceteris paribus. Regression (3) shows that when FAM V/C is added as complementary measure of family control it has a negative but insignificant coefficient for both low- and high market-to-book firms. Furthermore, the negative coefficient of FAMVOTE for low market-to-book firms decreases in magnitude and is no longer significant, whereas there is a marginal increase in the magnitude and significance level of the coefficient of FAMVOTE for the high market-to-book firms. The insignificance of FAMVOTE for the low market-to-book firms when FAM V/C is included could be due to a multicollinearity problem, since family blockholders with a large deviation from one-share-one-vote also tend to have a high level of vote ownership. This conjecture is confirmed when I rerun the regression excluding FAMVOTE (unreported). Without FAMVOTE, FAM V/C has a significant negative coefficient for the low market-to-book firms.

The results provide evidence against the voluntary constraint hypothesis. Under the voluntary constraint hypothesis we expect a significant positive relation between the degree of family control and leverage *in particular* for firms with poor growth prospects. We observe the exact opposite relation. Instead, the results are consistent with the control hypothesis, which suggests that families in control chose capital structures that facilitate

maintained control and extraction of private benefits. For example, the negative relation between TOTLEV and FAMVOTE for low market-to-book firms is consistent with empire-building families wanting to avoid constraints on their investment activity. The positive relation between TOTLEV and FAMVOTE for high market-to-book firms is consistent with families in control of firms with many positive NPV projects choosing the type of investment financing that will dilute their control the least.

I further test the validity of control hypothesis by interacting FAMVOTE with ROA for both low market-to-book and high market-to-book firms. The control hypothesis predicts that controlling families preferred choice of financing is internally generated cash flow. This should be true for both low market-to-book and high market-to-book firms. Hence, under the control hypothesis we expect the interaction of FAMVOTE with ROA to be negatively related to TOTLEV regardless of growth opportunities. In regression (4) the interaction between FAMVOTE and ROA is included together with FAMVOTE. The coefficients associated with the interaction between FAMVOTE and ROA are negative and significant for both low market-to-book and high market-to-book firms (although only weakly significant for low market-to-book firms). At the same time the negative coefficient associated with FAMVOTE for low market-to-book firms is reduced in magnitude and becomes insignificant whereas the positive coefficient associated with FAMVOTE for high market-to-book firms increases in both magnitude and significance level. These results provide further support for the control hypothesis in that they suggest that family owners prefer to use internally generated cash rather than debt to fund their firms' operations. The fact that the negative relation between FAMVOTE and TOTLEV for low market-to-book firms seem to have been driven by family controlled firms that have access to more internally generated funds also suggests that the negative relation was not due to new equity issues.

4.3 The relation between family ownership and long-term and short-term leverage

Table 4 displays the estimated results from fixed effects regressions with LTLEV as the dependent variable. Regression (1) shows that there is a highly significant negative relation between FAMVOTE and LTLEV for low market-to-book firms (p-value<0.01) whereas there is no significant relation for high market-to-book firms. The difference in coefficients is significant at the 1%-level. The negative relation between FAMVOTE and LTLEV for low market-to-book firms is not only highly statistically significant, the relation is also important in an economic sense. An increase in family vote ownership from zero to the median ownership level by a family blockholder (0.617) is associated with an increase in LTLEV of

Table 4. The relation between long-term leverage and family ownership

Fixed firm effects coefficient estimates from regressing long-term leverage on family ownership variables and control variables. The data set is an unbalanced panel of 215 Swedish firms listed on the SSE 1990-1997. In total, the sample includes 1,196 firm-year observations. The explanatory variables are all lagged one year. All variables are defined in Table 1. Year dummies for 1991-1997 are included but not reported. *p*-values from *t*-tests using White's heteroskedasticity-robust standard errors are reported within parentheses. The F-test tests whether the fixed firm effects are jointly significant. The Hausman-test is a Wald-test under the null hypothesis of zero correlation between the regressors and the firm specific effects.

	Dependent variable: LTLEV			
Explanatory variable	(1)	(2)	(3)	(4)
FAMVOTE × LOWGROWTH	-0.223	-0.197	-0.191	-0.165
	(0.000)	(0.000)	(0.003)	(0.010)
FAMVOTE × HIGHGROWTH	-0.020	-0.010	0.006	0.019
	(0.612)	(0.781)	(0.896)	(0.689)
FAM V/C × LOWGROWTH		-0.045		-0.045
		(0.065)		(0.065)
FAM V/C × HIGHROWTH		-0.047		-0.050
		(0.055)		(0.042)
FAMVOTE×ROA×LOWGROWTH			-0.387	-0.402
			(0.233)	(0.212)
FAMVOTE×ROA× HIGHGROWTH			-0.261	-0.287
			(0.310)	(0.260)
SIZE	0.039	0.040	0.038	0.039
	(0.020)	(0.018)	(0.022)	(0.019)
TANG	0.348	0.354	0.354	0.360
	(0.000)	(0.000)	(0.000)	(0.000)
ROA	-0.415	-0.421	-0.299	-0.296
	(0.001)	(0.001)	(0.062)	(0.060)
M/B	-0.005	-0.002	-0.005	-0.002
	(0.670)	(0.854)	(0.670)	(0.868)
NDTSHIELD	0.009	0.016	0.001	0.007
	(0.799)	(0.660)	(0.978)	0.846)
DNONFAM	0.001	0.004	0.000	(0.003
	(0.943)	(0.798)	(0.998)	(0.851)
Adjusted R^2	0.689	0.690	0.689	0.690
F-test of fixed effects	6.58	6.65	6.55	6.62
(*p*-value)	(0.000)	(0.000)	(0.000)	(0.000)
Hausman-test	69.26	59.69	59.69	64.66
(*p*-value)	(0.000)	(0.000)	(0.000)	(0.000)

approximately 13.8 percentage points, all else being equal. This is a significant increase considering that the median value of LTLEV is 0.318. In Regression (2) of Table 4 FAM V/C is added as an explanatory variable. The previous results are robust to this inclusion. Furthermore, FAM V/C is negatively related to LTLEV for both low market-to-book and high market-to-book firms. The relation is weakly significant (at the 10%-level) for both types of firms. Hence, keeping the level of vote ownership constant, it seems as if a family owner prefers less long-term debt the larger the separation of ownership and control is.

In Regressions (3) and (4) of Table 4 the interaction between FAMVOTE and ROA is added to the specifications in Regressions (1) and (2), respectively. The interaction is negatively related to LTLEV for low market-to-book as well as high market-to-book firms in both regressions, but not significantly so. The magnitude of the negative coefficient associated with FAMVOTE decreases somewhat, but the coefficient is still highly significant (at the 1%-level).

Table 5 displays the results from repeating the above analysis with STLEV as the dependent variable. In all regressions there is a significant positive relation between FAMVOTE and STLEV for both low market-to-book and high market-to-book firms. However, the coefficient associated with FAMVOTE for low market-to-book firms is almost twice as large as the coefficient associated with FAMVOTE for high market-to-book firms. There is no significant relation between FAM V/C and the use of short-term debt for either low market-to-book or high market-to-book firms. Furthermore, the coefficient associated with the interaction between FAMVOTE and ROA is negative but insignificant for both types of firms.

From the above results we can infer that the negative relation between FAMVOTE and TOTLEV for low market-to-book firms is solely due to a decrease in the use of long-term debt. Furthermore, the positive relation between FAMVOTE and STLEV for low market-to-book firms also suggests that these firms to some extent are exchanging long-term debt for short-term debt as the degree of family control increases. This result is consistent with long-term corporate investment activity being a channel through which a controlling family extracts private benefits. For example, the family may engage in. empire building or pursue pet projects. The debt-overhang associated with long-term debt is likely to constrain such investment activity (which is also what my results in Section 5 indicate).

We can also infer that the positive relation between FAMVOTE and TOTLEV for high market-to-book firms is due to an increased use of short-term debt as family vote ownership increases. However, there is no evidence that controlling families in high market-to-book firms are actively exchanging long-term debt for short-term debt. This could be due to the fact that families in control of high market-to-book firms use more debt in the first place. Excessive use of short-term debt may lead to an unacceptably high risk of bankruptcy, in

Table 5. The relation between short-term leverage and family ownership

Fixed firm effects coefficient estimates from regressing short-term leverage on family ownership variables and control variables. The data set is an unbalanced panel of 215 Swedish firms listed on the SSE 1990-1997. In total, the sample includes 1,196 firm-year observations. The explanatory variables are all lagged one year. All variables are defined in Table 1. Year dummies for 1991-1997 are included but not reported. *P*-values from *t*-tests using White's heteroskedasticity-robust standard errors are reported within parentheses. The F-test tests whether the fixed firm effects are jointly significant. The Hausman-test is a Wald-test under the null hypothesis of zero correlation between the regressors and the firm specific effects.

	Dependent variable: STLEV			
Explanatory variable	(1)	(2)	(3)	(4)
FAMVOTE × LOWGROWTH	0.160	0.149	0.165	0.152
	(0.002)	(0.003)	(0.004)	(0.008)
FAMVOTE × HIGHGROWTH	0.083	0.077	0.098	0.091
	(0.022)	(0.027)	(0.029)	(0.038)
FAM V/C × LOWGROWTH		0.018		0.018
		(0.414)		(0.408)
FAM V/C × HIGHROWTH		0.033		0.032
		(0.148)		(0.161)
FAMVOTE×ROA×LOWGROWTH			-0.054	-0.042
			(0.831)	(0.866)
FAMVOTE×ROA× HIGHGROWTH			-0.153	-0.131
			(0.465)	(0.519)
SIZE	0.035	0.034	0.035	0.035
	(0.006)	(0.007)	(0.007)	(0.007)
TANG	-0.091	-0.093	-0.091	-0.094
	(0.121)	(0.112)	(0.123)	(0.113)
ROA	-0.215	-0.210	-0.166	-0.169
	(0.046)	(0.048)	(0.169)	(0.155)
M/B	-0.003	-0.005	-0.003	-0.005
	(0.710)	(0.552)	(0.738)	(0.582)
NDTSHIELD	-0.036	-0.039	-0.036	-0.038
	(0.217)	(0.190)	(0.258)	(0.229)
DNONFAM	0.012	0.011	0.012	0.011
	(0.375)	(0.437)	(0.382)	(0.443)
Adjusted R^2	0.560	0.560	0.559	0.556
F-test of fixed effects	5.41	5.42	5.40	5.41
(*p*-value)	(0.000)	(0.000)	(0.000)	(0.000)
Hausman-test	71.79	46.31	30.73	31.09
(*p*-value)	(0.000)	(0.000)	(0.021)	(0.039)

which the family of course would lose both their equity capital and their private benefits.

The negative relation between FAM V/C and LTLEV for both low market-to-book and high market-to-book firms is also consistent with the conjecture that long-term debt reduces private benefits extraction, since for a given level of vote control, the larger the V/C-ratio the more important private benefits are.

Finally, it is also interesting to note that the previous result of controlling family owners preferring to use less debt as ROA increases does not seem to be due to a decrease of a

particular type of debt. This suggests that for a given degree of control, family owners have a preferred mix between long-term and short-term debt. Hence, when more internal cash flow is available controlling families reduce the total amount of debt but keep the composition of debt more or less the same.

4.4 Discussion of the results

The results of the empirical analysis so far support the hypothesis that controlling family owners make corporate financing decisions based on control considerations and protection of private benefits. Hence, suboptimal capital structure choices could potentially explain the large negative effect of concentrated family vote ownership on firm value that has been documented for Swedish firms by Cronqvist and Nilsson (2001). Capital structure theory points at how the families' choice of capital structures can increase the agency problem between the controlling families and non-controlling shareholders. For low market-to-book firms there is a potential problem of overinvestment, since debt can constrain investments in unprofitable projects for these firms (Jensen (1986); Stulz (1990); Hart and Moore (1995)). For high market-to-book firms there is a potential problem of underinvestment, since a high level of leverage creates a debt-overhang problem (Myers (1977)). Consistent with these arguments, McConnell and Servaes (1995) find that leverage is positively associated with corporate value for firms classified as having few valuable growth opportunities, whereas leverage is negatively associated with corporate value for firms classified as having many valuable growth opportunities.

In the next section I further investigate the above conjectures by analyzing the effect of leverage and family ownership on corporate investment activity.

5. Analysis of the relation between leverage, family ownership and corporate investment

I define corporate investment (INVEST) as gross investments in fixed assets in year *t* scaled by the book value of total assets at the end of year *t-1*. The results are robust if I instead use a measure based on net investments (i.e., gross investments less depreciation and divestitures). Because there are a few firm-year observations with extreme levels of investments (the maximum level is 6.65), I exclude firm-year observations with a value of INVEST above the 99th percentile (=1.42) from the analysis. This reduces the sample size to 1,184 firm-year observations. Table 6 displays descriptive statistics for INVEST for both the original sample as well as the truncated regression sample.

Table 6. Summary statistics for corporate investment measure

The data set is a panel of 215 Swedish firms listed on the SSE 1990-1997, with firms allowed to enter and exit the panel over time. In total, the sample includes 1,196 firm-year observations. INVEST is defined as gross investments in fixed assets in year *t* scaled by the book value of assets at the end of year *t*-1.

Variable	N	Mean	25th percentile	Median	75th percentile	Standard deviation
INVEST (entire sample)	1,196	0.157	0.041	0.081	0.157	0.326
INVEST (truncated sample)	1,184	0.134	0.041	0.080	0.153	0.172

I run fixed effects regressions of INVEST on measures of leverage interacted with the LOWGROWTH and HIGHGROWTH indicator variables. Beside the leverage variables, I also include the M/B-ratio and ROA as explanatory variables. The M/B-ratio is included to control for direct impact of growth opportunities on corporate investment. ROA is included because previous studies have shown that investment is related to the availability of internal funds (see, e.g., Fazzari et al. (1988)). As in the regressions in the previous sections, the explanatory variables are lagged one year in order to reduce possible simultaneity bias. Furthermore, year dummies are also included in the regressions to control for business cycle effects. Table 7 presents the regression results.

In the first regression model displayed in Regression (1) of Table 6 I use TOTLEV as a measure of leverage. We see that TOTLEV has a significantly negative coefficient for both low market-to-book (p-value = 0.013) and high market-to-book firms (p-value < 0.000). The magnitude of the coefficient is almost twice as large for high market-to-book firms, however. Hence, debt seems to constrain corporate investment activity for both low market-to-book and high market-to-book firms, but to a much larger extent for the high market-to-book firms. In the regression displayed in Regression (2) I use LTLEV and STLEV as measures of leverage instead of TOTLEV. There is a significant (at the 1%-level) negative relation between INVEST and LTLEV for both types of firms, although, in line with the result for TOTLEV, the magnitude of the coefficient is much larger for the high market-to-book firms. STLEV has a negative coefficient for both low market-to-book and high market-to-book firms, but the coefficient is only significant for the high market-to-book firms. For both types of firms the negative coefficient of LTLEV is of a significantly (at the 5%-level) larger magnitude than the negative coefficient of STLEV. Hence, it seems as if the use of short-term debt does not constraint corporate investments in low market-to-book firms, and is less constraining than long-term debt in high market-to-book firms.

Table 7. The relation between corporate investment, leverage and family ownership

Fixed firm effects coefficient estimates from regressing corporate investment on leverage, family ownership and control variables. The data set is an unbalanced panel of 215 Swedish firms listed on the SSE 1990-1997. In total 1,184 firm-year observations. The explanatory variables are all lagged one year. All variables are defined in Table 1. Year dummies for 1991-1997 are included but not reported. *P*-values from *t*-tests using White's heteroskedasticity-robust standard errors are reported within parentheses. The F-test tests whether the fixed firm effects are jointly significant. The Hausman-test is a Wald-test under the null hypothesis of zero correlation between the regressors and the firm specific effects.

	Dependent variable: INVEST				
Explanatory variable	(1)	(2)	(3)	(4)	(5)
TOTLEV × LOWGROWTH	-0.231			-0.230	
	(0.013)			(0.014)	
TOTLEV × HIGHGROWTH	-0.402			-0.400	
	(0.000)			(0.000)	
LTLEV × LOWGROWTH		-0.263			-0.256
		(0.006)			(0.008)
LTLEV× HIGHGROWTH		-0.430			-0.429
		(0.000)			(0.000)
STLEV × LOWGROWTH		-0.160			-0.175
		(0.114)			(0.086)
STLEV × HIGHGROWTH		-0.344			-0.346
		(0.001)			(0.001)
FAMVOTE × LOWGROWTH			0.105	0.095	0.080
			(0.045)	(0.071)	(0.147)
FAMVOTE × HIGHGROWTH			0.009	0.028	0.023
			(0.806)	(0.418)	(0.524)
M/B	0.043	0.041	0.052	0.043	0.042
	(0.036)	(0.040)	(0.013)	(0.036)	(0.038)
ROA	-0.026	-0.032	0.242	-0.024	-0.030
	(0.830)	(0.793)	(0.025)	(0.844)	(0.807)
Adjusted R^2	0.233	0.235	0.208	0.235	0.235
F-test of fixed effects (*p*-value)	2.45	2.46	2.23	2.47	2.48
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Hausman-test (*p*-value)	52.00	69.59	20.55	57.21	65.99
	(0.000)	(0.000)	(0.039)	(0.000)	(0.000)

In Regression (3), I replace the leverage variables with FAMVOTE interacted with LOWGROWTH and HIGHGROWTH. There is a significant positive relation between FAMVOTE and INVEST for low market-to-book firms (p-value = 0.045), whereas there is no significant relation for high market-to-book firms. This result suggests that families in control of low market-to-book firms have a higher preferred level of investment activity than other shareholders, thus indicating a potential overinvestment problem. To investigate the marginal impact of leverage when controlling for family ownership, and vice versa, I rerun Regressions (1) and (2) including FAMVOTE interacted with LOWGROWTH and HIGHGROWTH. The results are displayed in Regressions (4) and (5), respectively. We see

that the coefficient of FAMVOTE is positive and weakly significant for low market-to-book firms when TOLEV is the measure of leverage. However, when LTLEV and STLEV are used as measures of leverage the coefficient of FAMVOTE is no longer significant. For high market-to-book firms, the coefficient for FAMVOTE is insignificant no matter how leverage is measured. In unreported regressions I have also added FAM V/C to the specifications with no significant results. Hence, it seems as if the degree of family control only affects corporate investment activity through its effect on the use of debt but has no direct impact on investments once leverage is controlled for. This result suggests that families in control have no greater incentives than professional managers to engage in empire building, but that controlling families can more easily realize empire building compared to professional managers because they can affect the capital structure choice.

In summary, the above results support the conjecture that controlling families' capital structure choices is part of the agency conflict between controlling families and non-controlling shareholders. In firms with few valuable growth opportunities, families in control seem to choose a capital structure that puts as few constraints as possible on their investment behavior, thereby increasing the risk of overinvestment. In firms with many growth opportunities, family control is associated with a higher level of leverage, which in turn is associated with a lower level of investment, thereby increasing the risk of underinvestment.

6. Conclusions

In this paper I propose and test the hypothesis that controlling family owners make corporate financing decisions based on protection of their future control and extraction of private benefits. If controlling families enjoy significant control rents they are likely to choose the form of financing that will pose the smallest possible threat to their control, since maintained control is the prerequisite for their consumption of private benefits. Given that the controlling family is unable to make further investments in the firm due to personal diversification preference or capital constraints, this hypothesis results in a 'pecking order' among financing alternatives: (i) If available, controlling families first and foremost use internally generated funds to finance their firms operations, since this will not impact the control structure of the firm, or put constraints on self-serving behavior. (ii) Lacking sufficient internally generated cash flow, controlling families will use debt financing, since debt financing does not affect the voting structure of the firm. (iii) Equity financing will only be used when internally generated funds are limited, debt capacity has been exhausted, and

the value of the project for which the financing is needed offset the dilution of the families voting power. Issuing low voting equity is a potential alternative to debt, but is likely to be (too) costly. Because an issue of low-voting shares would increase the controlling families' separation of ownership, potential investors are likely to demand a large discount on the new shares because of the risk of expropriation once they have made the investment in the firm.

One implication of the above 'control hypothesis' is that controlling family owners will be more likely to use debt financing in firms with many growth opportunities, since such firms are unlikely to generate the cash flow needed to finance the firms' growth. Conversely, controlling families' will be less likely to use debt financing among firms with few growth opportunities, since such firms are more likely to be mature firms that generate a steady cash flow that can be used to finance investments or to retire debt.

Using an unbalanced panel of 215 listed Swedish firms over the period 1990-1997, I find that there is a significant positive relation between family vote ownership and leverage for firms with few growth opportunities (low market-to-book firms). Furthermore, this negative association seems to be driven by family controlled firms that have a high level of operating earnings. In contrast, for firms with many profitable growth opportunities (high market-to-book firms) there is a significant positive relation between family vote ownership and leverage. However, similar to the low market-to-book firms, I find that family-controlled high market-to-book firms with a high level of operating earnings use less debt in their capital structures. These results are consistent with the 'control hypothesis.'

Furthermore, I find that increased use of debt is associated with a lower corporate investment activity in both low market-to-book and high market-to-book firms. Combined the results suggests that the capital structures chosen by controlling family owners create a potential overinvestment problem in low market-to-book firms and a potential underinvestment problem in high market-to-book firms. Thus, the evidence in this paper suggests that the capital structure choices made by controlling families are part of the agency problem between controlling and non-controlling shareholders.

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Chapter 3

The Choice between Rights Offerings and Private Equity Placements*

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1. Introduction

Despite a burgeoning finance literature on seasoned equity offerings (SEOs), there is a surprising lack of studies on the determinants of the choice between different SEO-methods. This is particularly true for stock markets outside the US and Japan, where SEOs by public firms are conducted mainly as rights offerings (ROs) or private equity placements (PPs),[1] as opposed to underwritten firm-commitment public offerings (POs).[2] This study is the first to examine how firms choose between these SEO-methods.

Our sample is an internationally unique, hand-collected, dataset consisting of the population of SEOs by Swedish public firms over the period of 1986-1997. Sweden is a first-rate study-object for an analysis of the choice between ROs and PPs. First, these are the only SEO-methods used, and we are able to identify *all* SEOs. Thus, the results of the present paper do not suffer from sample-selection problems. Second, the fact that public firms often are closely-held by families with a large separation of ownership of votes and shares (La Porta et al. (1999a)) makes it ideal for analyzing whether corporate control considerations influence SEO-method choices. Similarly, the small size and the low analyst following of a substantial fraction of firms makes it ideal for analyzing whether asymmetric information

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[1] In an RO, current shareholders are given short-term options, "rights," to purchase new shares on a *pro rata* basis at a certain exercise price until a certain expiration date. In a PP, new shares are sold to a small group of -- current or new -- shareholders.

[2] See Eckbo and Masulis (1995) for an extensive review of the existing evidence on SEOs.

about firm value influences SEO-method choice. Finally, we are able to obtain comprehensive data on issue characteristics (e.g., detailed data on SEO-motives) and characteristics of the issuing firms (e.g., detailed data on pre- and post-SEO "ultimate" ownership of votes and shares).

If issuing firms only consider *direct* flotation costs (merchandising expenses, fees for legal services, listing fees, underwriter compensation, etc.), few firms would choose an SEO-method other than uninsured ROs (also called "pure" ROs), since average costs are only about 2% of the proceeds (see Smith (1977) and Eckbo and Masulis (1992), among others). However, it is a well-established fact in the US and many other markets that most firms do not choose uninsured ROs. Instead they choose ROs guaranteed by an underwriter who commits to purchase any unsubscribed shares (interchangeably referred to as insured, standby or underwritten RO), or a firm-commitment underwritten PO. This is the so-called "rights offer paradox" (see Smith (1977) and Hansen and Pinkerton (1982)), and it is present also in our data: only 33.7% of our SEOs are uninsured ROs. Moreover, while the importance of PPs among private firms has been recognized (Fenn et al. (1997)), the question remains why a *public* firm would turn to the *private* market for equity? After all, the average cost, in the form of a discount to the PP-investor, amount to about 20% of the proceeds according to Hertzel and Smith (1993). Yet, PPs among public firms are very common, both in our data (total proceeds from PPs is 50% of those from ROs) and in the U.S. (see Wu (2001)).[3] Thus, this is what we may term a "private placement paradox." Economic determinants other than direct flotation costs should be the focus of any study aiming at solving these equity-financing paradoxes.

In this paper, we develop an empirical model – a nested logit model (McFadden (1978, 1981)) – to analyze the choice between an RO and a PP. We allow for heterogeneity within these two main SEO-methods. Firms choosing an RO can, in turn, choose between an uninsured RO and an underwritten RO. Firms choosing a PP can, in turn, choose between a PP to a current investor (block shareholder or creditor) and a PP to a new shareholder.

We test three hypotheses on the determinants of the SEO-method choice. The first is what we term 'the control hypothesis.' We hypothesize that to the extent that controlling families enjoy significant private benefits of control, they will be reluctant to issue equity using a method that will threaten their extraction of control rents. We find strong support for

[3] This empirical evidence contradicts the assumption by some scholars (e.g., Helwege and Liang (1996)) that PPs among public firms are not common.

families' control considerations affecting their SEO-method choice. Firms controlled by family owners avoid PPs and underwritten ROs, which are the SEO-methods most likely to establish a new block shareholder or lead to more monitoring of the family. The commonness of family-controlled firms outside the U.S., in combination with families' control-dilution aversion, may explain the relative popularity of uninsured ROs around the world. Our evidence complements the research that has found that agency problems and control considerations explain the decision to issue equity in the first place (e.g., Amihud et al. (1990) and Jung et al. (1996)).

The second hypothesis we test is 'the adverse selection hypothesis.' Eckbo and Masulis (1992) recognize that firms with an expected current shareholder participation in an RO (take-up) below 100% face a similar adverse selection problem to that described by Myers and Majluf (1984). Eckbo and Masulis (1992) show that underwriter certification can mitigate this adverse selection problem by reducing information asymmetries. We expand Eckbo and Masulis's framework by allowing for a certification role of PP-investors. In fact, we argue that the certification benefit is larger in PPs. The issuing firm may be more willing to reveal proprietary, firm-specific information to PP-investors with large long-term ownership stakes. Furthermore, PP-investors expose themselves to a larger firm-specific risk by purchasing and holding the entire issue (similar to Leland and Pyle (1977)). Thus, a PP is likely to be a more credible signal of firm value than an underwriter certification. Given an expected take-up below 100% and the fact that a PP is the most expensive issue method in terms of direct costs, it follows that severely undervalued firms will tend to choose PPs, whereas firms with a moderate degree of undervaluation will tend to choose underwritten offers, because they provide some certification benefits while being cheaper than PPs. Furthermore, for a given level of undervaluation, as expected take-up decreases (i.e., as the expected proportion of shares sold to new shareholders increases) firms will switch from an uninsured RO to an underwritten offer, and then to a PP.

We find that the probability of choosing a PP is increasing in proxies for the degree of asymmetric information. In particular, we find that firms with the most extreme uncertainty about firm value choose to make a PP to a current investor, suggesting that current investors act as "capital providers of last resort." We also find that the probability of choosing a PP is decreasing in our measure of expected take-up. Among RO-firms, we find that the probability of an insured RO is positively related to the degree of asymmetric information. However, we find no evidence that differences in expected take-up explain the choice between insured and uninsured ROs. The last result contrasts the results of Bohren et al.

(1997), who study the choice between insured and uninsured ROs for a sample of Norwegian firms and find that expected take-up is positively related to the probability of an uninsured RO. Overall, the evidence is consistent with our hypothesized pecking order *within* the set of equity-financing alternatives.

The third hypothesis we test is' the moral hazard hypothesis.' PPs, and to some extent insured ROs, may be used to decrease agency costs due to managerial discretion. A PP will create a blockholder with incentives to monitor both the use of the issue proceeds and the firm's ongoing operations (see, e.g., Shleifer and Vishny (1986)) and an underwriter has incentives to monitor the firm to protect their reputational capital (Hansen and Torregrosa (1992)). Hence, firms that benefit the most from monitoring should use PPs or insured ROs. However, we find no empirical support for this hypothesis. There is no significant relation between measures for the potential benefits of increased monitoring and the choice of PPs or insured ROs. .

We also consider the importance of moral hazard problems in product market relationships. It is often impossible to contractually specify all contingencies of a business relationship, and this may lead to holdup problems ex post. This may, in turn, have ex ante effects on investments in the relationship, in particular if the assets involved are relationship-specific. A large industrial economics literature (e.g., Klein et al. (1978), Williamson (1979, 1985), and Aghion and Tirole (1994)) argues that an equity stake can align incentives and lead to lower contracting costs arising from such problems. Consistent with theses arguments, we find that almost a third of all PPs are made in conjunction with the issuing firm entering into a product market relationship with the PP-investor, whereas not one single RO is made concurrent with the establishment of a product market relationship.

The rest of the paper is organized as follows. Section 2 presents hypotheses and empirical predictions for the SEO-method choice. Our dataset is described in Section 3. Section 4 presents the nested logit model that we employ to test the relevance of our empirical predictions. Estimation results are reported in Section 5. Section 6 reports further supportive evidence on announcement reactions and changes in operating performance. Section 7 concludes the paper.

2. Hypotheses and variables

2.1 Contracting costs due to adverse selection

We assume that a firm f with a true value of assets in place of V_f, has a new project with $NPV_f > 0$. The firm furthermore lacks financial slack and has to raise (a commonly known amount of) capital through an SEO. Following Myers and Majluf (1984), we assume that prospective outside investors are informationally disadvantaged about V_f, whereas managers are fully informed and act in current shareholders' interests by maximizing the 'intrinsic' (full information) value of existing shares. The choice to issue and invest using a particular equity financing alternative, a, depends on NPV_f, the direct flotation costs, d_a and the expected wealth transfer (due to under-/overvaluation of V_f), $\Delta_{f,a}$, from current to new shareholders. That is, if the manager maximizes the 'intrinsic' value of existing shares, he will choose an SEO if and only if $NPV_f \geq d_a + \Delta_{f,a}$.

Myers and Majluf assume that (i) current shareholders are passive and cannot participate in the SEO; (ii) underwriters, such as investment banks, do not have any certification role; and (iii) PPs are not available. Thus, in practice, the SEO-method choice set only consists of a "direct equity offering" distributed by a simple best-effort contract with an investment bank. Myers and Majluf show that given these assumptions, undervalued firms with high values of $\Delta_{f,a}$ will not issue and invest and a decision to issue equity signals the manager's belief that the firm is overvalued.

Eckbo and Masulis (1992) expand the Myers and Majluf framework by allowing for current shareholder participation in the issue and for a certification role of underwriters. That is, the set of financing alternatives include uninsured ROs, underwritten ROs, and firm commitment POs. In addition to these extensions, we also allow for the use of PPs, where PP-investors, as well as underwriters, can engage in information production, at a cost, and thereby reduce the information asymmetry about V_f.[4] For there to be credible certification, there must be some mechanism that ensures that underwriters or PP-investors do not benefit from false certification. For underwriters, reputation can be one such mechanism (see, e.g., Chemmanur and Fulghieri (1994)). For PPs, the willingness to forego diversification benefits

[4] Hertzel and Smith (1993) expand the Myers and Majluf framework by adding the possibility of PPs to an investor who, at a cost, can learn the true value of assets-in-place. In contrast to our approach, they do not consider shareholder participation or a role for underwriters. Consequently, they analyze the choice between 'direct equity offerings' to the public and PPs.

could be a credible signal that the firm is of high quality, similar to the mechanism in Leland and Pyle (1977).[5]

Based on the above extension of Myers and Majluf's assumptions, a manager maximizing the intrinsic value of the current shares will choose the SEO-method, a^*, that solves

$$\max_{a\in\{a_1,\ldots,a_A\}}\left\{V_f + NPV_f - \left(d_a + \Delta_{f,a}\right), V_f\right\}, \tag{1}$$

where a is either an uninsured RO , an underwritten RO , a firm commitment PO, or a PP (or no issue at all). The size of $\Delta_{f,a}$ depends on:

The difference between V_f and the market's belief about V_f conditional on SEO-method a being chosen, i.e., the conditional degree of asymmetric information.

Expected current shareholders take-up, $t_f \in [0,1]$, i.e., the fraction of issued shares expected to be purchased by current shareholders. We assume that t_f is exogenous to the manager and that the manager has better knowledge about t_f compared to prospective investors. Following Eckbo and Masulis (1992), we assume that t_f is determined by current shareholders' personal diversification preferences, capital constraints, etc.

Let us first consider d_a for the different equity financing alternatives. The direct costs of an uninsured RO are the costs of distributing the issue, administrative fees, etc. In underwritten offers and in PPs, d_a will also include compensation for costs incurred in the underwriter's or PP-investor's information production. Furthermore, a PP-investor will, by definition, end up with a substantial stake in the PP-firm, whereas an underwriter, such as an investment bank, will only end up with a stake in the firm if the SEO fails (which is not common). Thus, compared to an underwriter, a PP-investor is likely to require larger compensation for becoming exposed to firm-specific risk, which will tend to make d_a larger in PPs than in underwritten ROs or firm commitment POs. These conjectures regarding direct flotation costs are consistent with the existing empirical evidence. Measured flotation costs as a percentage of issue size are the largest for PPs, the smallest for uninsured ROs, and

[5] This argument relies on overvalued firms refraining from making a PP. Overvalued firms can benefit by making a PP to an investor who can resell the shares prior to the revelation of the true value of the firm. This requires collusion between the PP-investors and the firm and that the PP investors can divest their shares before the true value of the firm is revealed. The risk of this is limited, however. A PP typically involves a few investors who receive a large block of shares. It would be difficult for the PP-investors to quickly divest their blockholdings through sales on the stock market without the market participants simultaneously revising their estimate of the firm's value.

somewhere in between for underwritten offers, where standby ROs tend to have lower direct costs compared to firm commitment POs.[6]

Obviously, if $t_f = 1$, there is no wealth transfer to new shareholders and, consequently, no adverse selection problem. Thus, in this case the manager chooses an uninsured RO if $NPV_f - d_{UI\text{-}RO} \geq 0$, since an uninsured RO is observed to have the lowest direct flotation cost. When $t_f < 1$ some undervalued firms will find it too costly to choose an uninsured RO. Instead they have the option to choose an underwritten offer or a PP. The particular method chosen among these alternatives will depend on the certification benefit of each particular issue net of d_a.

One argument for the certification benefit being larger in PPs is that the issuing firm may be more willing to reveal proprietary, firm-specific information to PP-investors than to underwriters, because the large ownership stake given to the PP-investors will ensure a more long-term interest in the performance of the firm. Another argument is that by purchasing and holding the entire issue, PP-investors expose themselves to a larger risk than underwriters, making a PP a more credible signal of the firm being undervalued. Given these arguments we assume that the degree of undervaluation of V_f will be lower in PPs than in underwritten offers.

So far, we have implicitly assumed that the PP investor is a new investor. However, the PP-investor could be one of the firm's current investors. A current investor may have a comparative advantage in valuing the firm, because she has already engaged in information production when making her initial investment and may also have developed relationships with the firm's managers in the past, which can facilitate transmission of information from the managers to the investors. In some cases, the current investor will be part of the management team and will be perfectly informed, by assumption. Therefore, a PP to a current investor is likely to be a more informative signal to the market about V_f than PPs to new investors. However, because a current investor already owns part of the firm, an increase in ownership is likely to mean significant costs to the investor in terms of exposure to idiosyncratic risk. Hence, if current investors are risk averse, they may not be willing to make an additional investment unless the undervaluation of the firm is especially large, such that the gain from reducing undervaluation offsets the loss of diversification.

[6] See Eckbo and Masulis (1995) for a review of the empirical evidence on direct flotation costs in ROs and POs, and Hertzel and Smith (1993) for evidence on discounts on shares sold in PPs.

Regarding the relative certification benefit of underwritten ROs versus underwritten POs, it is likely that an underwritten PO is a more credible certification of the issuing firms' value, since an underwriter takes a greater risk in a PO by guaranteeing the whole issue.

Based on the above discussion of the relative certification benefits and flotation costs for the different SEO-methods, we can now make testable predictions regarding the choice of SEO-method among the set of alternatives we observe in our particular data set (i.e., excluding POs), given $t_f < 1$:

(i) Undervalued firms with a low level of pre-issue asymmetric information will tend to choose uninsured ROs, because in this case, the benefit of certification is low and uninsured ROs are the cheapest in terms of d_a.

(ii) Over a mid-range level of asymmetric information, undervalued firms will find uninsured ROs too costly and choose insured ROs instead. Insured ROs provide some certification benefits while being cheaper in terms of d_a compared to PPs.

(iii) As the level of asymmetric information becomes high, undervalued firms will start to find insured ROs to be too costly, and instead choose PPs. PPs provide a greater certification benefit than insured ROs, and for severely undervalued firms this benefit may offset the larger d_a of PPs. Over very high levels of asymmetric information, we hypothesize that firms choose PPs to current investors who act as "capital providers of last resort."

The above empirical predictions thus describe a pecking order *within* the set of equity-financing alternatives. However, the predictions ignore the effect of the level of t_f on $\Delta_{f,a}$. For a given magnitude of pre-issue undervaluation, the larger t_f is, the smaller $\Delta_{f,a}$ will be and, hence, the more likely the firm will be to choose an uninsured RO. As t_f decreases, the expected wealth transfer increases and the firm shifts away from an uninsured RO to another SEO-method at some critical value of t_f. If the reduction in $\Delta_{f,a}$ due to the certification benefit of an underwritten offer or a PP is sufficiently great to outweigh the increase in d_a, the manager will choose a PP or underwriter certification. Thus, underwriter certification and PPs can act as substitutes for expected current shareholder take-up. In line with the predictions above, we hypothesize that the level of t_f gives rise to a similar pecking-order within the set of equity-financing alternatives for a given level of pre-issue undervaluation:

(i) For high values of t_f, undervalued firms choose uninsured ROs.

(ii) For some intermediate values of t_f, undervalued firms choose underwritten ROs.

(iii) For low values of t_f, firms choose PPs because of their greater certification benefit.

2.2 Corporate control considerations

In many countries in Europe and the Pacific Basin, where the main SEO-method choice is between an RO and a PP, there is a well-documented conflict-of-interests between controlling and non-controlling, minority, shareholders (see, among others, Claessens et al. (2000) and La Porta et al. (1998, 1999b)). These controlling owners are typically families who are actively involved in the management of the firm by serving as executive officers and/or directors. Thus, they have great discretion over the firm's SEO-method choice. Furthermore, the controlling families tend to control more voting rights than cash flow rights through dual-class shares and stock-pyramids (La Porta et al. (1999a)). Given these facts, we hypothesize that families in control are more likely than other controlling owners to derive significant private benefits and to deviate from shareholder wealth maximization. In our particular case, we hypothesize that controlling families choose the SEO-method that maximizes the controlling family's private value rather than shareholder wealth in general.

If private benefits are large, controlling families will tend to be "control-dilution averse," in the sense that they will strive to preserve family control, i.e. their fractional ownership of the firms' votes, in order to protect their control rents. Theory strongly suggests that controlling owners are dilution averse if they extract private benefits of control. Stulz (1988) models how the threat of a takeover by a hostile party induces owner-managers with large private benefits of control to maintain a control stake of the firm's votes by using debt or low-voting equity rather than full-voting equity to finance the firm's operations. Furthermore, by holding on to their control block of votes, a controlling owner can be compensated for the private benefits in future transfers of control (see Zingales' (1995) model of control considerations in IPOs). Bebchuk (1999) argues that controlling owners have incentives to protect their control stake when control rents are large, because relinquishing control leaves control "up for grabs," inviting rivals to seize control in an attempt to capture the private benefits.

Thus, we hypothesize that controlling owners with large private benefits of control will choose the SEO-method that maximizes the probability of remaining in control. In particular, we hypothesize that issuing firms with families in control will choose ROs. Unless a PP is sold to the controlling family itself – which may be problematic because of capital constraints or because such sales are regulated in most stock markets – the PP will not only directly dilute the family's vote control, but also establish a blockholder with incentives to monitor the family. We also hypothesize that controlling families will tend to choose uninsured ROs rather than insured ROs. Underwritten ROs are potentially threatening to a family's control if

the underwriter sells unsubscribed rights in a block or becomes a (temporary) block shareholder itself.[7] Furthermore, because of reputational concerns, the underwriter may perform monitoring activities that reduce the family's extraction of private benefits.

A PO may be an alternative to both PPs and insured ROs. However, if a controlling family avoids a PP because it cannot place the shares with a friendly party, it is not likely to prefer a PO to an insured RO. To the extent that the controlling family can participate in an RO, a PO will dilute the owner's control more than an RO. Furthermore, because the underwriter is exposed to a lager risk in a PO compared to a standby guarantee in an RO, the underwriter's incentive to monitor the family is greater compared to an insured RO. Hence, insured ROs always dominate PPs under the control hypothesis.

2.3 Contracting costs due to moral hazard

The SEO-method choice may be used to reduce moral hazard problems between (i) the controlling party and non-controlling shareholders, and (ii) business partners involved in a product market relationship.

The firm may choose a PP to reduce contracting costs due to managerial (or controlling owner) moral hazard problems. A block shareholder has incentives to provide monitoring of management and to restructure a poorly performing firm's operations or otherwise improve the operating performance (see Shleifer and Vishny (1986) for theory, and Zeckhauser and Pound (1990) and Bethel et al. (1998) for tests).[8] PP-investors may thus limit managerial discretion over operating decisions. Wruck (1989), and to a lesser extent Hertzel and Smith (1993), show that the stock-market reaction to PPs in the U.S is positively related to an increase in ownership concentration. They do not study the *choice* between a PP and other SEO-methods (in the U.S., it would be a firm-commitment underwritten PO), so it is unclear whether monitoring benefits is the cause of the choice of a PP or just a consequence. Nevertheless, the testable hypothesis that emerges is that firms with potentially large costs of managerial discretion will benefit from choosing a PP.

Similarly, since investment banks take a financial and reputational risk by underwriting an RO, they have incentives to scrutinize the firms' stated issue motive, etc (Hansen and

[7] The underwriter has an incentive to sell unsubscribed rights as a block, because it allows the underwriter to capture any control premium associated with the block (e.g., Barclay and Holderness (1989)).

[8] By contrast, in the Burkart et al. (1997) model, constraints on the manager through monitoring is costly because managerial discretion comes with benefits (e.g., initiative and firm-specific investment).

Torregrosa (1992)). Thus, conditional on the choice of an RO, firms with potentially greater managerial moral hazard problems are expected to choose insured ROs.

The second moral hazard problem potentially involved in SEOs is related to product market relationships between business partners. Suppose the project for which capital is sought is a joint R&D-venture with another corporation and that both business partners must invest to realize a positive NPV. Without any type of credible commitment, incompleteness of contracts may lead to ex post contractual holdup problems, such as one of the firms backing off or attempting to change the agreement. This, in turn, may have adverse ex ante effects on firms' incentives to invest in assets that are specific to, or have a low value outside, the product market relationship.

A large body of theory in industrial organization suggests that equity ownership may mitigate moral hazard problems between business partners and increase firms' incentives to invest in relationship-specific assets. For example, Williamson (1979, 1985) emphasizes that equity ownership can lead to lower contracting and monitoring costs in product market relationships by aligning the interests of the business partners. Klein et al. (1978) attribute the extent of inter-corporate ownership to the potential for hold-up problems. Aghion and Tirole (1994) show that partial equity ownership by a customer (the "downstream" firm) of a "research unit" can increase incentives to develop a new innovation that cannot be identified ex ante. Full ownership by a customer that has ex ante bargaining power may discourage the research unit's initiative if current effort affects the occurrence of or value of future innovations.[9]

Long-term and strategic partial equity ownership stakes may thus be a measure to reduce contracting and monitoring costs in product market relationships. If a firm is to raise equity for investment in, for example, a distribution/supply agreement with another firm, the firm can of course raise the capital through a PO or an RO. The empirical prediction from the above theories is however that the firm is more likely to make a PP to the new business partner. [10] Because the marginal benefit of equity ownership is likely to be larger if the business partner has no previous investment in the firm, we expect firms raising capital in

[9] In Rajan and Zingales's (1998) model, full ownership can reduce incentives to produce specialized assets, in particular when specialization reduces the asset's value in an alternative use (they do not consider partial ownership).

[10] There is also an abundance of press articles that highlights the importance of this hypothesis. For instance, in 1991, Sydkraft (Sweden's largest utility) sold a PP to one of Germany's largest utilities, PreussenElektra, and at the same time a product market relationship was announced: the firms were to construct the world's most advanced "undersea HVDC-link," and conduct R&D concerning sea-based wind power plants, Internet applications, etc (*Financial Times*, 4/5/1991).

conjunction with a new product market relationship to be more likely to make a PP when the business partner is not one of the firm's current investors.

2.4 Variables

To assist the reader, variables are presented in italicized, and the variable definitions are summarized in Table 1. Furthermore, a summary of the empirical predictions linking the variables to the choice of SEO-method is displayed in Table 2.

2.4.1 Contracting costs due to adverse selection

To test our empirical predictions concerning take-up, we need an estimate of *Expected shareholder take-up*. Appendix A gives a detailed description of the procedure we use to obtain this variable.

To study the importance of adverse selection problems in the choice between SEO-methods, we need a proxy for the level of asymmetric information about firm value. We use *Firm age* and *Firm size* to capture potential information asymmetries. Younger and smaller firms – with limited financial histories and less public information available – should have a higher degree of asymmetric information. *Firm age* is defined as the number of years since the firm was incorporated. *Firm size* is defined as the market value of the firm's equity. We take the log of both of these variables before including them in the estimations. The adverse selection hypothesis suggests that both a greater *Firm age* as well as *Firm size* reduces the probability of choosing a PP and, to some extent, an RO with underwriter certification.

We expect the adverse selection problem to be particularly important when the resolution of state-of-the-world uncertainty is essentially dichotomous (i.e., the firm survives or not). We use two proxies for dichotomous uncertainty. *Debt restructuring*, a dummy that is one if the firm is undergoing debt restructuring, where we use Gilson et al.'s (1990) definition. *Speculative project*, a dummy that is one if the firm is in the development stage of a speculative new project without revenues from other projects, such as many biotech firms and dotcoms (see Hertzel and Smith (1993)). The adverse selection hypothesis suggests that *Debt restructuring* and *Speculative project* firms, respectively, are more likely to choose a PP and, to some extent, an RO with underwriter certification. In particular, we hypothesize that such firms sell the PP to current investors, who act as a "capital provider of last resort."

2.4.2 Corporate control considerations

To test the control hypothesis, we use several pre-SEO ownership variables. We define a block shareholder to be an owner with >5% of the firm's votes, and a controlling owner to be

an owner with >25% of the firm's votes *and* more votes than the combined votes of all other block shareholders. Owners fulfilling the definition of a controlling owner are likely to have effective control over the firms SEO-method choices. We define the variable *Controlling family* as a dummy that is equal to one if the firm has a family coalition as a controlling owner prior to the SEO. The identification of controlling owners as families or non-families is based on the ultimate ownership of the firm. That is, we consider firms to be ultimately controlled by a family if the sum of direct block ownership and ownership by organizations controlled by the family exceeds 25% of the votes. A family is considered to control an organization if the family, in turn, controls at least 25% of the votes of this organization.[11] Hence, all firms classified as not having a controlling family owner are either controlled by widely held corporations, financial institutions, the government, or are lacking a controlling owner.

A reasonable conjecture is that families' control-dilution aversion, if present in the data, is concave in the ownership of votes. That is, a family with 25% of the votes (our definition of control-in-practice) cares more about the SEO-method choice from a control perspective than a family with, say, 75% of the votes. To test this hypothesis, we also include the variable *Controlling family vote ownership>50%*, which is a dummy equal to one if the family controls more than a majority of the votes.

Finally, the deviation from one-share-one-vote allows us to contrast our control hypothesis with the Hansen and Pinkerton (1982, 1984) "comparative cost" hypothesis. Their hypothesis suggests that firms with concentrated equity ownership faces comparatively lower direct costs when making ROs, and, thus, firms choose an uninsured RO when the ownership of *shares*, not necessarily the number of votes, is concentrated. Hansen and Pinkerton show for a U.S. sample of 13 AT&T subsidiaries and 37 other RO-firms that merchandising expenses, exchange listing fees, stamps, and the like, are significantly lower for issuing firms with concentrated ownership.[12] However, Hansen and Pinkerton's sample did not allow them to separate between ownership of votes and shares. To control for the comparative cost hypothesis, we use *Capital ownership by 25 largest owners* as a variable for concentration of ownership of shares. The 25 largest owners are defined in terms of coalitions of owners with common interests, as defined in our source of ownership data (see Sundqvist and Sundin (1985-1998)), rather than on an individual owner basis. This variable is not particularly likely

[11] The definition of ultimate ownership is similar to that used by La Porta et al (1999a).

[12] It should be noted, however, that Smith and Dhatt (1984) show that the result of Hansen and Pinkerton (1982) is extremely sensitive to the functional form of the rights offering cost function.

Table 1. Definitions of variables

Variable		Definition
Proceeds[a]	=	Gross proceeds from the private placement = Issue price × Number of shares issued
Fraction shares (votes) placed	=	Number of shares (votes) issued ÷ Total number of shares (votes) outstanding ex post.
A-shares	=	High voting shares, typically with a votes-to-capital ratio ≥ 10. In Sweden, the only difference between common stock A-shares and B-shares is in terms of voting rights. The Swedish Companies Act does not permit issuance of shares with no voting rights.
Market value of equity[a]	=	Stock price Day_{-11} × Number of shares outstanding Day_{-11}.
Total assets[a]	=	Book value of total assets
Firm age	=	Years (truncated at 100) since the firm was incorporated and registered in the Swedish Securities Register Center's register.
Debt restructuring	=	1 if the firm has declared a public default on its debt or the firm has been stopped from trading on the Stockholm Stock Exchange because of debt renegotiations with its creditors; 0 otherwise.
Residual sigma	=	The standard deviation of the residuals from a standard market model regression of daily stock returns, estimated over the period day –190 to day –11, where day 0 is the day of the issue announcement.
Speculative project	=	1 if the firm was in the development stage of a speculative new project without significant revenues from other projects; 0 otherwise. See Hertzel and Smith (1993).
Expected shareholder take-up	=	(1 - fraction rights traded in the secondary market – fraction rights sold in blocks outside the stock exchange) for rights offerings; estimated using predicted values obtained from the coefficients of the regression model described in the Appendix for private placements.
Blockholder	=	An owner controlling ≥ 5% of the firm's votes.
Controlling family owner	=	1 if the firm has a family owner controlling ≥ 25% of the votes *and* more votes than the total votes controlled by all other blockholders; 0 otherwise.
Controlling family ownership >50%	=	1 if a controlling family owns > 50% of the votes; 0 otherwise
Capital ownership by largest 25 owners	=	The fraction of total equity that is owned by the firm's 25 largest shareholders
Book-to-market ratio	=	(Book value of total assets) ÷ (Market value of equity + Book value of non-equity liabilities).
Cash÷ Total assets	=	(Liquid funds + Marketable securities) ÷ Total assets.
Low-growth indicator	=	1 if the firm has a book-to-market ratio >1; 0 otherwise.
Product market relationship	=	1 if the issuing firm will use the proceeds for projects related to the establishment of a product market relationship with another organization; 0 otherwise.
CAR [-1,1]	=	The three-day cumulative abnormal return around the announcement of an RO or a PP estimated using a standard market model. The estimation period is day –190 to day –11, where day 0 is the day of the issue announcement.
Return on assets (ROA)	=	Operating income ÷ Total assets (book value).
Pre-issue (post issue) average ROA	=	Mean of ROA over years [-3, -1] (years [1, 3]).

to be correlated with the family control variables, since the use of dual-class shares is widespread in our sample.

Table 2. Summary of empirical predictions for the choice of SEO-method

	PP vs. RO	Insured RO vs. uninsured RO	PP to new investor vs. current investor
Hypothesis	Prediction for probability of PP	Prediction for probability of insured RO	Prediction for probability of new investor
Adverse selection:			
Expected shareholder take-up	–	–	No prediction
Log (Market value of equity)	–	–	+
Log (Firm age)	–	–	+
Debt restructuring dummy	+	+	–
Speculative product dummy	+	+	–
Control considerations:			
Controlling family dummy	–	–	No prediction
Controlling family ownership >50%	+	+	No prediction
Captial ownership by largest 25 owners	–	–	No prediction
Moral hazard:			
Book-to-market ratio	+	+	+
Cash ÷ Total assets x Low-growth indicator	+	+	+
Product market relationship dummy	+	No prediction	+

2.4.3 Contracting costs due to moral hazard

The scope for value-reducing managerial discretion is great in firms with few growth opportunities. As a proxy for growth opportunities, we use the firm's *Book-to-market ratio*, the ratio of book value of assets to the market value of assets (book value of debt plus market value of equity). Growth opportunities increase a firm's market value relative to its book value because intangible assets such as growth options are not included in the book value of assets. Because cash-rich firms with low growth prospects, defined as those with *Book-to-market* > 1, are particularly likely to be subject to overinvestment and other FCF-problems (e.g., Jensen (1986)), we use (*Cash ÷ Total assets*) x *Low-growth indicator* as another proxy for the potential for managerial moral hazard problems. We expect a positive relation between these two variables and the probability of choosing a PP as well as the probability of choosing an insured RO, conditional on an RO in the first place.

We use a *Product market relationship* dummy, which is equal to one if the firm at the time of the SEO establishes a new strategic alliance, joint venture, or another contract or memorandum of agreement regarding production, R&D, product development, marketing, or

distribution/supply with a public or private, domestic or foreign, business partner. We expect these firms to choose a PP to the new business partner.

3. Data and descriptive statistics

3.1 Motivation for and selection of sample

We employ an internationally unique, hand-collected, dataset consisting of the population of SEOs by Swedish public firms over the period 1986-1997. We use the *Stockholm Stock Exchange Annual Report* (1987-1992), *Stockholm Stock Exchange Fact Book* (1994-1998) to identify all ROs. To identify all PPs, we recorded by hand *every* change in equity capital for *each* firm on the Stockholm Stock Exchange (2,697 firm-year observations) from the *Stockholm Information Exchange* (*SIX*) database, and determined whether it was due to a PP or not.[13] We do not include SEOs by banks or insurance companies (2-digit SIC codes 60 and 63) or SEOs in which options account for >50% of the proceeds. Neither do we include equity issues resulting from employee stock option plans. We end up with 142 ROs and 128 PPs. We further split ROs into uninsured ROs (91 observations) and underwritten ROs (51 observations). PPs are split into PPs to current investors (45 observations), and PPs to new investor (83 observations). Because we like to capture current investors that are likely to be relatively informed investors, we operationally define a PP-investor to be a current investor if the investor is one of the firm's 25 largest shareholders prior to the issue or identified as one of the firm's current creditors. All other investors are defined as new investors.

Stock price data, data on the pricing of the SEOs, and accounting data (from the most recent year-end before the issue) are collected from *SIX*, and firms' annual reports. Issue terms are collected from the *Affärsdata* and *Lexis-Nexis* news databases, annual reports, and prospectuses. Ownership data is from *Owners and Power in Sweden's Listed Companies* (Sundqvist and Sundin (1985-2001)). The ownership data is uniquely detailed by international standards. For instance, shares owned by family members (with or without identical family name) and affiliated parties (co-founders, managers who took part in an MBO, owners with shareholder agreements, etc.) are treated as an owner coalition (*ägarsfär*). Similarly, parties in an ongoing family feud or the like are treated as separate owners

[13] It should be noted that our dataset is not subject to the sample-selection biases present in U.S. studies of PPs. Wruck (1989) and Hertzel and Smith (1993) search for synonyms of "private placement" in the *Dow Jones News Retrieval Service* and the *Lexis-Nexis* database, which biases their samples towards large, well-known firms. Hertzel and Smith (1993) also use *Investment Dealers' Digest*, which biases their sample towards PPs to financial institutions. Fenn et al. (1997) use the *Securities Data Corporation* database, which excludes registered PPs, PPs to foreign investors, PPs to private investors, and direct PPs, i.e., PPs in which firms sell the shares without an intermediary.

Table 3. Seasoned equity offerings by industry and year

The sample is 142 rights offerings and 128 private placements made 1/1/1986 - 12/31/1997 by firms listed on the *Stockholm Stock Exchange*. The *Stockholm Stock Exchange Annual Report* (1987-1992), *Stockholm Stock Exchange Fact Book* (1994-1998), the *SIX* database, the *Affärsdata* and *Lexis-Nexis* news databases, the book series *Owners and Power in Sweden's Listed Companies* from *SIS Ägarservice* (Sundin and Sundqvist (1985-1998)), annual reports, were used to collect the data.

Panel A: Seasoned equity offerings by industry

	Rights offerings		Private placements	
Industry (2-digit SIC codes)	N	Fraction (%)	N	Fraction (%)
Mining (10, 12, 13, 14)	9	6.3	9	7.0
Construction (15, 16, 17)	20	14.1	14	10.9
Food Products (20)	2	1.4	0	0.0
Paper and Printing (24, 25, 26, 27)	13	9.2	3	2.3
Chemical Products (28, 29)	11	7.7	8	6.3
Manufacturing (30, 31, 32, 33, 34)	11	7.7	16	12.5
Computer Equipment and Services (35, 73)	22	15.5	18	14.1
Electronic Equipment (36)	4	2.8	4	3.1
Transportation (37, 39, 40, 41, 42, 44, 45)	14	9.9	11	8.6
Scientific Instruments (38)	3	2.1	8	6.3
Communications (48)	0	0	4	3.1
Electricity, Gas, and Sanitary Services (49)	2	1.4	1	0.8
Durable Goods (50)	1	0.7	2	1.6
Retail (53, 54, 56, 57, 59)	6	4.2	6	4.7
Financial Services (62, 64)	5	3.5	2	1.6
Real Estate (65)	11	7.7	19	14.8
Entertainment Services (70)	1	0.7	0	0.0
Consulting (87)	1	0.7	0	0.0
Other (67, 99)	6	4.2	1	0.8

Panel B Seasoned equity offerings by year

	Rights offerings				Private placements			
Year	N	Fraction (%)	Average proceeds[a]	Aggregate proceeds[a]	N	Fraction (%)	Average proceeds[a]	Aggregate proceeds[a]
1986	10	7.0	214.8	2,147.8	7	5.5	237.1	1,659.7
1987	12	8.5	582.9	6,994.5	5	3.9	118.0	590.0
1988	7	4.9	352.1	2,465.0	10	7.8	136.2	1,362.0
1989	12	8.5	281.3	3,375.8	6	4.7	90.5	543.3
1990	10	7.0	607.4	6,073.9	8	6.3	457.1	3,657.0
1991	5	3.5	1171.4	5,856.9	9	7.0	503.7	4,533.6
1992	3	2.1	581.8	1,745.3	6	4.7	136.1	816.7
1993	26	18.3	529.5	13,767.1	23	18.0	211.9	4,874.3
1994	19	13.4	316.6	6,016.4	14	10.9	127.1	1,779.4
1995	7	4.9	1,430.2	10,011.4	14	10.9	270.0	3,779.5
1996	11	7.7	108.0	1,187.7	13	10.2	304.8	3,963.0
1997	20	14.1	287.3	5,746.4	13	10.2	133.9	1,740.4

[a] Expressed in terms of end-of-1997 million SEK. The USD / SEK exchange rate as of 1997-12-31 was 0.1383.

We use "ultimate" ownership by accounting for cross-shareholdings, pyramids, and other indirect ownership via firms (public or not), family trusts, etc (similar to La Porta et al. (1999a)).

3.2 Sample and Issue characteristics

Panel A of Table 3 shows issuing firms according to 2-digit SIC codes and indicates no concentration to one particular industry. Panel B reports the distribution of issues by calendar years; 60.6% of the ROs and 64.8% of the PPs occurred during the latter half of the period.

Panel A and B of Table 4 show issue characteristics. The distributions of *Proceeds* are skewed. Mean (median) Proceeds of ROs are SEK 460.5 (233.5) million, ranging from 9.3 million to 8,632.0 million, and mean (median) Proceeds of PPs are SEK 228.9 (89.9) million SEK, ranging from 1.3 million to 2,807.1 million. Thus, firms choosing ROs on average raise double the amount of capital compared to firms choosing PPs. At the mean (median), the *Fraction shares placed* is 40.2% (33.3%) and the *Fraction votes placed* is 36.7% (33.2%) in ROs. In PPs, the mean (median) *Fraction shares placed* is 23.1% (14.7%) and the mean

Table 4. Issue characteristics

The sample is 142 rights offerings and 128 private placements made 1/1/1986 - 12/31/1997 by firms listed on the *Stockholm Stock Exchange*. All variables are defined in Table 1. The *Stockholm Stock Exchange Annual Report* (1987-1992), *Stockholm Stock Exchange Fact Book* (1994-1998), the *SIX* database, the *Affärsdata* and *Lexis-Nexis* news databases, the book series *Owners and Power in Sweden's Listed Companies* from *SIS Ägarservice* (Sundin and Sundqvist (1985-1998)), annual reports, were used to collect the data.

Panel A: Rights offerings (ROs)						
	All ROs		Uninsured ROs		Insured ROs	
	Mean	Median	Mean	Median	Mean	Median
Proceeds[a]	460.5	233.5	488.1	224.1	411.2	240.4
Fraction shares placed (%)	40.2	33.3	33.8	33.1	0.515	0.500
Fraction votes placed (%)	36.7	33.2	29.7	25.9	0.492	0.500
Number of observations	142		91		51	

Panel B: Private placements (PPs)						
	All PPs		PPs to current investors		PPs to new investors	
	Mean	Median	Mean	Median	Mean	Median
Proceeds[a]	228.9	89.9	238.9	130.1	223.5	83.0
Fraction shares placed (%)	23.1	14.7	31.4	21.7	18.6	11.7
Fraction votes placed (%)	18.6	9.3	25.6	15.9	14.7	7.3
Number of observations	128		45		83	

[a] Expressed in terms of end-of-1997 million SEK. The USD / SEK exchange rate as of 1997-12-31 was 0.1383.

(median) *Fraction votes placed* is 18.6% (9.3%). Thus, ROs are also relatively larger than PPs. All differences are statistically significant.

3.3 Explanatory variables related to the adverse selection hypothesis

Table 5 reports mean and median of the explanatory variables related to the adverse selection hypothesis split by SEO-method. There is some suggestive evidence supporting the adverse selection hypothesis. Market value of equity of PP-firms is significantly lower; about half the size of RO-firms. Firm age of PP-firms is also significantly lower; about half the age of RO-firms. Firms engaged in a *Speculative project* often choose a PP (p-value for test of differences in proportions < 0.000). Furthermore, there is a significant difference in median *Expected shareholder take-up* between RO- and PP-firms according to a Mann-Whitney test (p-value < 0.000).

Table 5. Descriptive evidence on the adverse selection hypothesis

The sample is 142 rights offerings and 128 private placements made 1/1/1986 - 12/31/1997 by firms listed on the Stockholm Stock Exchange. All variables are defined in Table 1. The *Stockholm Stock Exchange Annual Report* (1987-1992), *Stockholm Stock Exchange Fact Book* (1994-1998), the *SIX* database, the *Affärsdata* and *Lexis-Nexis* news databases, the book series *Owners and Power in Sweden's Listed Companies* from *SIS Ägarservice* (Sundin and Sundqvist (1985-1998)), annual reports, were used to collect the data.

Panel A: Rights offerings (ROs)						
	All ROs		Uninsured ROs		Insured ROs	
	Mean	Median	Mean	Median	Mean	Median
Expected shareholder take-up	0.811	0.859	0.834	0.940	0.770	0.803
Market value of equity[a]	3,140.3	604.8	4,221.7	1,004.8	1,572.1	469.3
Firm age	33.5	23.0	34.9	23.0	30.4	26.0
Speculative project	0.155	n/a	0.154	n/a	0.063	n/a
Debt restructuring	0.113	n/a	0.022	n/a	0.275	n/a
Number of observations	142		91		51	

Panel B: Private placements (PPs)						
	All PPs		PPs to current investors		PPs to new investors	
	Mean	Median	Mean	Median	Mean	Median
Expected shareholder take-up	0.784	0.818	0.747	0.790	0.804	0.824
Market value of equity[a]	1,732.0	493.6	1,367.3	294.3	1,929.9	539.0
Firm age	19.8	10.0	16.4	9.0	21.7	10.0
Speculative project	0.266	n/a	0.378	n/a	0.205	n/a
Debt restructuring	0.141	n/a	0.333	n/a	0.036	n/a
Number of observations	128		45		83	

[a] Expressed in terms of end-of-1997 million SEK. The USD / SEK exchange rate as of 1997-12-31 was 0.1383.

Among the RO firms, firms making uninsured ROs are larger and older than firms making insured ROs, suggesting that they are firms with a potentially lower degree of information asymmetry. Firms making uninsured ROs are also less often undergoing a *Debt restructuring* at the time of the issue. Furthermore, *Expected shareholder take-up* is significantly lower for firms choosing insured ROs, which is consistent with underwriter certification being a substitute for expected take-up.

For PP-firms, we see that PPs to current investors seem to be chosen by firms with a high level of asymmetric information about firm value. *Market value of equity* and *Firm Age* are lower, and the fraction of *Debt restructuring* and *Speculative project* firms are higher compared to firms choosing a PP to a new shareholder. This is consistent with current investors acting as "investors of last resort" when the degree of asymmetric information is high

3.4 Explanatory variables related to the control hypothesis

Table 6 reports the mean and median of the ownership variables used as explanatory variables to test the control hypothesis. *Controlling family owners* are significantly more common in firms choosing ROs (76.8% vs. 67.2% of issuing firms), and in particular in uninsured ROs. This is preliminary support for the control hypothesis: controlling families tend to choose an equity-financing alternative that is the least likely to alter the ownership structure of the firm. In terms of the fraction vote and capital ownership by controlling families, there seem to be no big differences across firms choosing different flotation methods.

The fraction equity ownership by the largest 25 owners is remarkably similar across firms, suggesting that there is no comparative costs advantage due to higher ownership concentration among the firms choosing uninsured ROs, as suggested by Hansen and Pinkerton (1982).

3.5 Explanatory variables related to the moral hazard hypotheses

Table 7 shows mean and median of explanatory variables related to the monitoring hypothesis. The average and median *Book-to-market ratio* of RO-firms are lower than for PP-firms, which is consistent with the monitoring hypothesis. Within the RO-firms, the *Book-to-market ratio* is lower for firms making insured ROs, which is also consistent with the monitoring hypothesis. However, inconsistent with the monitoring hypotheses, firms making

Table 6. Descriptive evidence on the control hypothesis

The sample is 142 rights offerings and 128 private placements made 1/1/1986 - 12/31/1997 by firms listed on the *Stockholm Stock Exchange*. All variables are defined in Table 1. The *Stockholm Stock Exchange Annual Report* (1987-1992), *Stockholm Stock Exchange Fact Book* (1994-1998), the *SIX* database, the *Affärsdata* and *Lexis-Nexis* news databases, the book series *Owners and Power in Sweden's Listed Companies* from *SIS Ägarservice* (Sundin and Sundqvist (1985-1998)), annual reports, were used to collect the data.

Panel A: Rights offerings (ROs)						
	All ROs		Uninsured ROs		Insured ROs	
	Mean	Median	Mean	Median	Mean	Median
Controlling family owner	0.768	n/a	0.846	n/a	0.627	n/a
Vote ownership by controlling family	0.654	0.682	0.656	0.676	0.650	0.698
Capital ownership by controlling family	0.443	0.444	0.433	0.433	0.465	0.492
Fraction of controlling family owners with vote ownership>50%	0.807	n/a	0.792	n/a	0.844	n/a
Capital ownership by largest 25 owners	0.751	0.787	0.760	0.786	0.735	0.794
Number of observations	142		91		51	

Panel B: Private placements (PPs)						
	All PPs		PPs to current investors		PPs to new investors	
	Mean	Median	Mean	Median	Mean	Median
Controlling family owner	0.672	n/a	0.622	n/a	0.699	n/a
Vote ownership by controlling family	0.634	0.647	0.662	0.658	0.620	0.634
Capital ownership by controlling family	0.429	0.403	0.452	0.436	0.419	0.400
Fraction of controlling family owners with vote ownership>50%	0.754	n/a	0.805	n/a	0.712	n/a
Capital ownership by largest 25 owners	0.735	0.755	0.767	0.791	0.718	0.741
Number of observations	128		45		83	

PPs to current investors seem to have higher book-to-market ratios than firms making PPs to new investors.

Almost a third of the PPs (30.5%) and zero (0) of the ROs are made in conjunction with the establishment of a product market relationship. The exclusive use of PPs is strong evidence supporting the hypothesis that partial ownership can mitigate contracting costs due to moral hazard problems in product market relationships. Consistent with the marginal benefit of monitoring being greater when the business partner does not already own a part of the issuing firm, financing of product market relationships are more frequent among PPs to new investors than among PPs to current investors (38.6% versus 15.6%).

Table 7. Descriptive evidence on the moral hazard hypotheses

The sample is 142 rights offerings and 128 private placements made 1/1/1986 - 12/31/1997 by firms listed on the *Stockholm Stock Exchange*. All variables are defined in Table 1. The *Stockholm Stock Exchange Annual Report* (1987-1992), *Stockholm Stock Exchange Fact Book* (1994-1998), the *SIX* database, the *Affärsdata* and *Lexis-Nexis* news databases, the book series *Owners and Power in Sweden's Listed Companies* from *SIS Ägarservice* (Sundin and Sundqvist (1985-1998)), annual reports, were used to collect the data.

Panel A: Rights offerings (ROs)						
	All ROs		Uninsured ROs		Insured ROs	
	Mean	Median	Mean	Median	Mean	Median
Book-to-market ratio	0.824	0.846	0.802	0.812	0.872	0.949
(Cash ÷ Total assets) × Low-growth indicator	0.024	0.000	0.024	0.000	0.024	0.000
Product market relationship	0.000	n/a	0.000	n/a	0.000	n/a
Number of observations	142		91		51	

Panel B: Private placements (PPs)						
	All PPs		PPs to current investors		PPs to new investors	
	Mean	Median	Mean	Median	Mean	Median
Book-to-market ratio	0.884	0.952	0.903	0.971	0.874	0.929
(Cash ÷ Total assets) × Low-growth indicator	0.035	0.000	0.054	0.000	0.025	0.000
Product market relationship	0.305	n/a	0.156	n/a	0.386	n/a
Number of observations	128		45		83	

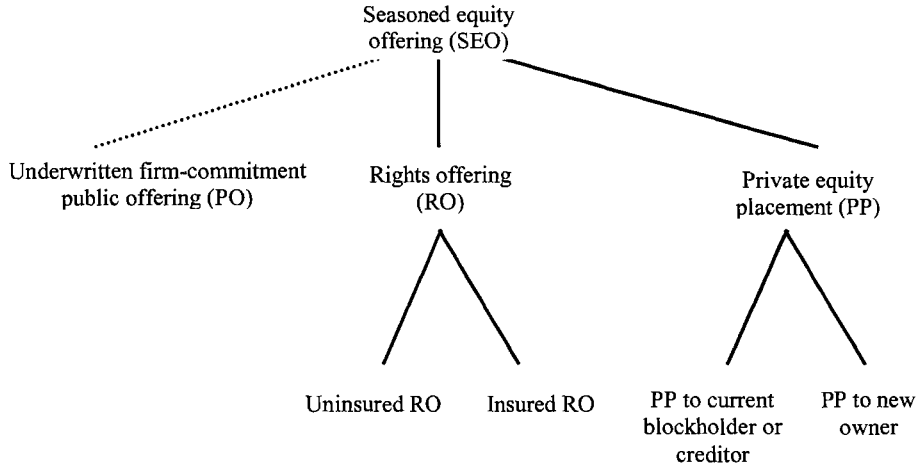
4. A nested logit model for the choice of SEO-method

We develop a nested logit model for the issuing firm's choice between SEO-methods to test the empirical implications derived in Section 2.[14] The empirical predictions imply that the SEO-method choice can be described according to the choice tree depicted in Figure 1. The nesting in Figure 1 does not necessarily imply that firms make SEO-method choices sequentially; the nesting simply reflects correlation patterns among unobservable variables across SEO-methods as they result from patterns in the econometrician's lack of information.

Our empirical model relies on a (weak) revealed preference restriction, i.e., a necessary and sufficient condition for optimization is that the observed SEO-method choice increases the firm's objective function more than any alternative would do. The objective function can be firm value maximization, but to the extent that agency problems are involved in the choice

[14] For another application of a nested logit model in corporate finance, see MacKie-Mason (1990) who develops a nested logit model to analyze the debt-equity choice.

Figure 1. Empirical model of SEO-method choices



of SEO-method, the actual function is likely to be the maximization of the decision-making agent's (e.g., a controlling family's) private value of the firm. We assume that the objective function is of the form:

$$V_{f,a} = \bar{V}_{f,a}(\cdot) + \varepsilon_{f,a} \quad \forall \quad f \in \{f_1, \ldots, f_N\}, \tag{2}$$

where $a \in C = \{a_1, \ldots, a_A\}$ represents an equity-financing alternative, $\bar{V}_{f,a}(\cdot)$ is the deterministic part (a function of firm characteristics and issue motives), and ε_c^f is the error term, which absorbs omitted firm characteristics, idiosyncrasies, etc.

We can partition the equity-financing choice set $\{a_1, \ldots, a_A\}$ into n disjoint subsets according to (i) "main" SEO-method, $m \in M$ (i.e., RO vs. PP), and (ii) SEO "sub-method" $m' \in M'$, such that a particular lower-level method is denoted $a_{m,m'} \in M \times M'$, and:

$$V_{f,m,m'} = \bar{V}_{f,m,m'}(\cdot) + \varepsilon_{f,m,m'}. \tag{3}$$

Estimation of equation (3)'s parameters requires that we assume some functional form for the deterministic part, and make a distributional assumption about the error term. We assume that $\bar{V}_{f,m,m'}(\cdot)$ is linear in firm characteristics and issue motives, and additively separable into one part that represents the value of a particular SEO-method and one part that represents the value from a particular SEO sub-method:

$$V_{f,m,m'} = \alpha' A_{f,m} + \beta' B_{f,m,m'} + \varepsilon_{f,m,m'}, \tag{4}$$

where α' and β' are parameter vectors to be estimated, A is the vector of explanatory variables for the main SEO-method choice, and B is the vector of explanatory variables for each sub-method. In accordance with McFadden's (1981) derivation of the nested logit model, $\varepsilon_{f,m,m'}$ is assumed to be generalized extreme-value distributed. The nested logit model relaxes the problematic IIA-assumption of the multinomial logit model, thereby allowing for more plausible substitution patterns (see Maddala (1983) for a review of logit models).

Under these assumptions, the joint probability, $P_{f,m,m'}$, of firm f choosing SEO-method $a_{m,m'}$ is:

$$P_{f,m,m'} = P_{f,m} \cdot P_{f,m'|m}, \tag{5}$$

where $P_{f,m}$ is the marginal probability of choosing main SEO-method m, and $P_{f,m'|m}$ is the probability of choosing sub-method m' conditional on choice of m in the previous stage. McFadden (1978, 1981) shows that the conditional choice probability $P_{f,m'|m}$ at the last stage of the choice tree in Figure 1 is given by the logit

$$P^{f}_{f,m'|m} = \frac{\exp\left[\beta' B_{f,m,m'}\right]}{\sum_{k'} \exp\left[\beta' B_{m,k'}\right]}, \tag{6}$$

and the marginal probability of choosing issue method m is given by the logit

$$P_{f,m} = \frac{\exp\left[\alpha' A_{f,m} + \lambda I_{f,m}\right]}{\sum_{k} \exp\left[\alpha' A_{f,k} + \lambda I_{f,k}\right]}, \tag{7}$$

where

$$I_{f,m} = \log\left\{\sum_{k'} \exp\left[\beta' B_{f,m,m'}\right]\right\}. \tag{8}$$

The "inclusive values," $I_{f,m}$, represent the expected firm value of subset m, while λ is the coefficient of the inclusive values estimated along with the parameter vectors α' and β'. The coefficient λ reflects the dissimilarity of the lower level choices. McFadden (1978) shows that the nested structure in Figure 1 is consistent with value maximization if and only if estimated coefficients of inclusive values lie within the unit interval. As the dissimilarity coefficient approach 0, the error terms become perfectly correlated and firms choose the alternative with the highest strict value. As the coefficient approach 1, the distribution of the

error terms becomes an IID extreme-value distribution and the simple multinomial logit model gives the choice probabilities. If the parameters of the inclusive values are greater than 1, there is substitution across the nests and the nesting is not consistent with value maximization.

We tried full information maximum likelihood (FIML) to estimate parameter vectors α' and β' of equation (4). FIML was infeasible due to the number of parameters to be estimated, and we have therefore used sequential maximum likelihood (SML) estimation to reduce the computational burden.[15] Using SML, the lower-level coefficients are consistently, but inefficiently, estimated by maximizing the conditional log-likelihood function. No adjustments have to be made for the estimation of standard errors. At the upper-level, SML produces coefficient estimates that are consistent, but we cannot use the inverse of the Hessian as an estimator of the standard errors. We therefore use the recursive formulas in McFadden (1981) to adjust for the fact that the inclusive values are themselves estimates.

5. Empirical results[16]

This section presents the estimation results from the nested logit model. The results are displayed in Table 8; Panel A reports the estimated results of the top-choice between PPs and ROs, Panel B reports the results from the bottom-level choice between uninsured and insured ROs, and Panel C reports the results of the choice between PPs to a current investor and PPs to a new investor. As we can see in Panel A of Table 8, the coefficients of the inclusive values for both reported specifications are within the unit interval, and, hence, our nesting in Figure 1 is consistent.[17]

As a measure of fit, we report the χ^2-statistic of an LR-test that all the parameters (except constant terms) are zero. We also report McFadden's likelihood ratio index (LRI), an analog to the R^2 in an OLS regression (frequently referred to by researchers as pseudo-R^2). Table 8 reports that our models do a reasonable job in terms of fit at each level of the choice tree.

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[15] SML estimation of parameters in a nested logit model is a "bottom-up" procedure: (i) Get parameter estimates for the lower-level choices using (6). (ii) Compute the inclusive values from (8). (iii) Estimate (7), using the estimated inclusive values.

[16] Reporting empirical results from multiple, slightly altered, nested logit model specifications is space consuming. Therefore, a statistical appendix is available from the authors on request. This appendix reports the robustness checks we refer to in this section but do not report.

[17] One alternative to our nested logit model is to use a multinomial logit model. We have estimated such a model for the choice between all four SEO-methods using the explanatory variables included in Panel A. However, because the IIA assumption is violated according to Small-Hsiao, we conclude that the nested logit model is the proper model to use for our particular choice problem.

Table 8. Nested logit coefficient estimates for the choice of SEO-method

The sample is 142 rights offerings and 128 private placements made 1/1/1986 - 12/31/1997 by firms listed on the Stockholm Stock Exchange. All variables are defined in Table 1. Estimation of the nested logit model is conducted by sequential maximum-likelihood. As measures of fit, we report the χ^2-statistic for a log-likelihood ratio test of the null hypothesis that all the coefficients of the independent variables (except the constant) are equal to zero, as well as the McFadden likelihood ratio index (LRI). *, **, and *** denote that the value is significantly different from zero at the 10%, 5%, and 1% levels, respectively, according to standard t-tests (using a two-tailed test) of estimated coefficients being equal to zero

Panel A: The choice between rights offerings and private placements				
	Private placement = 1; Rights offering = 0			
	(1)		(2)	
Variable	Coefficient	*p*-value	Coefficient	*p*-value
Expected shareholder take-up	-1.918*	0.055	-2.026**	0.045
Log (Market value of equity)	-0.021	0.834	-0.019	0.848
Log (Firm age)	-0.583***	0.000	-0.589***	0.000
Speculative product	0.957**	0.027	0.995**	0.023
Debt restructuring	3.430***	0.001	3.596***	0.000
Controlling family owner	-0.971**	0.040	-1.000*	0.087
Controlling family vote ownership>50%	-0.329	0.416	-0.302	0.489
Capital ownership by controlling family			-0.026	0.981
Capital ownership by largest 25 owners	0.121	0.896	0.058	0.957
Book-to-market ratio	0.884	0.121	0.876	0.123
(Cash ÷ Total assets) × Low-growth indicator	1.063	0.564	1.092	0.557
Constant	2.233	0.308	2.324	0.289
Inclusive value	0.939		0.979	
Number of observations	270		270	
χ^2-statistic (*p*-value)	50.53*** (0.000)		50.97*** (0.000)	
McFadden's LRI	0.135		0.136	

5.1.1 Contracting costs due to adverse selection

We find strong support for the information hypothesis in the sense that (i) the level of asymmetric information about firm value and (ii) the level of expected take-up are important determinants of a firm's SEO-method choice. We only comment on the results from model (1) since the results from both reported model specifications are very similar for the variables related to the adverse selection hypothesis.

Panel A of Table 8 shows that the estimated coefficients on *Firm age*, *Debt restructuring* and *Speculative product* – proxies for the degree of asymmetric information about firm value – are all significant at the 5%-level and have signs in line with our empirical predictions. Thus, younger firms and firms for which information asymmetries are potentially very large choose PPs more often than other firms do. Put differently, the probability that a firm shifts away from an uninsured RO or an insured RO, to a PP increases as the degree of asymmetric

Table 8 continued

Panel B: The choice between uninsured and insured rights offerings				
	Insured = 1; Uninsured = 0			
	(1)		(2)	
Variable	Coefficient	*p*-value	Coefficient	*p*-value
Expected shareholder take-up	-0.256	0.809	-0.390	0.716
Log (Market value of equity)	-0.466***	0.004	-0.434***	0.009
Log (Firm age)	0.265	0.268	0.270	0.261
Speculative product	-0.383	0.547	-0.277	0.669
Debt restructuring	3.082***	0.001	3.205**	0.001
Controlling family owner	-2.191***	0.007	-2.580***	0.005
Controlling family vote ownership>50%	1.316*	0.084	1.026	0.209
Capital ownership by controlling family			1.478	0.332
Capital ownership by largest 25 owners	-2.130	0.124	-2.806*	0.073
Book-to-market ratio	0.159	0.796	0.059	0.924
(Cash ÷ Total assets) × Low-growth indicator	-2.634	0.408	-2.314	0.471
Constant	10.366***	0.002	10.336***	0.003
Number of observations	142		142	
χ^2-statistic (*p*-value)	41.13*** (0.000)		42.11*** (0.000)	
McFadden's LRI	0.222		0.227	

Panel C: The choice between private placements to new investors or current investors		
	New investor = 1; Current investor = 0	
	(1) and (2)	
Variable	Coefficient	*p*-value
Expected shareholder take-up	2.364	0.597
Log (Market value of equity)	-0.141	0.508
Log (Firm age)	0.274	0.234
Speculative product	-1.419**	0.027
Debt restructuring	-3.461***	0.000
Book-to-market ratio	0.083	0.932
(Cash ÷ Total assets) × Low-growth dummy	-3.967	0.107
Product market relationship	2.037***	0.001
Constant	1.363	0.720
Number of observations	128	
χ^2-statistic (*p*-value)	45.67*** (0.000)	
McFadden's LRI	0.275	

information increases. Furthermore, the coefficient estimate on *Expected current shareholder take-up* is significant at the 10%-level and has a sign in line with our empirical prediction; the probability that a firm shifts away from an uninsured RO or an insured RO to a PP increases as the level of expected take-up decreases.

In Panel B, the estimated coefficients on *Firm size* and *Debt restructuring* are significant at all relevant levels and have signs in line with our empirical predictions; smaller firms and

firms undergoing debt restructuring are more likely to choose an insured RO than an uninsured. This is consistent with firms with larger information asymmetry about firm value seeking underwriter certification. However, there is no evidence that firms shift away from an uninsured RO to an underwritten RO as the level of *Expected take-up* decreases. The estimated coefficient on *Expected take-up* in the choice between an uninsured and an insured RO is insignificant (p-value =0.809).

In Panel C, the estimated coefficients on *Debt restructuring* and *Speculative product* are significant at the 5%-level and have signs in line with our empirical predictions. That is, when the state-of-the-world uncertainty is great and essentially dichotomous (the firm survives or not), the PP is bought by current investors. For firms undergoing debt restructuring or firms developing a speculative project, it thus seems prohibitively costly to sell the PP to a new investor.

Overall, our evidence is strong support for the adverse selection hypothesis. Over low levels of asymmetric information about firm value, firms choose uninsured ROs. Over intermediate levels, firms choose underwritten ROs. Over high levels, when the underinvestment problem is particularly severe, firms choose PPs to resolve information asymmetries. Also, over very high levels, some current investors, who can be assumed to be well informed, seem to act as "capital providers of last resort" and buy the PP. Furthermore, for a given degree of information asymmetry, we find that firms with a low *Expected take-up* choose PPs rather than ROs. This result suggests that a PP can act as a substitute for expected take-up by conveying the manager's private information about firm value, thereby minimizing wealth transfers to new shareholders. In contrast, there is no evidence that differences in *Expected take-up* explain the conditional choice between uninsured and insured ROs. Thus, our evidence is not consistent with the empirical prediction of Eckbo and Masulis' original framework or with the evidence from the Oslo Stock Exchange in Bohren et al. (1997) on the choice between an uninsured and an insured RO. The difference between our results and Bohren et al.'s might be explained by the fact that we control for more variables that are likely to affect the choice of issue method. For example, Bohren et al. do not take into the account control considerations when estimating the choice between uninsured and insured ROs.

We conclude that the evidence is consistent with our extension of the Eckbo and Masulis (1992) framework, in which not only underwriter certification but also PPs can be used to resolve asymmetric information about firm value, thereby allowing firms to overcome the Myers and Majluf underinvestment problem.

5.2 Corporate control considerations

In Model 1 in Panels A and B of Table 8, the estimated coefficients on the *Controlling family* dummy are significant (p-values = 0.040 and 0.007, respectively), and have signs in line with our empirical predictions. That is, controlling families avoid PPs and insured ROs. These results are consistent with the hypothesis that families enjoy significant control rents and therefore choose a SEO-method that maximizes the probability of remaining in control. Furthermore, in Panel A, the estimated coefficient of *Controlling family vote ownership > 50%* is insignificant, whereas in Panel B the estimated coefficient of *Controlling family vote ownership > 50%* is positive and significant at the 10%-level (p-value = 0.084), i.e., the sign is the opposite of the coefficient for the *Controlling family* dummy. The latter result is consistent with controlling families' control-dilution aversion being greater when the family's control margin is slim. Thus, this evidence suggests that families with a large control margin are relatively more likely to choose an underwritten RO but not more likely to choose a PP, supposedly because the potential control structure consequences of a PP are much greater than that of an insured RO.

Since we control for ownership concentration of equity, we are confident that our results are not due to Hansen and Pinkerton's (1982) comparative cost hypothesis. The comparative cost hypothesis predicts a positive relation between concentration of ownership of shares and the marginal probability of choosing an uninsured RO. We find no support for this hypothesis in Panels A and B; the estimated coefficients on *Capital ownership by largest 25 owners* are not significant. Our evidence highlights the importance of distinguishing between concentration of control and concentration of equity ownership.

One remaining concern regarding our results is that they may be related to monitoring benefits of PPs and insured ROs, rather than control considerations, because the controlling families are large equity owners. To the extent that there are monitoring benefits from PPs or underwritten ROs, they should be smaller when the firm is run by a party that is also a large equity owner, since large equity ownership by managers aligns incentives and reduces agency costs (Jensen and Meckling (1976)). Hence, firms controlled by large family owners do not need too choose PPs or insured ROs to receive monitoring benefits and can instead choose the cheaper alternative of uninsured ROs. To control for this kind of effect, we include the fraction equity owned by controlling families in model 2 of Table 8. If the alternative explanation is true, it should be this variable rather than the controlling family dummy that is negatively related to the probability of a PP or an insured RO. As we can see in Panel A and B, our original results are robust. The coefficients on the fraction equity owned by the

controlling families are insignificant and of the opposite sign to the predicted in both Panels A and B, whereas the coefficients on the controlling family dummy are still significant in both panels. Interestingly, the coefficient on *Capital ownership by largest 25 owners* becomes significant at the 10%-level in Panel B and of the sign predicted by the comparative cost hypothesis: firms with a higher degree of ownership concentration prefer uninsured ROs to insured. This result suggests that the comparative cost hypothesis may be relatively more valid in firms without controlling families, since equity ownership by controlling families is controlled for separately.

In unreported estimations, we have also included dummies for other types of controlling owners, such as widely held financial institutions or corporations, but without significant results. Hence, it seems as if it is only families among controlling owners who have a preference for a particular SEO-method, which is consistent with our assumption that controlling families have private reasons to prefer one SEO-method (i.e. uninsured ROs) over another.

To provide further evidence on the control hypothesis we analyze the type of shares issued by controlling families in uninsured ROs. Under the control hypothesis, we expect families who cannot participate in the stock issue to issue shares with as few control rights as possible. The result of this analysis is presented in Table 9. Panel A shows the class of shares issued in the uninsured ROs split by family controlled firms and other firms. We see that all of the 20 firms in our sample who issue only low-voting shares (typically with 1/10 of votes per share) in an uninsured RO are family-controlled firms. Panel B shows evidence on average pre- and post-SEO fractional ownership of votes and capital by controlling families. Consistent with the control hypothesis, there is a significant reduction in controlling families' average fraction of capital ownership by 7.9% (t-statistic = 3.11), which is evidence on the families not partaking in the issue. The fraction vote ownership also decreases (with 5.0%), but as expected the decrease of votes is both absolutely and relatively lower than the decrease in capital. Finally, we estimate a logit model of the likelihood of issuing only low-voting shares in uninsured ROs. Panel C shows the results of this analysis. We see that the probability of a family controlled firm to issue only low-voting shares is significantly increasing at least at the 10 %-level when the controlling family has not provided a subscription commitment, already has invested a lot of capital in the firm, and non-family block shareholders control a lot of votes. Thus, consistent with the control hypothesis controlling families choose to issue only low-voting shares when they are likely to be capital constrained and a threat from non-family blockholders is substantial.

Table 9. Further evidence on the control hypothesis

This table presents further evidence on family control-dilution aversion as a determinant of the choice of uninsured rights offerings. This sample is 91 uninsured rights offerings made 1/1/1986 - 12/31/1997 by firms listed on the *Stockholm Stock Exchange*. Panel A reports the class of shares issued in uninsured rights offering by controlling families' firms. Panel B reports changes in ownership of votes by controlling families, split by class of shares issued. Panel C reports a simple logit model for the probability of issuing only low-voting shares, where explanatory variables are proxies for controlling families' capital constraints and the probability of a control threat emerging: (i) a dummy that is one if the family has not publicly committed to subscribe to their share of the issue; (ii) the controlling family's fraction of the firm's shares; and (iii) vote ownership by all non-family (corporate, financial, or State) blockholders (expressed as a fraction of total votes). As measures of fit, we report the χ^2-statistic for a log-likelihood ratio test of the null hypothesis that all the coefficients of the explanatory variables (except the constant) are zero, as well as the McFadden likelihood ratio index (LRI). *, **, and *** denote that the value is significantly different from zero at the 10%, 5%, and 1% levels, respectively, according to standard two-tailed *t*-tests of estimated coefficients being zero.

Panel A: Class of shares issued in uninsured RO

	Family controlled firms		Other firms	
Class of shares issued	*N*	Fraction (%)	*N*	Fraction (%)
Only low-voting	20	26.0	0	0.0
High-voting or both high- and low-voting shares	57	74.0	14	100.0

Panel B: Changes in fractional ownership of votes and capital in uninsured RO

Issue type	*N*	Mean pre-issue family ownership of votes (capital) (%)	Mean post-issue family ownership of votes (capital) (%)	Change in mean family ownership of votes (capital) (%)	*t*-test of change in family ownership of votes (capital) (%)
All issues	77	65.6	63.6	-2.0	1.46
		(43.3)	(40.4)	(-2.9)	(2.26)**
Only low-voting shares	20	68.5	63.5	-5.0	1.99*
		(49.1)	(41.2)	(-7.9)	(3.11)***
Other	57	64.5	63.7	-0.8	0.56
		(41.3)	(40.1)	(-1.2)	(0.78)

Panel C: Logit model for the probability of issuing only low-voting shares

	Only low-voting shares = 1; Other = 0	
Explanatory variables	Coefficient	*p*-value
No subscription commitment by controlling family	1.418**	0.016
Capital ownership by controlling family	2.934*	0.066
Vote ownership by all non-family blockholders	4.998*	0.065
Constant	-2.126**	0.018
N	77	
χ^2-statistic (*p*-value)	11.64*** (0.009)	
McFadden's LRI	0.132	

5.3 Contracting costs due to moral hazard

We first consider whether the SEO-method choice is used to reduce moral hazard problems between management and shareholders. All Panels in Table 8 show that the estimated coefficients for *Book-to-market* and *(Cash ÷ Total assets) x Low-growth* – proxies for the potential for managerial moral hazard problems – are insignificant at the 10%-level. Thus, our results are not consistent with the hypothesis that firms with few growth options in their investment opportunity set, i.e., firms with greater potential for value-reducing managerial discretion and thus greater contracting costs of moral hazard, choose underwritten ROs or PPs to new investors to mitigate agency problems.

The potential for improvement in monitoring may be particularly great for SEO-firms that lack a non-family (corporate, financial, or government) controlling owner. In unreported estimations, we include the interaction variables *No non-family controlling owner x Book-to-market* and *No non-family controlling owner x [(Cash ÷ Total assets) x Low-growth]*. Neither interaction variable is significant at the 10%-level. Hence, our inferences remain unchanged. [18]

Second, we study whether the SEO-method choice is used to reduce moral hazard problems between business partners involved in a product market relationship. It is not econometrically feasible to include the *Product market relationship* dummy as an explanatory variable in the main SEO-method, upper-level, choice: all of the 39 firms in our sample who issued equity concurrent with the formation of a new product market relationship choose a PP. Nevertheless, this is strongly supportive of our empirical prediction. In Panel C of Table 8, the estimated coefficient on the *Product market relationship* dummy is significant (p-value = 0.001), and has a sign in line with our empirical prediction; the formation of a new product market relationship increases the likelihood of a PP to a new investor. All of the product market relationship PPs were sold to the new business partner with whom investments in the relationship-specific asset were about to take place. Thus, our results are consistent with the hypothesis that firms involved in a new product market relationship choose PPs to reduce contracting and monitoring costs.

Table 10 provides further evidence on the choice of SEO-method and contracting costs of moral hazard by considering the likelihood that a new investor in a PP receives a seat on the

[18] Regulated firms are already subject to limitations on managerial discretion by authorities and are therefore expected to find only a limited need for additional monitoring (Smith and Watts (1992)). Our inferences are unchanged if including *Regulation*, a dummy that is one if the firm operates in a regulated industry (gas and electric utilities, SIC codes 4900 to 4939).

Table 10. Further evidence on the moral hazard hypotheses

This table presents further evidence on the product market relationship hypothesis by investigating the probability of a new investor getting a set on the board after a private placement. This sample is 83 private placements directed to new investors made 1/1/1986 - 12/31/1997 by firms listed on the *Stockholm Stock Exchange*. Panel A reports univariate evidence on the relation between the establishment of a product market relationship and the probability of getting a seat on the board. Panel B reports a simple logit model of the probability of getting a board seat, where the product market relationship dummy is an explanatory variable together with proxies for potential for managerial moral hazard problems, *Book-to-market* and *(Cash ÷ Total assets) × Low-growth*. As measures of fit, we report the χ^2-statistic for a log-likelihood ratio test of the null hypothesis that all the coefficients of the explanatory variables (except the constant) are zero, as well as the McFadden likelihood ratio index (LRI). *, **, and *** denote that the value is significantly different from zero at the 10%, 5%, and 1% levels, respectively, according to standard two-tailed *t*-tests of estimated coefficients being zero.

Panel A: Establishment of a product market relationships and probability of getting a board seat

	Post-issue board seat ($N = 35$)		No post-issue board seat ($N = 48$)	
	N	Fraction (%)	*N*	Fraction (%)
Product market relationship	24	68.6	8	16.7

Panel B: Logit model for the probability of getting a seat on the board

	Board representation = 1; No representation = 0	
Explanatory variables	Coefficient	*p*-value
Product market relationship	2.391***	0.000
Book-to-market	0.529	0.649
(Cash ÷ Total assets) × Low-growth	3.723	0.533
Constant	-1.827*	0.094
N	83	
χ^2-statistic (*p*-value)	25.07*** (0.000)	
McFadden's LRI	0.222	

board after the issue. A board seat should indicate that the new investor is more likely to have a monitoring role. Panel A shows that a vast majority (68.6%) of the new board seats were given to PP-investors who are new business partners of the issuing firm. Panel B reports the results of a logit estimation including the product market relationship dummy as well as *Book-to-market*, and *(Cash ÷ Total assets) x Low-growth* as explanatory variables. Confirming the result in Panel A, a product market relationship increases the probability that a new investor gets a seat on the board (p-value < 0.001). This evidence is consistent with the new business partner entering the firm to perform monitoring. We also note that the estimated coefficients on *Book-to-market* and *(Cash ÷ Total assets) x Low-growth* are insignificant at the 10%-level in Panel B. This evidence also reinforces the previous evidence that PPs are not chosen because of general monitoring considerations. This is not particularly surprising in

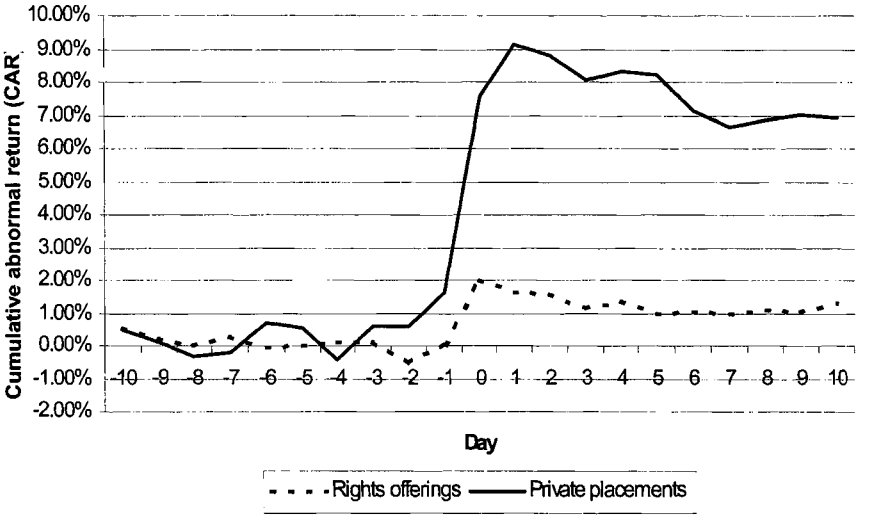
the sense that there is no reason to assume that a manager or a controlling family would voluntarily choose a PP to reduce their own discretion over operating decisions.

6. Further empirical results: Evidence on issuing firms' performance

Employing standard event-study methodology (see MacKinlay (1997)), we estimate a market model by OLS for each firm using daily stock returns. Our market portfolio proxy is *Affärsvärlden's Generalindex*, a value-weighted index of all public Swedish firms. The estimation window is days [-190, -11]. Figure 2 shows that *both* ROs and PPs, on average, are met with a *positive* stock-market reaction. Table 11 reports that for days [-1,1], the average cumulated abnormal return (CAR) for PPs is 8.5% (p-value < 0.000), which, in turn,

Figure 2. Cumulative abnormal returns for 21 days around rights offering and private equity placement announcement dates

The sample is 142 rights offerings and 128 private placements announced 1/1/1986 - 12/31/1997 by firms listed on the *Stockholm Stock Exchange*. To measure cumulative abnormal returns (CARs), the market model is estimated by OLS for each firm from daily stock returns obtained from the *TRUST* database. The betas are estimated using the Scholes and Williams (1977) procedure to deal with the potential bias (towards zero) of betas due to non-synchronous trading of illiquid stocks. The return on *Affärsvärlden's Generalindex* is used as a proxy for the return on the market portfolio.



is significantly higher (p-value < 0.01) than the average CAR for ROs, 2.2% (p-value < 0.000).[19] All results are robust to the use of alternative event windows.

In addition, we study changes in operating performance. Due to mean-reversion in *ROA*, and because profitability changes appear over longer periods, we measure changes in operating performance using changes in *Average ROA* = *Average post-issue ROA* (mean ROA over year +1 through +3) - *Average pre-issue ROA* (mean ROA over year -3 through -1). Because of the skewed distributions of *Average ROA*, we use Wilcoxon-tests for changes in *Average ROA*. The results using t-tests for the mean change in *Average ROA* are stronger, but partly driven by outliers.

We now briefly consider Tables 11 (abnormal returns) and 12 (changes in *Average ROA*) in light of our hypotheses and the results in the previous section. In sum, they provide further support for the empirical results regarding the determinants of the SEO-method choices:

(i) The control hypothesis. We find that firms controlled by family owners choose ROs, in particular uninsured ROs. Table 11 shows that the announcements of an uninsured RO is not rewarded by the stock market (average CAR = 0.48%; t-statistic = 0.53) and Table 12 shows that RO-firms do not manage to improve operating performance. This is consistent with uninsured ROs being chosen to preserve family control rather than as part of a shareholder wealth maximizing strategy.

(ii) The adverse selection hypothesis. We find that firms with high levels of asymmetric information about firm value choose to issue equity through PPs. In particular, firms with a very high level of asymmetric information, e.g., firms in financial distress, choose a PP to a current investor, who seems to act as an "investor of last resort." These PPs are associated with the largest positive stock-market reaction (average CAR = 11.6%; t-statistic = 3.06), which suggest that such PPs signal positive insider information about firm value. Consistent with this conjecture, these firms manage to improve *Average ROA* by 1.26 percentage points around the PP.

(iii) The product market hypothesis. We find that PPs to new investors are often made at the establishment of a product market relationship, such as a strategic alliance, between the issuing firm and the PP-investor. Table 11 shows that the announcement of a PP to a new shareholder is appreciated by the stock market (average CAR = 6.85%, t-statistic = 2.44) and

[19] The evidence is similar to that of prior research, which has documented positive ARs to ROs in other stock markets (see, e.g., Eckbo and Masulis (1995)), and there is evidence of positive ARs to PPs in the US (Wruck (1989), Hertzel and Smith (1993), and Wu (2001)), and Japan (Kato and Schallheim (1993)).

Table 11. Stock-market reactions to rights offerings and private equity placements

The full sample is 142 rights offerings and 128 private placements made 1/1/1986 - 12/31/1997 by firms listed on the *Stockholm Stock Exchange*. To measure the three day cumulative abnormal returns (CAR[-1,+1])), the market model is estimated by OLS for each firm from daily stock returns obtained from the *SIX* database. The betas are estimated using the Scholes and Williams (1977) procedure to deal with the potential bias (towards zero) of betas due to non-synchronous trading of illiquid stocks. The return on *Affärsvärlden's Generalindex* is used as a proxy for the return on the market portfolio. Panels A and B display CAR[-1,+1] for rights offerings firms and private placement firms, respectively. We test if the CARs are significantly different from zero using both a standard *t*-test as well as Wilcoxon's signed-ranks test. *, **, and *** denote that the value is significantly different from zero at the 10%, 5%, and 1% levels, respectively.

Panel A: CAR[-1,+1][a] (%) by RO-method			
	N	Mean	*t*-statistic
All ROs	142	2.18	3.57***
Uninsured ROs	91	0.48	0.53
Insured ROs	51	5.22	3.98***

Panel B: CAR[-1,+1][a] (%) by PP-method			
	N	Mean	*t*-statistic
All PPs	128	8.52	8.69***
PPs to current investor	45	11.59	3.06***
PPs to new investor	83	6.85	2.44**

[a] The announcement date is defined as day 0.

Table 12. Changes in operating performance for firms making rights offerings and private equity placements

The full sample is 142 rights offerings and 128 private placements made 1/1/1986 - 12/31/1997 by firms listed on the *Stockholm Stock Exchange*. The table reports median values for Average pre-issue ROA, Average post-issue ROA, and the change in Average ROA. See Table 1 for definitions of the variables. Because the changes are calculated for individual observations, observations are only included if information is available for both pre-issue and post-issue Average ROA. Panel A displays the results for rights offering firms and Panel B displays the results for private placements firms. We test if the median changes in Average ROA are significantly different from zero using Wilcoxon's signed-rank test. *, **, and *** denote that the value is significantly different from zero at the 10%, 5%, and 1% levels, respectively.

Panel A: Change in Average ROA for firms making rights offerings (ROs)					
		Average pre-issue ROA	Average post-issue ROA	Change in Average ROA	
	N	Median	Median	Median	Wilcoxon-test
All ROs	126	6.88	6.92	0.01	0.16
Uninsured ROs	80	7.78	7.73	-0.44	0.16
Insured ROs	46	6.19	6.09	0.48	0.67

Panel B: Change in Average ROA for firms making private placements (PPs)					
		Average pre-issue ROA	Average post-issue ROA	Change in Average ROA	
	N	Median	Median	Median	Wilcoxon-test
All PPs	116	5.81	6.99	1.08	3.22***
PPs to current investor	38	6.49	6.99	1.26	1.92*
PPs to new investor	78	5.77	6.93	1.00	2.62***

Table 12 shows that these firms manage to improve *Average ROA* by 1.0 percentage points around the PP. Although these effects are consistent with PPs resolving information asymmetry, they are also consistent with reduction of moral hazard problems in product market relationships. Supporting the latter argument, we find that the average CAR over days [-1,1] for PPs to new investors that involves formation of product market relationships is 12.7% (p-value<0.05), which is significantly larger than the average CAR of 3.2% for PPs to new investors that do not involve product market relationships (not reported). This is further evidence on an important link between financial and product markets. Our conclusion is supported by the Allen and Phillips (2000) study on inter-corporate equity ownership. They document that the formation of a new (corporate) block shareholder is associated with significant increases in the target's stock prices, operating performance, and investment, in particular when accompanied by a new product market relationship.

7. Conclusions and discussion

In stock markets outside the US and Japan, seasoned equity offerings (SEOs) by public firms are conducted mainly as rights offerings (ROs) or private equity placements (PPs). This study is first to examine how firms' choose between these equity-financing alternatives.

Our evidence suggests that the relative popularity of ROs can be explained by corporate control considerations. In Europe and the Pacific Basin, public firms are controlled by family owners who are also actively involved in the firms' management. To the extent that these families enjoy control rents, we expect them to be averse to issuing new shares in such a manner that their control is threatened. That is, controlling families will choose the SEO-method that is least likely to dilute their vote ownership and increase monitoring by an investment bank or a new large shareholder. Consistent with this conjecture, we show that controlling families avoid PPs as well as ROs underwritten by investment banks. By differentiating ownership of votes from ownership of shares, we show that the result is not due to firms with concentrated ownership of shares having a comparative cost advantage in uninsured ROs (as argued by Hansen and Pinkerton (1982, 1984)).

The control hypothesis also sheds some light on why firms in Europe and the Pacific Basin avoid firm-commitment underwritten POs altogether. It is apparent from our evidence that families in control avoid PPs and underwritten ROs. A PO may be an alternative in this case. But unlike in a PP, the family has no control over who will subscribe to a PO and what the underwriter will do. Thus, there is great uncertainty regarding the post-PO control

structure and what control threats may emerge. Furthermore, because of the large risk taken by investment banks in a PO, they will have large incentives to monitor the controlling family (Hansen and Torregrosa (1992)). Although similar control threats may emerge in underwritten ROs, they should be less severe. Thus, if a controlling family cannot make a PP to a friendly investor, an RO always dominates a PO from a control perspective. Our evidence fits with the fact that POs are predominately used in the US, where public firms have the most dispersed ownership structure in the world. Interestingly, and consistent with our conjecture, the few firms that choose ROs in the US tend to be small family-controlled firms (see Kothare (1997)).

Our evidence of corporate control considerations affecting the SEO-method choices has at least one important implication: families who would face an "unacceptable" dilution of control will choose not to issue in the first place. Such family-controlled firms may thus forego positive NPV projects altogether, since pecking-order theories suggest that firms issue equity only when they have exhausted other financing alternatives (see, e.g., Myers (1984)). Thus, controlling families' dilution aversion may have adverse consequences for corporate investment activity, economic efficiency, and non-controlling shareholders' wealth. Nilsson (2001) provides some support for this conjecture. Using a panel of 215 listed Swedish firms over the period 1990-1997, he finds that controlling families in firms with potentially many positive NPV projects (high market-to-book firms) use less equity financing than other firms, and that the resulting higher level of leverage is associated with a decrease in corporate investment activity. Hence, control-dilution aversion may lead to underinvestment. The link between controlling families' control considerations, *personal* diversification concerns, capital constraints, etc and corporate investment activity seems to be a productive area for future research.

Control considerations seem to be an explanation for why firms make ROs, in particular uninsured ROs, but it does not answer the following question: Why do public firms place equity privately? A PP is an expensive SEO-method in terms of direct flotation costs due to the large discount given to PP-investors. Still, it is a common SEO-method in many countries around the world. We find that firms with a low expected current shareholder take-up of issued shares and firms with a high degree of asymmetric information about firm value choose PPs rather than ROs. This result is consistent with PPs being used to overcome the Myers and Majluf (1984) underinvestment problem. Our evidence also suggests that in cases of extreme information asymmetry, large current investors are the purchasers of PPs, thereby

acting as "capital providers of last resort," supposedly because they are informationally advantaged compared to new investors.

We also find evidence that PPs are chosen when equity is raised in conjunction with the establishment of a new product market relationship. A substantial body of industrial organization theory suggests that business partners use equity ownership to reduce contracting and monitoring costs involved in the production of relationship-specific assets. Our evidence is consistent with this view. .

Besides the case of investments in product market relationships, we find no support for increased monitoring of management being a determinant of the choice of flotation method. Yet, it is likely that improved monitoring is a by-product of any PP, because the PP-investor's large stake will induce the investor to monitor the firm. Thus, our evidence is not necessarily inconsistent with Wruck (1989), who find that improved monitoring is a potential determinant of the positive abnormal returns around the announcement of PPs. We are simply suggesting that the potential for increased monitoring benefits is not a main determinant of the choice of a PP. It should be noted, however, that there are some important institutional differences between our sample and Wruck's: while 99% of our sample firms have a pre-SEO block shareholder, most of Wruck's NYSE-firms do not.

Appendix – Estimation of expected shareholder take-up

Estimation of expected requires two steps. First, we define *actual* take-up by current shareholders for firm *f* as:

$$t_f^{actual} = 1 - \frac{(\text{Rights sold in secondary market+Rights sold in block outside the market})}{\text{Total number of rights}} \qquad (9)$$

In our view, this is the best available proxy of actual take-up. Assuming that a right is traded, at most, once in the secondary market, Bohren et al. (1997) argue that the fraction rights traded is a good estimate of the fraction of the issue sold to outside investors. Overallotments of shares to current shareholders who want to purchase more than their pro rata share of the issue are executed by the investment bank managing the SEO rights offer and are not recorded as trades in the secondary market for rights. However, because blockholders have incentives to sell rights as a block rather than piecemeal in order to capture a potential control premium (Barclay and Holderness (1989)), we are likely to overestimate the actual take-up if we only consider the rights traded in the stock exchange. Therefore, we identified all block sales around ROs in the *Affärsdata* news database, and determined whether they were attributable to a current shareholder transferring a block of rights outside the stock exchange. All block sales of rights to new shareholders identified in this manner are included in our measure of actual take-up.

For ROs, we consider the actual take-up to be our best estimate of expected shareholder take-up. To estimate expected take-up for PPs, we estimate an OLS regression model of t_f^{actual} for RO-firms and use the coefficients from this model to calculate predicted values of take-up. The explanatory variables are proxies for factors affecting current shareholders' decisions to participate in the RO:

(i) Log of *Total proceeds* capture that the larger the RO, the more likely that a current shareholder face capital, diversification, or liquidity constraints.

(ii) *Blockholder capital ownership* is included because large capital ownership by current influential shareholders may reduce agency problems and increase the likelihood that the issue is part of firm value maximization.

(iii) Log of *Market value of equity* captures that larger firms often have more dispersed ownership, which increases current shareholders' participation to the extent that dispersed shareholders are well-diversified shareholders.

(iv) *Residual sigma* capture that risk-averse shareholders are less likely to participate if the firm-specific risk is large.

Table A1 presents the results. The model explains 11.8% of the cross-sectional variation in current shareholders' actual take-up. The *F*-statistic rejects the hypothesis that the estimated coefficients are all zero at the 1%-level. We recognize that the coefficient estimates may be subject to a sample-selection bias, since we observe t_f^{actual} for RO-firms only. However, since *Expected take-up* is an explanatory variable of the choice between ROs and PPs, we have found it computationally infeasible to integrate sample selection models (such as Heckman (1976) two-step model) with our nested logit model to tackle this problem.

Table A1. OLS regression model for actual take-up

The sample is 142 rights offerings announced 1/1/1986 - 12/31/1997 by firms listed on the *Stockholm Stock Exchange*. The dependent variable is actual take-up, defined as one minus the fraction rights traded. All variables are defined in Table 1. *, **, and *** denote that the value is significantly different from zero at the 10%, 5%, and 1% levels, respectively, according to standard t-tests (using a two-tailed test) of estimated coefficients being equal to zero.

	Dependent variable: Actual take-up	
Independent variables	Coefficient.	*p*-value
Log (Total proceeds)	-0.022	0.254
Blockholder capital ownership	0.035	0.658
Log (Market value of equity)	0.031*	0.073
Residual sigma	-1.728**	0.045
Intercept	0.646**	0.016
Number of observations	142	
R^2	0.118	
F-statistic (*p*-value)	4.56*** (0.002)	

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Chapter 4

Why Agency Costs Explain Diversification Discounts*

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1. Introduction

Is the diversification discount a measure of the contemporaneous inefficiency of an already diversified firm? Or is it an ex ante measure of the inefficiency of future diversifying acquisitions? The principal answer in the literature is that it is diversification per se that causes the discount since internal capital markets of a diversified firm are inefficient because of systematic cross-subsidization of capital expenditures between divisions.[1, 2] But this paper presents evidence that the diversified firm as such is not inefficient but that diversification is. We study diversification within the single industry of real estate because of its relative transparency: portfolio management of assets with well-defined market prices.

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[1] Specifically, divisions that are either small, underperforming or have lower future growth opportunities are suboptimally subsidized by divisions that are either larger, overperforming or have better growth prospects. The higher the dispersion of the investment opportunities across divisions within a conglomerate, the more likely that funds are inefficiently allocated to divisions with low future growth opportunities (Rajan et al (2000)). For evidence on diversification in the U.S., see Lang and Stulz 1994, Berger and Ofek (1995, 1996), and Comment and Jarrell (1995); and for the UK, and Japan, see Lins and Servaes (1999); see Bodnar, Tang, and Weintrop (1998) for international diversification of U.S. firms.

[2] For empirical evidence of cross-subsidization of underperforming segments, see Lamont 1997. Shin and Stulz (1998) report that investments of the smallest division of a diversified firm is not primarily related to its own investment opportunities but depend significantly and inefficiently on the cash flows of other divisions. Scharfstein (1997) reports that conglomerate divisions in high-Q industries invest less than comparable stand-alone firms while the opposite is true for divisions in low-Q industries.

Diversification is simply over property types and geographical regions. Since diversifying firms have certain characteristics and trade at a discount prior to undertaking a diversifying action, it is more likely that it is anticipated losses associated with the diversification process rather than inefficiency of a diversified firm that cause the discount. We show that the ex ante discount is larger and more important than the contemporaneous discount measuring the inefficiency of an already diversified firm. The ex ante discount gauges anticipated extra costs in a future diversification process, primarily due to too expensive acquisitions and loss of managerial rents since critical managerial capital becomes more thinly spread over disparate activities. Specifically, too much management time is devoted to the newly acquired parts, which is detrimental to efficient management of incumbent activities.

Two results are novel to the literature. First, unlike previous papers that looked at the discount prior to diversification and selected only those firms that actually did diversify later, we avoid post selection bias and use a pure ex ante measure to classify firms into two groups before they diversify.[3] Firms are either expected to pursue a focusing or a non-focusing (diversifying or unclear) future strategy. The ex ante classification is a highly accurate predictor of actual firm behavior in the future. The ex ante discount is only associated with firms classified as pursuing a non-focusing strategy.

Second, firms expected to follow a non-focusing strategy are predominantly privately controlled and use dual-class share systems to separate control of votes from ownership of capital. Individuals have a substantial part of their wealth invested in the single firm they control, and all of their human capital as well if they are also CEOs. They obtain part of their preferred level of private risk diversification if the firm itself diversifies to generate more stable cash flows and returns. Since they enjoy private benefits of control, they may e.g. implement diversifying investments in new lines of business, and support such projects too long despite being less profitable or even unprofitable. Because the owner in control only carries potential losses in proportion to capital invested, the brunt of such costs is borne by other shareholders. Thus, a dual-class share system facilitates implementation of diversifying actions and strategies by private owners in control against the interest of other shareholders. The ex ante discount is, therefore, related to firm ownership characteristics and a measure of agency costs associated with the conflict between controlling private owners and other

[3] Since it is not a random selection of firms that decide to diversify but firms with certain characteristics, failure to control for such characteristics may incorrectly attribute the discount to diversification rather than to underlying firm characteristics. Campa and Kedia (1999) report that selection bias is significant; firms that later diversify trade at a discount prior to diversification. After correcting for the bias, there is no significant diversification discount and not infrequently a premium is observed.

shareholders. The unique link between agency costs, expected corporate strategy and ex ante diversification discount is as far as we know novel.

To limit the effect of measurement errors, selection bias and to keep as many factors as possible constant besides diversification, we don't study diversification over different industries or segments, but within a single industry.[4] The choice of Swedish real estate corporations (SRECs) is not coincidental. It has several principal advantages. First, diversification in the real estate industry is simple to analyze since it has two easily identifiable and measurable dimensions: over different property types — residential housing, hotel, industrial, office and retail properties-- and spatially over geographical regions. Second, real estate firms are also economically relatively transparent since its technology is portfolio management of objects with well-defined market prices in actively traded primary markets. The pivotal factor is, therefore, specialized managerial talent in portfolio management of properties. Third, unlike most other industries, it is possible in real estate to calculate the market value of underlying assets and not be limited to book values in valuation measures, such as the ratio of market value of equity to net asset value or Tobin's Q. Fourth, it is also comparatively easy to characterize firms expected to pursue focusing and non-focusing business strategies, respectively. We use a unique ex ante measure provided by the business magazine *Börsveckan* as a reasonable proxy for type of corporate strategy expected to be pursued. It is also our control for selection bias. Finally, an important advantage is the very high quality of Swedish ownership data in general (Sundqvist and Sundin 1985-1998).[5]

Our empirical analysis shows that focus matters even within a single industry. Firms that restrict their investments to one or two property types like hotels, industrial and residential housing properties are valued at a premium. Since management of each property type requires distinct and highly specialized skills, there are no significant synergistic gains from managing disparate property types within a diversified firm. However, focus on certain geographical regions has no significant positive effect on shareholder value. We also find strong evidence that there exists an ex ante diversification discount. Firms expected to follow a non-focusing (diversifying or unclear) corporate strategy are valued at a significant discount

[4] Since the positive economic effects of scale and scope are more direct within an industry but some of the excessive costs of conglomeration are avoided, potential gains of diversification are more likely to be successfully exploited in diversification within an industry ("related" diversification) than in unrelated diversification across industries. But if we still find a diversification discount, it will be even more difficult to argue that diversification in general generates significant economic gains. It is also easier to understand why such a discount exists since many factors that differ between industries are constant.

[5] Annual reports of share of votes and capital of the 25 largest owners in firms listed on the Stockholm Stock Exchange.

(about 20%) over firms anticipated to pursue a focusing strategy. Moreover, firms predicted to pursue a focusing strategy receive a larger increase in shareholder value from property type focus contemporaneously than non-focusing firms do. Thus, whether the firm is expected to pursue a focusing or diversifying course of action is a more fundamental determinant of value than contemporaneous focus per se.

Our ex ante classification of corporate strategy is also a very accurate predictor of future behavior. Firms classified as expected to pursue focusing strategies do not diversify, and the stock market reaction to major deals (acquisitions/sell-offs) is significantly positive. However, firms anticipated to follow a non-focusing strategy tend to diversify more by acquiring firms in new geographical areas, which increases the overall geographic dispersion. The market reactions to such deals are insignificantly negative. This is further evidence that the market correctly anticipates firms with certain characteristics to diversify more, particularly geographically, and already discounts for such behavior. In particular, since we find no significant contemporaneous effect of geographical diversification per se and no significant announcement effect when firms expected to pursue non-focusing strategies diversify geographically, the effect of geographical diversification is exclusively gauged by the ex ante discount. The cause of the discount is, therefore, not diversification per se but anticipated losses in the process of acquiring firms in new geographical areas as part of a diversification strategy.

The ex ante diversification discount is directly linked to agency costs since privately controlled firms, in particular when the major owner is a private person or the founder who also acts as CEO, are much more likely to pursue a non-focusing strategy, and, therefore, also to have a higher degree of diversification. Firms with a high concentration of institutional owners, on the other hand, are primarily following a focusing strategy, resulting in a lower level of diversification. The results are consistent with the view that financial markets regard private owners in control of a firm with dual-class shares to have too strong incentives to diversify, in particular geographically, since they underestimate and do not bear the full proportional costs of rents dissipated in the diversification process. Hence, the diversification discount is an ex ante measure of agency costs associated with highly concentrated private ownership.

Denis et al (1997) present evidence from U.S. data that the diversification discount may be caused by agency costs associated with firms with low managerial ownership since such

firms tend to maintain value-reducing diversifying operations.[6] Using the same Compustat Data Base as Denis et al but correcting for the 28% of observations that were incorrectly classified as diversifying events, Hyland (1999), however, reports no significant relation between managerial ownership and diversification discounts.[7] Berger and Ofek (1995) find that the loss in shareholder value from diversification in general is mitigated when the diversification is within related industries. But by looking specifically at diversification within a single industry, we find that there are no positive effects on shareholder value of diversification per se. Capozza and Seguin (1999) investigate the effect of diversification on shareholder value of U.S. Real Estate Investment Trusts (REITs).[8] They report no positive effect of corporate focus after controlling for the indirect effect of focus via increased stock market liquidity. These studies do not use an agency cost based explanation of the diversification discount, nor do they differentiate between measures of diversification that are of a contemporaneous and of an ex ante nature.

The paper is organized as follows. The next section details our theoretical arguments why agency costs explain diversification discounts. We then present our sample selection and describe the data while the following section contains empirical results on the relationship between diversification and shareholder value. Empirical evidence on our agency cost explanation of diversification discounts follows. Thereafter, we report results from tests of the validity of the ex ante corporate diversification strategy variable. The penultimate section discusses the results by putting them in perspective while the final section concludes.

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[6] They assume a convergence-of-interest between managers and other shareholders as managerial ownership increases. But for firms with more than 50% managerial ownership, they find a positive relation between managerial ownership and diversification

[7] More generally, empirical evidence showing that it is the inefficiency of a diversified firm that causes the discount has recently been challenged because they are sensitive to selection bias and to measurement errors. The empirical results on diversification depend critically on the assumption that Tobin's Q is a good proxy for the theoretically correct marginal Q. Using a measurement-error consistent estimator to correct for potential measurement problems in Tobin's Q, Whited (1999) finds that the previously reported evidence of inefficient allocation of investments across divisions disappears. Analyzing both measurement problems and selection bias, Chevalier (1999) finds that the investment pattern that is observed after the diversification, and interpreted as evidence of inefficient cross-subsidization, existed prior to the diversification when the firms were independent and no cross-subsidization was possible. Using the Longitudinal Research Data Base instead of the standard Compustat Data Base, Schoar (1999) reports that diversifying firms are more efficient than stand alone firms since better firms diversify. After diversification productivity of the acquired plants increases significantly while it decreases in the incumbent plants. Even if the dynamic effect of diversification on productivity is overall negative, it is not large enough to explain the diversification discount.

[8] Since there is no preferential treatment or regulation of Swedish real estate firms, our results have more general relevance than a similar study of e.g. the more regulated U.S. (REITs). By eliminating diversification across industries and restricting ourselves to one industry, we limit problems of spurious correlation by ruling out that diversification is the effect and not the cause of poor performance. The relative simplicity and transparency of the real estate sector makes it very suitable as an appropriate economic benchmark for a better general understanding of the relevance of corporate focus, and the existence and limits of synergistic gains.

2. Agency Costs and Diversification Discounts

We present theoretical arguments to establish relations between ex ante diversification discounts and agency costs associated with highly concentrated private ownership.

2.1 Why Focus Matters

Focus on a narrow set of activities matters within an industry if there are significant gains from specialization. Such gains are most likely to occur if segments of products or services are clearly separable, cater to different categories of customers with particular preferences, and if skills acquired in the production and sales of such products are not easily standardized and transferable. Moreover, if the typical firm within an industry has few substantial intangible assets, for example in management skills, R&D and marketing that may be used in a complementary way across product segments, it is less likely that there will be any significant gains from diversification (Morck and Yeung (1997)). Thus, focus matters when there are significant increasing returns to specialization but few gains from economies of scope (Milgrom and Roberts (1992)).

A more focused firm is also easier to analyze and value since it is more transparent. Investors are likely to prefer focused firms since it is more convenient for them to achieve the desired level of risk diversification with pure-play firms (Ferris and Sarin (1997)). This in turn may increase trading volume. A reasonable conjecture is, therefore, that more focused firms will trade at a premium over less focused firms both because of higher transparency and because of higher liquidity.

From an ex ante perspective, credible commitment to a focusing corporate strategy that concentrates on a narrow set of activities, and deliberately forgoes seemingly profitable investment opportunities outside this range may enhance firm value. For example, if it is very costly to diversify since rents gets dissipated in the diversification process, credible commitment to stay focused and not undertake diversifying acquisitions is value enhancing. In a world of incomplete contracting, focus on a small set of well-defined core activities may for example enable the firm to design more efficient contracts to motivate its employees to find ways to improve profitability. Such contracts may not be implementable if the firm is engaged in many disparate activities (Rotemberg and Saloner (1994)).

The gains from commitment to narrow strategies ultimately emanate from returns to specialization. If there are gains from specialization on a set of core activities due to learning particular skills, we, therefore, anticipate that credible commitment to focus on these narrow activities also in the future will enhance firm value. For example, risky and potentially very

costly investments outside the core competence of the firm will be avoided despite looking seemingly profitable ex ante. Losses are more likely to occur if the diversifying investments require the firm to acquire new specialized skills in order to generate a sufficient level of profitability, which may take time and be costly. In fact, lack of experience and competence may make firms overly optimistic about the potential profitability in the new business areas (Heaton (1997)). The diversification process may also be extra costly due to too expensive acquisitions and since the process of integrating separate firms may consume more of scarce managerial capital when it gets more thinly spread over disparate activities. Thus, if gains from specialization are significant, commitment to a strategy that focuses on a set of core activities is particularly valuable since it avoids potential future losses in a diversification process where large rents gets dissipated.

Concerning the effects on value of contemporaneous diversification within the real estate sector, we hypothesize that firms focusing on management of specific property types will trade at a premium since specialized knowledge is required to manage each separate property type and there are no apparent synergistic gains from integrated or joint management. For example, economic fundamentals associated with the business cycle affect property types differently, and the investor clienteles are very disparate with special preferences. There are also significant gains from specialization in management of specific property types since knowledge about individual properties, how to value them and about potential buyers and sellers is essential for a profitable investment. This knowledge is often specialized to a few persons, and not easily transferable to management of other types of properties. Diversification over more geographic regions but within the same property type is likely to be less negative since the same specialized knowledge is applied more thinly.

With respect to ex ante discounts, we conjecture that firms making credible commitments to concentrate their future investments and activities to certain regions and certain property types, where they already have acquired competence, will trade at a premium over firms unable to make such commitments. However, it is much more costly to diversify over property types than over geographic regions since it is more difficult and time consuming to acquire the highly specialized skills of managing a new property type and there are no synergistic gains. If real estate firms are expected to diversify in the future, we conjecture that it is primarily geographic diversification. Within the real estate industry it may be especially tempting to venture into new geographical areas where prices have been steadily rising, often under speculative pressure. By committing to a narrow range of core activities also in the future, firms avoid such investments that are attractive ex ante but whose potential profits are

difficult to realize since they paid too much when acquiring the properties in a speculative market and because scarce managerial talent gets spread more thinly. Spending too much time and effort on properties in the newly acquired areas will incur costs in terms of lower profits in old areas since they get less managerial attention. Thus, winner-picking strategies are not likely to be profitable in real estate since pivotal managerial skills are highly specialized and not easily transferable, not even over geographic regions (Stein (1997)). An ex ante diversification discount will, therefore, measure anticipated losses in a future diversification process due to overpayment and rent dissipation.

Summarizing our conjectures, we expect to observe a contemporaneous discount for diversified firms that manage different property types, and an ex ante discount for firms unable to credibly commit not to diversify into new geographic regions in the future.

2.2 Private Control and Diversification

The shareholder value of a closely held, public firm may not be maximized because of agency costs associated with conflicts of interests between owner(s) in control and other shareholders. Since control generates private benefits, the owner in control maximizes the private value of his investments, i.e. the sum of private benefits and common stock value, and not overall shareholder value; see Bebchuk et al (1999). For example, if the firm itself diversifies its operations and investments, the large private owner in control derive private benefits since his own undiversified capital and human capital investments in the firm also become more diversified (Amihud and Lev (1981); Huddart (1993)). Diversifying expansion into new areas of business and industries may also generate private benefits for the owner in control by realizing empire building ambitions, by catering to power preferences, and by higher pecuniary compensation if he also acts as CEO since size and managerial compensation are positively related (Jensen (1986); Jensen and Murphy (1990)). Moreover, because of private benefits associated with diversification, the private owner in control can not credibly commit to pursue a focusing corporate strategy in the future.

Since the owner in control typically owns a larger share of votes than of dividend rights (capital), a dual-class share system de facto protects and enhances private benefits of control, i.e. agency costs increase when the interests of owners in control and other shareholders become less aligned (Bebchuk et al (1999)). In particular, by not carrying the full proportional costs of investments and potential losses, the private owner in control has even stronger incentives to undertake diversifying investments into new markets and areas of business. For example, incentives to engage in overoptimistic winner picking are reinforced

(Heaton (1997)). Privately controlled firms are more likely to hang on to losers longer since separation of voting and dividend rights is like a put option to cover part of potential losses issued by the other shareholders to the owner in control. Substantial losses may occur if it is a pet project with considerable private benefits. Thus, under a dual-class system it is even less credible for the private owners in control to make a commitment to avoid risky and costly, diversifying investments in the future and to focus on a narrow range of activities.[9] In particular, firms controlled either by the founder/CEO or by private persons outside the founder's family are more likely to undertake diversifying actions since they have invested in the firm primarily to exercise an active control, and to enjoy the associated private benefits. But institutionally controlled firms are more likely to make such a commitment since institutional investors are primarily interested in maximizing returns and not private benefits.[10]

Since it is impossible for privately controlled firms to make credible commitments to a narrow business strategy because of the significant private benefits from diversification, we expect to observe an ex ante diversification discount for firms with private persons as controlling owners. This establishes a link between agency costs associated with highly concentrated private ownership and an ex ante discount, in particular when dual-class shares are used. Building on our previous conjectures, we expect that within the real estate sector privately controlled firms are unable to credibly commit not to pursue a strategy of geographical diversification. In summary, we expect to observe a contemporaneous discount for diversified firms that manage different property types, and an ex ante discount for privately controlled firms unable to credibly commit not to diversify into new geographic regions in the future.

[9] The link between ownership structure (type) and a firm's choice of strategy is also apparent if shares are widely held. Bethel et al (1998) report that block share purchases by owners pursuing an "active" strategy are followed by increases in asset divestitures and decreases in mergers and acquisitions. The risk concept in diversification is not the standard exogenous one in portfolio theory but an endogenous one, i.e. a diversifying operation may increase risk since it is uncertain if the benefits from diversification are going to be realized if its success critically depends upon if managerial skills are acquired and properly applied.

[10] Institutional investors are likely to block diversifying actions since they invest in a diversified portfolio of focused firms to maximize returns. Since their interests are more aligned with other shareholders, the institutionally controlled firms will be more focused. Because of the credible commitment to a focusing strategy, there is less likely to be an ex ante diversification discount.

3. Sample Selection and Data Description

3.1 Sample

Our sample consists of annual observations of 32 separate Swedish real estate corporations (SRECs) listed on the Stockholm Stock Exchange any year between 1990 and 1996.[11] A corporation is included in the sample if at least 75% of total assets, gauged at book values, are attributable to property assets. This is one of the criteria used in the US to legally define a REIT. In particular, it excludes unrelated diversified firms that combine a significant construction activity with real estate property management. The number of firms simultaneously listed grows from 13 to 19 over the time period. For 6 corporations we have a full time-series over seven years. Due to new listings as well as delistings, the size of the pooled sample of cross-sectional and time-series observations is 114, not 224; see Table A1 in the Appendix for a list of observations. All data was gathered from annual reports unless otherwise stated below.

3.2 Variables

We use the ratio of market value of equity to net asset value (NAV) as the measure of shareholder value, henceforth called market-to-NAV, since it is not an accounting based but a forward-looking and risk-adjusted measure incorporating the capitalized value of a firm's intangible assets, e.g. benefits from focus or related diversification; Table 1 for definitions of all variables used. Stock price data was collected from the *Findata* TRUST database. NAV is equal to the real estate market value of properties (replacement value) plus the book value of other assets minus the book value of debt; it is predominantly a market-based measure that avoids the standard measurement problem when using only book values. We also limit potential measurement error problems by constructing different market-to-NAV ratios using several sources for estimated NAVs: The business magazines *Affärsvärlden, Veckans Affärer*, and *Börsveckan*. Each source reports the NAVs by firm, and we use the reported value for each firm from the last issue of every year. However, we have primarily used the estimates provided by *Affärsvärlden*, which is the leading business magazine in Sweden, since it is the most frequently updated, unified and most independent data source available. *Affärsvärlden* estimates the real estate market value of properties using standard appraisal methods. For example, the market price is estimated using transaction prices of similar properties that have recently been traded, or by using the discounted value of expected rents, where the discount

[11] We chose this time period because the frequency of missing observations before the 1990s is very high.

Table 1. Definitions of Variables.

Variable	Definition
Market-to-NAV	Market value of equity /NAV (Real estate market value of properties + book value of other assets – book value of debt).
Property type focus	Herfindahl Index (HI): Sum of squared proportions (of total square meters) of a SREC's property portfolio invested in each of the different property types.
Geographical region focus	Herfindahl Index (HI): Sum of squared proportions (of total square meters) of a SREC's property portfolio invested in each of the different geographical regions.
Corporate strategy dummy *(DCS)*	1 if the SREC is classified as *non-focusing*, and 0 if *focusing*.
Company size	Value of total assets (Real estate market value of properties + book value of other assets).
Market liquidity	Total stock turnover (trading volume/average market capitalization) during the last 50 trading days before end-of-year.
Leverage	Book value of debt/ Value of total assets.
Expected dividend	Forecasted dividend per share next year / End-of-year stock price
Construction business sales / Total sales	Construction business segment sales / Total company sales
Return-on-sales (ROS)	Earnings before interest, depreciation, and taxes (EBDIT)/ Total company sales

factor is derived from sales of similar objects. Furthermore, *Affärsvärlden* continuously updates its estimates, as new information about the firms and their properties become available. We prefer to use the market-to-NAV measure instead of the more common Tobin's Q, since private debt is not publicly traded, but all results are robust if we instead use a Tobin's Q measure based on book values of debt.

To measure related diversification over (i) property types and (ii) geographical regions, we use two Herfindahl indices (HIs). The indices gauge the extent to which a SREC's real estate property portfolio is concentrated in just a few segments (property types or geographical regions). Since we cannot disentangle the individual property values for all firms in order to use value-based HIs, we instead use square meter based HIs as a proxy for portfolio concentration. A square meter based HI has the drawback that it ignores differences in value per square meter between different property types and geographical regions. However, as far as it is possible to control, the correlation between square meter based HIs and asset based HIs is very high (≈0.9). The property type and geographical region HIs are calculated annually for each SREC as

$$HI = \sum_{i=1}^{N} P_i^2 ,$$

where P_i is the proportion of the SREC's total square meters invested in property type i, or geographical region i, respectively, and N is equal to the total number of property types or geographical regions.

We differentiate between property types by dividing real estate assets into five homogenous blocks: hotel, industrial, office, residential, and retail. The SRECs report detailed information in their annual reports about their property portfolios' distribution of square meters over different property types, which enables the above classification. Considering pivotal economic differences between the property types, residential housing has a lower average vacancy rate (1-4%) than the other types. While rents and property prices show substantial variation over the business cycle for office and hotel properties, rents are very stable for residential housing while prices vary somewhat more. Since characteristics and demands of tenants differ widely across property types, there is also a need for special management skills for distinct property types.

To capture dispersion across geographical areas, we define 23 regions: 8 domestic regions according to *Statistiska Centralbyrån's* (1996) real estate statistics, and 15 foreign countries; each country constitutes a separate region.[12] All SRECs in our sample provide detailed information in their annual reports about the geographical distribution of their property portfolios, as measured by square meters of rental space, which enables the above regional classification. About 72 percent of the SRECs' real estate properties are located in Sweden's three metropolitan areas (Stockholm, Göteborg and Malmö), and approximately 12 percent are foreign property holdings.

The HIs for property type and geographical diversification are of a contemporaneous nature. We also use a forward-looking (ex ante) variable differentiating between firms pursuing a focusing and non-focusing (diversifying or unclear) corporate strategy, respectively. We include this variable since current stock prices most likely reflect expectations about whether the firm will pursue a diversifying or a focusing strategy. Previous studies of corporate focus have either implicitly assumed that the present level of diversification is correlated with the future corporate diversification strategy or looked at firms after they diversified to find out if they also traded at a discount prior to diversification.

[12] The domestic regions are the counties of: (1) Stockholm, (2) Södermanland, Uppland, Västmanland, Örebro, and Östergötland, (3) Gotland, Jönköping, Kalmar, and Kronoberg, (4) Blekinge, and Skåne, (5) Göteborg och Bohus, Halland, Skaraborg, and Älvsborg, (6) Gävleborg, Dalarna, and Värmland, (7) Jämtland and Västernorrland, and (8) Norrbotten and Västerbotten.

The latter procedure imposes an ex post selection bias since it assumes that the investors actually knew with full certainty beforehand that the firm is going to diversify. Using a strict ex ante measure, we avoid post selection bias. The dummy for whether the firm is expected to pursue a focusing or non-focusing strategy is also our control for selection bias since it is not a random selection of firms that diversify but firms with certain characteristics. If we observe a discount associated with firms expected to pursue a non-focusing strategy this is a pure ex ante measure of anticipated extra costs in a future diversification process.

The independent business magazine *Börsveckan* provides a reasonable proxy for which corporate strategy is expected to be pursued. We view the magazine's classification of SRECs into either *focusing* or *non-focusing* as a good (exogenous) proxy variable for expected future corporate diversification strategy. It is of particular importance to understand that this measure was not designed especially for the present paper by the authors. The classification emanates from 1980s when real estate firms pursuing an active or passive portfolio management strategy were taxed differently, but the magazine continued to provide a classification of firms as investor advice even after the differential tax treatment was abolished in the late 80s. No formal criteria or explicit reasons for the classification are given, but an analyst with long experience of the Swedish real estate market has been responsible for it since its initiation. Generally, it is a forward-looking measure based on firm characteristics, past behavior and stated firm strategy.[13] It is sequentially upgraded, and we use the last reported classification in the previous year as a predictor for the behavior of the coming year. To better understand what the corporate strategy dummy actually measures, we later report results of tests of how it is related to the ownership structure of the firm and other variables, and if it is an accurate predictor of future diversification behavior. We include a corporate strategy dummy that is one if the firm is expected to pursue a non-focusing corporate strategy, and zero if a focusing strategy is anticipated to be followed.

We include a set of control variables to eliminate the possibility that our regression results are driven by spurious correlation: company size, market liquidity, leverage, expected dividends, construction business sales and profitability. Company size, measured as value of total assets (estimated real estate market value of properties plus book value of other assets), is used as a control variable since more diversified real estate corporations are likely to be larger than focused ones. The relationship between related diversification and market-to-

[13] Börsveckan's classification is not exclusively based on whether the firm has pursued diversifying or focusing actions in the past. As will be shown, the measure is primarily related to firm characteristics like type of owners in control.

NAV might then be explained by cross-sectional differences in the size of the asset base rather than by the degree of related diversification.

If equity of more diversified SRECs is traded in a less liquid market than focused SRECs, the association between related diversification and market-to-NAV may be explained by cross-sectional differences in market liquidity rather than by the degree of related diversification. More specifically, Amihud and Mendelson (1991) demonstrate that investors demand a higher rate of return to invest in less liquid shares since trading costs are higher. Market liquidity is measured as total stock turnover (trading volume/average market capitalization) during the last 50 days of the year. The TRUST database supplied the data needed to calculate market liquidity.

Because diversification increases corporate debt capacity (the co-insurance effect), more diversified SRECs are likely to have higher leverage than focused firms. Higher leverage may also reduce agency costs because the mitigating effect of debt on free cash flows (FCFs) (Jensen (1986)). The association between related diversification and market-to-NAV may then be explained by cross-sectional differences in leverage rather than by the extent of related diversification. Thus, we include leverage as a control variable measured as book value of debt divided by value of total assets.

Stock prices reflect expected dividends. Related diversification may via its effect on leverage also influence the level of dividends. Another link between diversification and dividends exists if a focused firm has more trouble raising capital than a diversified one due to capital market imperfections. It may therefore be unable to exhaust its positive net present value projects, which results in a higher market-to-NAV value. However, a firm paying dividends could invest more by cutting dividends, and is therefore unlikely to be capital rationed. To control for these possibilities, we include expected dividends as a control variable. *Affärsvärlden* provided us with data on expected dividends.

Even if we excluded real estate corporations that have more than 25% of their assets invested in a construction business, income generated from this comparatively small but unrelated segment may still influence the relationship between related diversification and shareholder value of a real estate corporation. In particular, market-to-NAV values for the construction business tend to be higher than for real estate. To control for this possibility we include construction business sales gauged as proportion of total sales as a variable in the regressions. Construction business sales were reported for nine firm-year observations, distributed over five different SRECs, in our sample. However, our results are robust if we exclude also these observations.

Finally, we include return-on-sales (ROS) as a control for firm profitability. If there are any operational advantages/disadvantages to diversification, they should manifest themselves as an increase/decrease in profitability. Hence, if we do not control for profitability, any observed relations between the diversification variables and market-to-NAV could be caused by differences in profitability rather than by diversification per se.

3.3 Descriptive Data Analysis

Table 2 shows that the Herfindahl index (HI) for geographical diversification has a higher average (.543) but varies more (from .149 to 1) than the index for property type focus, which averages .379 and ranges from .229 to .791. Hence, properties tend on average to be less dispersed over regions than over types. The average for market-to-NAV is .66. Its range from .038 to 1.910 reflects the severe real estate crises in Sweden in the early 90s, and the subsequent fast recovery. The low levels of expected dividends (.9%), and the large dispersion in firm size, profitability (ROS) and leverage reflect the same development.

Table 2. Summary Statistics: Mean, Median, Minimum, Maximum and Standard Deviation

Summary statistics for 114 observations of Swedish Real Estate Corporations (SRECs) between 1990 and 1996. To estimate *market-to-NAV*, market value of equity from the Findata TRUST database and NAV (Net Asset Value) from *Affärsvärlden*'s Placeringsindikator were used. To calculate *property type focus* and *geographic region focus*, measured as Herfindahl indices, the proportion of squared meters of each type or region in relation to total square meters was used. *Company size* is measured as value of total assets (NAV plus book value of debt). *Liquidity* is gauged as total stock turnover (trading volume/average market capitalization) for the last 50 trading days of the year. The data is from the TRUST database. *Leverage* is measured as book value of debt as percentage of value of total assets. *Affärsvärlden* provided the data on *expected dividends*. *Construction business sales / total sales* gauges the proportion of all sales generated by the construction business segment. *ROS* is measured as earnings before depreciation, taxes, and interest (EBDIT), divided by company sales. Unless otherwise stated, all data is collected from the firms' annual reports.

Variable	Mean	Median	Minimum	Maximum	Standard. Deviation
Market-to-NAV	.66	.63	.04	1.91	.37
Property type focus (%)	37.9	32.3	22.9	79.1	13.1
Geographical region focus (%)	54.3	41.7	14.9	100.0	27.8
Company size (MSEK)	3,774	2,775	449	21,485	3,385
Market liquidity (%)	8.5	4.5	0.3	70.0	10.7
Leverage (%)	65.5	68.2	19.1	95.5	17.0
Expected dividend (%)	0.9	0.0	0.0	6.7	1.4
Construction business sales / Total sales (%)	3.4	0.0	0.0	52.9	11.9
ROS (%)	47.3	49.1	-49.0	90.0	19.6

Table 3. Summary Statistics: Annual Averages

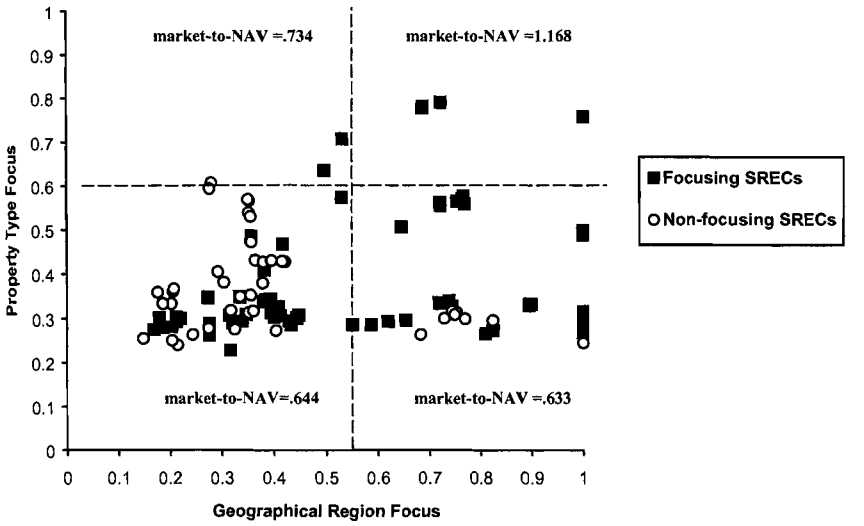
Number of observations and annual averages from 1990 to 1996 for Swedish Real Estate Corporations (SRECs). Classification of corporations pursuing *non-focusing* and *focusing strategies* is from the business magazine *Börsveckan*. To estimate *market-to-NAV*, market value of equity from the Findata TRUST database and NAV (Net Asset Value) from *Affärsvärlden*'s Placeringsindikator were used. To calculate *property type focus* and *geographic region focus*, measured as Herfindahl indices, the proportion of squared meters of each type or region in relation to total square meters was used. *Liquidity* is gauged as total stock turnover (trading volume/average market capitalization) for the last 50 trading days of the year. The data is from the Trust database. *Leverage* is measured as book value of debt as percentage of value of total assets. *Affärsvärlden* provided the data on *expected dividends*. *Construction business sales / total sales* gauges the proportion of all sales generated by the construction business segment. *ROS* is measured as earnings before depreciation, taxes, and interest (EBDIT), divided by company sales. Unless otherwise stated, all data is collected from the annual reports. A *Student t*-test is used to check if each year's mean is statistically different from the overall mean. *, **, and *** denotes two-tailed significance at the 10%, 5% and 1% level, respectively.

	Year						
Variable	1990	1991	1992	1993	1994	1995	1996
Number of observations	13	17	15	11	21	18	19
Proportion of focusing SRECs (%)	53.9	58.8	80.0	81.8	66.6	66.6	52.6
Market-to-NAV	.51	.31	.27***	.73	.85***	.82*	.98***
Property type focus (%)	34.5	37.3	38.5	39.5	42.1	38.6	34.1
Geographical region focus (%)	64.7	56.1	58.8	56.6	53.0	50.0	46.1
Total assets (MSEK)	5,070	4,520	2,730*	3,160	2,490**	3,090	5,470
Market liquidity (%)	2.8***	2.9***	4.0***	13.5	9.2	8.7	17.3***
Leverage (%)	53.0***	58.1*	69.6	72.2	68.4	68.3	68.1
Expected dividend (%)	1.38	1.35	.87	.22**	.58	.55	1.09
Construction business sales / Total sales (%)	9.2	5.0	2.4	0.0	2.5	2.6	2.3
ROS	44.6	41.0	34.7	53.3	51.1	53.9*	50.9

Table 3 reports the time-series development of averages from 1990 to 1996. A t-test is used to check if a single year's average differs from the overall mean. The crises of the early 90s show up in the significant time-series variation, first a steady decline and then a strong upward trend, in market-to-NAV, market liquidity, expected dividend, profitability and in the number of listed corporations. Not unexpectedly, leverage increased during the crises. The market value of total assets was in 1994 less than half of its value in 1990, which was first surpassed in 1996. There is also a clear trend that corporations become more geographically dispersed during the 90s while property type focus has remained more stable. The proportion of corporations pursuing a focusing strategy increased during the crises, but then decreased again when new firms went public during the recovery phase. Jointly, these trends imply that corporations tended to pursue non-focusing strategies by diversifying geographically rather than over property types.

Figure 1. The relationship between property type and geographical region focus, corporate strategy and value of market-to-NAV.

The figure illustrates 114 observations of Swedish Real Estate Corporations (SRECs) from 1990 to 1996 measured along two dimensions, *property type* and *geographic region focus*, gauged by Herfindahl indices. To calculate the indices, the proportion of squared meters of each property type or geographic region in relation to total square meters was used. For each observation it is also shown if the corporation pursues a *non-focusing* or *focusing strategy*. The classification of strategy is according to the business magazine *Börsveckan*. The two broken lines are midway between the theoretical maximum and minimum values for each dimension of focus. The most focused SRECs are in the right-hand upper corner (N=4) with an average market-to-NAV of 1.168 while the most diversified ones are in left-hand bottom corner (N=63) with an average market-to-NAV of 0.644. SRECs in the left-hand upper corner (N=3) have an average market-to-NAV of 0.734, and SRECs in the right-hand bottom corner (N=44) with an average market-to-NAV of 0.633 are diversified along only one dimension. N is the number of observations. Unless otherwise stated, all the other data comes from the annual reports of the real estate corporations.



To capture the co-variation between the two indices for property and regional focus, Figure 1 illustrates the degree of diversification along these two dimensions for SRECs expected to pursue focusing and non-focusing strategies. The average market-to-NAV value for each quadrant is also reported. Most conspicuously, a majority of corporations are diversified along both dimensions while very few focused on both. Corporations are more diversified over property type than over geographical region. Ceteris paribus, a more geographically focused firm does not on average have a higher market-to-NAV value while a firm which is more focused on a certain property type on average has a higher market value. Consequently, when looking at the two diversification dimensions simultaneously, property type focus seems to have a positive effect on shareholder value while regional focus does not.

From Figure 1 we infer that firms that follow a non-focusing strategy are much more likely than focusing ones to be diversified along both property type and regional dimensions. Splitting the sample into corporations pursuing focusing and non-focusing strategies, Table 4 reports that the average market-to-NAV value for non-focusing (0.564) is significantly lower than for focusing (0.712).[14] Thus, corporations classified as pursuing a non-focusing strategy are on average traded at a discount of 20.8%. Non-focusing SRECs are significantly more diversified geographically, slightly more leveraged, larger, and have a larger share of sales from construction business than focusing ones but the average level of property focus does not differ between the groups.

In summary, we observe three trends in the descriptive statistics. (i) Property type focus is positively associated with shareholder value as measured by market-to-NAV, but there is no direct relationship between geographical focus and shareholder value. (ii) Real estate corporations classified as pursuing a non-focusing strategy are valued at a significant discount. (iii) Since these corporations tend to invest in more geographical regions, there is an indirect negative association between geographical dispersion and shareholder value. Next we will test if these relationships hold up when we run multiple regressions with shareholder value as the dependent variable.

4. Empirical Results: Diversification and Shareholder Value

4.1 Related Diversification and Shareholder Value

As a baseline model we use OLS to regress the market-to-NAV ratio on the two Herfindahl indices for related diversification over property types and geographical regions, respectively, on the set of control variables previously described, and on yearly time dummies. The results are displayed as regression 1 in Table 5. In order to check robustness to different panel data model specifications, we also run a "within" regression model, controlling for fixed firm effects, and feasible generalized least squares model (FGLS), controlling for random firm effects. We use standard panel data techniques to estimate the within and the FGLS regressions 2 and 3 (Baltagi (1995)).

Regression 1 shows a significant (1% level) positive relationship between property type focus and shareholder value. It is also economically significant. Each 10 percentage points increase in property type focus results in a market-to-NAV-ratio that is 5.82 percentage

[14] We report the result of both a regular F-test and a Kruskal-Wallis Chi-square test since observations are not independent.

Table 5. Regression Coefficients Estimates: Determinants of Market-to-NAV

Dependent variable is Market-to-NAV. Estimation by ordinary least squares (OLS) in regression (1) and (2), where the *within* regression (2) is calculated using standard panel data techniques. Estimation by *feasible generalized least squares* (FGLS) in regression (3), assuming random company effects. The sample consists of 114 observations from 1990 to 1996 for 32 Swedish Real Estate Corporations (SRECs). The market value of equity from the Findata TRUST database, and NAV (Net Asset Value) from *Affärsvärlden*'s Placeringsindikator were used to estimate *market-to-NAV*. To calculate *property type focus* and *geographic region focus*, measured as Herfindahl indices, the proportion of squared meters of each type or region in relation to total square meters was used. *Liquidity* is gauged as total stock turnover (trading volume/average market capitalization) for the last 50 trading days of the year. The data is from the Trust database. *Affärsvärlden* provided the data on *expected dividends*. *Leverage* is measured as book value of debt as percentage of value of total assets. *Company size* is measured as value of total assets (NAV plus book value of debt). *Construction business sales / total sales* gauges the proportion of all sales generated by the construction business segment. *ROS* is measured as earnings before depreciation, taxes, and interest (EBDIT), divided by company sales. Unless otherwise stated, all other data is collected from the annual reports. The *t*-statistics (reported within parentheses) are calculated using White's (1980) heteroskedasticity consistent standard errors for regressions (1) and (2). Asterisks indicate whether the test-statistics exceed the 10% (*), 5% (**), or 1% (***) critical values. Note that the adjusted R^2-values are not comparable across the regressions.

Explanatory variable	Regression 1 OLS	Regression 2 Within	Regression 3 FGLS
Intercept	-0.662		0.609
	(-0.890)		(0.563)
1991 dummy	-0.190***	-0.239***	-0.220***
	(-2.903)	(-5.719).	(-3.408)
1992 dummy	-0.217**	-0.353	-0.292***
	(-2.543)	(-4.294)	(-3.631)
1993 dummy	0.263**	0.064	0.159*
	(2.568)	(0.671)	(1.800)
1994 dummy	0.388***	0.286***	0.334***
	(4.290)	(3.550)	(4.167)
1995 dummy	0.379***	0.314***	0.337***
	(3.962)	(3.969)	(4.254)
1996 dummy	0.475***	0.525***	0.497***
	(5.844)	(5.597)	(5.983)
Property type focus	0.582***	1.051***	0.726***
	(3.786)	(3.632)	(3.045)
Geographical region focus	0.191**	0.098	0.148
	(2.162)	(0.627)	(1.259)
Liquidity	0.562*	0.593**	0.485**
	(1.914)	(2.391)	(2.359)
Expected dividend	2.275*	1.584	1.614
	(1.664)	(1.000)	(0.988)
Leverage	-0.152	0.238	0.085
	(-0.909)	(0.751)	(0.459)
log (Company size)	0.045	-0.214***	-0.023
	(1.271)	(-3.478)	(-0.483)
Construction business sales / Total sales	0.205	0.570	0.293
	(0.961)	(0.988)	(1.223)
ROS	-0.285**	-0.075	-0.224*
	(-2.553)	(-0.596)	(-1.933)
Adjusted R^2 (R^2 for FGLS)	0.566	0.794	0.620
Number of observations	114	114	114

points higher. Although the magnitudes differ, the coefficient for property focus is positive and strongly significant also in regressions 2 and 3. The relative stability of results for property focus across the three regressions indicates that the result is robust and captures an important positive effect of focus on shareholder value. Thus, diversification over property types does not benefit shareholders. This is in accordance with our conjecture that there are increasing returns to specialization in management of a specific property type, and that such skills are not transferable.

Geographic region focus has a significant effect on shareholder value only in the OLS regression but becomes insignificant when we control for firm specific effects as well as in all other regressions reported below. Since there is no robust effect of geographical focus, related diversification per se among SRECs is neither directly harmful nor directly beneficial to shareholders. This result confirms the findings from the descriptive analysis above. Looking at regression coefficients of control variables, there is a positive and significant (5% or 10% level) relationship between market liquidity and the market-to-NAV ratio, across all regressions. Evidently there exists a discount for low-liquidity SRECs, which is according to expectations. Profitability (ROS) is significantly, negatively related to firm value except in the within regression. Thus, higher profitability implies a lower market valuation, which indicates that investors are concerned that the extra resources will be used inappropriately, e.g. in diversifying acquisitions of uncertain or negative value. There are no unified results concerning any of the other control variables. Not surprisingly, the severe financial distress during the first years of the 1990s, and the subsequent recovery of the Swedish real estate sector is picked up by the highly significant coefficients for the time dummies in all regressions.

Our results so far show that there are no gains to shareholders from diversification within a single industry. On the contrary, there is a robust positive effect of property type focus on shareholder value. Hence, the stock market seem to favor more focused firms also within a single industry, suggesting that potential synergistic gains of diversification are very hard to realize, even when the odds are favorable.

4.2 Corporate Diversification Strategy and Shareholder Value

We now test if beyond the contemporaneous effect on shareholder value of property type and geographic focus, also expectations about the future course of actions affect value today. Addition of the corporate strategy dummy (= 1 (0) if classified as non-focusing (focusing)) as explanatory variable in regression 4 in Table 6 shows that its coefficient is negative and

Table 6. Regression Coefficients Estimates: Determinants of Market-to-NAV for Focusing and Non-Focusing Corporations

Ordinary (OLS) least square regression coefficients for determinants of shareholder value as measured by *market-to-NAV* for Swedish Real estate Corporations (SRECs) characterized as pursuing a focusing and non-focusing corporate strategy, respectively. The classification of strategies is done by the business magazine *Börsveckan*. Regression (4) includes a *corporate strategy dummy* as explanatory variable. It equals 1 if the corporation pursues a non-focusing strategy and 0 otherwise. Regression (5) and (6) are separate ordinary least square regressions for the two subsamples of corporations pursuing focusing and non-focusing strategies, respectively. The overall sample consists of 114 observations from 1990 to 1996 for 32 SRECs, and the subsample for focusing corporations contains 74 observations while the non-focusing subsample consists of 40 observations. The market value of equity from the Findata TRUST database, and NAV (Net Asset Value) from *Affärsvärlden*'s Placeringsindikator were used to estimate *market-to-NAV. Property type focus* and *geographic region focus*, measured as Herfindahl indices, the proportion of squared meters of each type or region in relation to total square meters was used. *Liquidity* is gauged as total stock turnover (trading volume/average market capitalization) for the last 50 trading days of the year. The data is from the Trust database. *Affärsvärlden* provided the data on *expected dividends. Leverage* is measured as book value of debt as percentage of value of total assets. *Company size* is measured as value of total assets (NAV plus book value of debt). *Construction business sales / total sales* gauges the proportion of all sales generated by the construction business segment. *ROS* is measured as earnings before depreciation, taxes, and interest (EBDIT), divided by company sales. Unless otherwise stated, all other data is collected from the annual reports. The *t*-statistics (reported within parentheses) are calculated using White's (1980) heteroskedasticity consistent standard errors. Asterisks indicate whether the test-statistics exceed the 10% (*), 5% (**), or 1% (***) critical values.

Explanatory variable	Regression 4	Regression 5 Focusing SRECs	Regression 6 Non-focusing SRECs
Intercept	-0.514 (-0.604)	-2.701*** (-2.896)	1.957 (1.495)
Property type focus	0.648*** (4.019)	0.974*** (5.529)	0.584*** (3.053)
Geographical region focus	0.050 (0.518)	0.176 (1.596)	-0.015 (-0.086)
Liquidity	0.444* (1.881)	0.588** (2.229)	-0.339 (-1.130)
Expected dividend	2.193 (1.437)	3.823* (1.844)	2.261 (0.690)
Leverage	-0.063 (-0.363)	0.270 (1.328)	-0.240 (-0.933)
log (Company size)	0.042 (1.155)	0.122*** (3.069)	-0.072 (-0.817)
Construction business sales / Total sales	0.454** (2.231)	-0.338 (-1.413)	0.590*** (3.227)
ROS	-0.242** (-1.798)	-0.118 (-0.832)	-0.255** (-2.321)
Corporate strategy dummy	-0.205*** (-3.758)		
Year dummies 1991-96	Yes	Yes	Yes
Adjusted R^2	0.619	0.654	0.600
Number of observations	114	74	40

highly statistically significant (1% level). On average, non-focusing SRECs have a market-to-NAV that is 20.5 percentage points lower than that of focusing ones. Thus, investors value real estate corporations systematically lower if they are expected to pursue a non-focusing

(diversifying or unclear) future course of action. Since the corporate strategy dummy is a constant for most SRECs, we could not use the within and FGLS estimators in this section.[15]

Comparing the results of regressions 1 and 4, the addition of the corporate strategy dummy in the latter marginally increases the magnitude and significance of the property type focus and construction business sales coefficients. The first effect is expected since the Pearson's correlation coefficient between property type focus and the corporate strategy dummy is negative (-0.164). The coefficient for construction business sales turn significant since construction enterprises in general have higher market-to-NAV ratios, and that almost all firms with a construction business are non-focusing. Thus, it does not measure gains from vertical diversification.

The coefficient for geographical region focus was significant in regression 1, but when the corporate strategy dummy is included, it becomes insignificant, and the magnitude of its coefficient shrinks towards zero in regression 4. This is also in line with expectations since the correlation between regional focus and corporate strategy dummy is significantly negative (-0.482). Thus, non-focusing SRECs diversify their portfolio more intensively over geographic regions than over property types. However, the pivotal result is that it is not related geographical diversification per se that reduces shareholder value but anticipated extra costs of a diversification strategy that increases geographical diversification in the future.

Regressions 5 and 6 in Table 6 report the results of separate regressions for SRECs classified as pursing focusing and non-focusing strategies, respectively. Differences between regression coefficients for the two subsamples are striking, which illustrates how pivotal the expected value of future focusing or diversifying actions is since the two sets of firms have different characteristics and are perceived very differently by the market. Most interesting, the coefficient for property type focus for non-focusing SRECs is about 60 percent of that for focusing ones. However, this effect does not occur because focusing corporations are more focused over property types than non-focusing; the averages of property type focus do not differ between the two groups (Table 4). These two facts imply that classification of corporate diversification strategy is a more fundamental determinant of shareholder value than contemporaneous level of related diversification per se, since it precedes, and therefore, decides the magnitude of the effects property type focus will have on value. The coefficient for regional focus is statistically insignificant both for non-focusing and focusing SRECs.

[15] Fixed firm effects are impossible to separate from the corporate strategy effect for the firms whose dummy value is constant across years. The estimate of the variance of random firm effects became negative, and hence FGLS estimation was impossible.

Jointly, these results show that it is not contemporaneous diversification per se that primarily affects shareholder value but more fundamentally whether a corporation is expected to pursue a focusing or non-focusing course of action.

Comparing the estimated coefficients of the control variables, we observe further substantial differences between focusing and non-focusing SRECs. While larger company size and higher market liquidity have a significantly positive effect on the value of focusing SRECs, they have a negative but insignificant impact on the value of non-focusing corporations. For a sample of U.S. REITs, Capozza and Seguin (1999) report a similar positive relation between size, liquidity and value. Thus, shareholders seem to expect that a firm predicted to pursue a focusing course of action will successfully exploit the positive effects of economies of scale associated with a larger size, but that a corporation expected to grow by following a diversifying strategy of expansion into new geographical regions fails to do so. Since the average market liquidity does not differ between the two groups, the higher transparency and lower perceived risk of the corporations expected to pursue a focusing course of action may cause the positive effect of market liquidity on shareholder value.

Moreover, expected dividends have a significant positive impact on value but only for focusing corporations. Construction business sales has a significant positive effect for non-focusing corporations, since most firms with a construction business are non-focusing and the construction business has a higher market-to-NAV value than real estate. Profitability (ROS) has a significant negative effect but only for firms expected to pursue a non-focusing strategy. Investors are concerned that higher profits may not be paid out to shareholders but used for costly diversifying investments. The insignificant but negative effect of leverage for non-focusing firms indicates that investors perceive a financial distress risk while the positive effect for focusing ones supports the conjecture that more restrictions on the action space of focusing SRECs is better.

Although not all effects in regressions 5 and 6 were statistically significant, the general picture of the results is that shareholders have a fundamentally different perception and valuation of corporations classified as pursuing focusing and non-focusing corporate strategies. We will soon show that the two sets of firms have different characteristics. The expected future diversification strategy is a previously neglected but potentially more fundamental determinant of shareholder value than contemporaneous focus per se. Whether a Swedish real estate corporation is expected to follow a focusing or diversifying future course of action will determine the magnitude of the increase in shareholder value from property type focus, and if company size, market liquidity, and expected dividends have a significant

positive effect on market-to-NAV, and if higher profitability has a significant negative impact on firm value.

4.3 Robustness

How robust are the results? Measurement error of the Net Asset Values (NAVs) in the market-to-NAV ratio is a potentially serious problem. Besides using estimates from *Affärsvärlden's Placeringsindikator*, we reran the regressions with NAVs from two other sources (*Veckans Affärer* and *Börsveckan*) that we regard as less reliable. However, the outcomes were qualitatively the same as our reported results but the significance levels were generally lower. In addition, we also ran all regressions with Tobin's Q (market value of equity plus book value of debt divided by NAV plus book value of debt) as the dependent variable.[16] Qualitatively the results still remained the same. Since market-to-NAV values differ between property types, the significant diversification discount may be the result of inappropriate aggregation and not of property type diversification as such. This may occur even if there are no firms in our sample that invest exclusively in a single property type, and the median property type HI index (0.323) indicates that firms diversify into several property types. We have controlled for this potential problem by interacting, for each property type, the firm's HI property type index with the fraction of its investments in the specific property type, and adding these as separate explanatory variables in the regressions. Even if there are variations in Market-to-NAV values across property types, the previous results are robust with respect to this adjustment. In particular, focus on residential and office properties has a significantly positive effect on firm value.

We have also tested several different divisions of geographical regions (e.g. Metropolitan, Non-Metropolitan and Foreign regions) and property types, but the coefficients for regional and property type focus did not vary significantly. In unreported regressions, we found no evidence that the diversification discounts could be explained by differences in risk behavior between the different subgroups.

Given the relatively small sample size, another potential problem concerns the sensitivity of the results to extreme values, that is, outliers more than three standard deviations from the mean. However, when running separate regressions excluding extreme observations, the strength of the relationship between related diversification and shareholder value increased. Moreover, missing observations may create a spurious correlation problem if there is a

[16] The difference between Tobin's Q and the market-to-NAV ratio is that the former measures total firm value whereas the latter only regards the equity value, i.e. we have controlled for potential leverage effects but they do not affect our results.

systematic economic pattern for exclusion. Since the majority of the exclusions are due to incomplete annual reports, we did not identify any such regularity. We also reran all regressions for different time periods. In particular, using only data for 1994, 1995 and 1996, the major results did not change. Summing up, the results so far seem robust with respect to several potential problems and omissions.

5. Agency Costs and Ex Ante Diversification Discounts

Since the business magazine *Börsveckan* does not explicitly state how it determines its prediction of corporate strategy expected to be pursued, further analysis of our proxy variable for corporate strategy is warranted. Ownership characteristics are very important determinants of corporate behavior since Swedish real estate corporations are primarily closely held firms with a dual-class share structure, and with a well-defined owner in control of the corporation and its management team; not infrequently, he is also the CEO. A-shares carry more voting rights than B-shares, but the two classes have equal dividend rights. Since different ownership types, e.g. private and institutional, have different objectives, they behave differently as controlling owners. We, therefore, test if different *ownership types* in control are pivotal determinants of whether a focusing or non-focusing strategy is pursued, and identify three different types of private ownership. If the founder controls the firm, and also acts as CEO, we denote it as *founder/CEO type.* When the founders and their families have retired from the operational management of the firm but still hold a controlling interest we denote it as *founder's family type. Other private ownership* characterizes control by all other private persons. Since we are interested in the control exerted by the private owners, we measure the variables as percentage of votes.[17] Only blocks of votes of 10 percent or more are included.[18]

In order to capture the disciplining effect of concentrated institutional ownership on the management's choice of corporate diversification strategy, or equivalently, the effect of lack

[17] Instead of fraction of votes controlled by different ownership types, we could have used the ratio of votes over capital (V/C) of the largest owners or owner in control as a measure of agency costs associated with the leverage effect of votes over capital in dual-class shares. Our previous work on data covering all listed firms on the Stockholm Stock Exchange has, however, shown that agency costs are most appropriately measured by the fraction of votes controlled by different ownership types, which is a more differentiated measure than the V/C ratio. In particular, the larger the fraction of votes owned by the controlling private owner, the larger the discount at which the firm is valued relative other firms (Cronqvist and Nilsson (2001)). Since the discount is directly related to ownership type characteristics it gauges agency costs.

[18] Because Sweden has enacted a *Compulsory Acquisition Limit* rule of 90%, an owner controlling 90+ percent of votes can compulsory acquire the remaining outstanding shares. Hence, you need at least 10 percent of the votes to have a blocking position.

of discipline in a firm with dispersed institutional ownership, we also include a variable measuring the concentration of institutional ownership. The variable is gauged as the total share of capital owned by institutions that are among the 25 largest shareholders. We use share of capital since institutions are interested in the income streams from the company and not in control per se. Hence, we hypothesize that institutions are more likely to engage in disciplining activities if there is a substantial amount of money at stake.

Panel A of Table 7 reports the average size of votes or capital for the four ownership variables in firms depending on expected corporate strategy. The average concentration of institutional ownership among firms characterized as focusing is far larger than that of non-focusing firms. Furthermore, the table shows that Founder/CEO ownership and other private ownership are both nearly exclusively associated with SRECs classified as non-focusing.[19] Founder family ownership seems to be more evenly distributed among the SRECS since there is no statistically significant difference between the averages.

We formally test the direct link between type of ownership and characterization of corporate diversification strategy by running a logistic regression. The dependent variable is a dummy variable 1 (0) if the firm is expected to follow a non-focusing (focusing) strategy and share of votes or capital controlled by each of the four types of owners are the independent variables. We include property and geographical focus variables (HI indices) to control for current level of diversification as well as company size (value of total assets) to control for the effect that smaller firms are more likely to be focused. Panel B shows that corporations with concentrated institutional ownership are strongly predicted to pursue a focusing strategy. There is also weak evidence of an increased probability of a focusing strategy as the size of founder family blockholdings increases. This result is consistent with the interpretation that the members of the founding family who have retired from operational management tend to view their stock holdings more as a financial asset than as a tool for extracting private benefits, and hence prefer a focusing strategy. Corporations controlled by the founder/CEO or outside private individuals are, not surprisingly, highly likely to follow a non-focusing strategy, especially if the corporation is large.

The characterization of strategy pursued by different firms according to *Börsveckan* is correctly predicted from the ownership types for 93.0% of all firms. Almost all corporations (94.6%) characterized as pursuing a focusing strategy are correctly classified using ownership types as explanatory variables. Since private owners in control are heavily entrenched using

[19] Since several observations come from the same firm, we run a Kruskal-Wallis Chi-square test; results from the F-test are robust.

Table 7. Logistic Coefficients Estimates: Ownership Types as Determinants of Corporate Strategy

The ownership of Swedish Real Estate Corporations (SRECs) is analyzed using four variables: *Founder/CEO ownership, founder's family, other private ownership*, and *concentration of institutional ownership*. The fraction of equity controlled by each type of private owner is measured as the share of votes where only blockholders with more than 10% of the votes are included. The concentration of institutional ownership is measured as the total share of capital owned by institutions that are among the 25 largest shareholders. The data on type of owner, and voting and capital shares for the controlling owner is obtained from Sundqvist (1991-1993), and Sundin and Sundqvist (1994-1997). Panel A reports the average size of votes (capital) for each category split according to if the corporation pursues a focusing or non-focusing strategy. The characterization of corporate strategy is done by the business magazine *Börsveckan*. *, ** and *** denotes two-tailed significance at the 10%, 5% and 1% level, respectively, of a F-test and a non-parametric Kruskal-Wallis test of the difference between the two groups. Panel B reports the result of a logistic regression with the corporate strategy dummy (1 if the corporation is characterized as pursuing a non-focusing strategy and 0 if following a focusing one) as the dependent variable. The four ownership type variables are used as explanatory variables, as well as *property type focus*, *geographical region focus*, and the log of *company size*. Year dummy variables for 1991-96 are also included but not reported. *p*-values from log-likelihood ratio tests of the significance of the coefficients are reported within parentheses.

Panel A

	Corporate strategy		
Independent Variables	Focusing	Non-focusing	*F*-statistic (Kruskall-Wallis chi-square statistic)
Number of SRECs	74	40	
Concentration of institutional ownership (Capital)	0.567	0.196	77.229*** (46.543***)
Founder' family (Votes)	0.131	0.095	0.561 (0.146)
Founder/CEO ownership (Votes)	0.000	0.281	42.269*** (31.466***)
Other private ownership (Votes)	0.003	0.102	18.043*** (16.538***)

Panel B

	Dependent Variable: Corporate strategy dummy
Independent Variables	Regression 7
Intercept	-26.731 (0.000)
Conc. of institutional ownership (Capital)	-9.609 (0.000)
Founder's family (Votes)	-1.293 (0.573)
Founder/CEO ownership (Votes)	14.376 (0.009)
Other private ownership (Votes)	39.685 (0.000)
Property type focus	-4.104 (0.492)
Geographical region focus	-1.499 (0.410)
Log (Company size)	1.433 (0.078)
Year dummies 1991-96	Yes
Likelihood Ratio χ^2-statistic	103.609 (0.000)
Hosmer-Lemeshow χ^2-statistic	6.291 (0.615)
Correctly classified SRECs	93.0 %
Correctly classified focusing SRECs	94.6 %
Correctly classified non-focusing SRECs	90.0 %

dual-class shares, transfers of control are rare. Hence, the relationship between ownership characteristics and expected choice of strategy as measured by the proxy variable is stable over time, and few firms change strategy classification in our sample.[20] Thus, whether the firm is privately or institutionally controlled is the ultimate determinant of expected strategy pursued, and, therefore, also a difference in fundamental characteristics valued by the market ex ante. The result is consistent with our hypothesis that privately controlled firms are unable to credibly commit not to diversify because of significant private benefits from diversification. The ex ante discount associated with the corporate strategy dummy is, therefore, a measure of agency costs emanating from the conflict between a private owner in control and other shareholders.

We provide further evidence on the agency cost interpretation by exploring on the direct link between ownership type variables and market-to-NAV in Table 8. Substituting the four previous ownership type variables (one for institutional and three for private types) for the corporate strategy dummy in our baseline regression 4 in Table VI, we report that all three private ownership type variables have a significantly negative impact on firm value but all our other regression coefficients are qualitatively the same; see regression 8. If the founder/CEO controls half of the votes, the market-to-NAV for the firm is 0.15 lower which is an economically important effect since the average value for market-to-NAV in our sample is 0.66. Institutional ownership has a positive but insignificant effect on market-to-NAV. More interestingly, when we include the corporate strategy dummy in regression 9, the significance level of the private ownership variables becomes lower but the negative effect on firm value remains. However, the coefficient for corporate strategy is less negative but it is still significant at the 10% level. This implies that agency costs associated with private owners in control lower market-to-NAV both through a direct (linear) ownership type effect and via an indirect (non-linear) effect through the corporate strategy variable. The latter effect is non-linear because of the relationship between ownership variables and choice of corporate strategy in the logistic regression.

Our results in this section establish a stable relationship between behavior of private owners in control of the corporation and the ex ante characterization of expected of corporate strategy to be pursued as measured by *Börsveckan's* proxy variable. The ex ante diversification discount is, therefore, gauging agency costs associated with private owners

[20] Because of the stable behavioral relationship between type of owners in control and the strategy proxy variable over time, the classification of expected corporate strategy to be pursued changes only for 6 firms, primarily due to transfer of control and explicit announcement of changed strategy.

Table 8. Regression Coefficients Estimates: Ownership variables as Determinants of Market-to-NAV

Ordinary (OLS) least square regression coefficients for determinants of shareholder value as measured by *market-to-NAV* for Swedish Real estate Corporations (SRECs). Regression (9) also includes a *corporate strategy dummy* as explanatory variable. It equals 1 if the corporation pursues a non-focusing strategy and 0 otherwise. The classification of strategies comes from the business magazine *Börsveckan*. The overall sample consists of 114 observations from 1990 to 1996 for 32 SRECs; 74 (40) observations are from firms characterized as pursuing a focusing (non-focusing) strategy. The market value of equity from the Findata TRUST database, and NAV (Net Asset Value) from *Affärsvärlden*'s Placeringsindikator were used to estimate *market-to-NAV*. *Property type focus* and *geographic region focus*, measured as Herfindahl indices, the proportion of squared meters of each type or region in relation to total square meters was used. *Liquidity* is gauged as total stock turnover (trading volume/average market capitalization) for the last 50 trading days of the year. The data is from the Trust database. *Affärsvärlden* provided the data on *expected dividends*. *Leverage* is measured as book value of debt as percentage of value of total assets. *Company size* is measured as value of total assets (NAV plus book value of debt). *Construction business sales / total sales* gauges the proportion of all sales generated by the construction business segment. *ROS* is measured as earnings before depreciation, taxes, and interest (EBDIT), divided by company sales. Unless otherwise stated, all other data is collected from the annual reports. The ownership of Swedish Real Estate Corporations (SRECs) are measured by four variables: *Founder/CEO ownership, founder's family, other private ownership*, and *concentration of institutional ownership*. The fraction of equity controlled by each type of private owner is measured as the share of votes where only blockholders with more than 10% of the votes are included. The concentration of institutional ownership is measured as the total share of capital owned by institutions that are among the 25 largest shareholders. The data on type of owner, and voting and capital shares for the controlling owner is obtained from Sundqvist (1991-1993), and Sundin and Sundqvist (1994-1997). The *t*-statistics (reported within parentheses) are calculated using White's (1980) heteroscedasticity consistent standard errors. Asterisks indicate whether the test-statistics exceed the 10% (*), 5% (**), or 1% (***) critical values.

Explanatory variable	Regression 8	Regression 9
Intercept	-0.371	-0.411
	(-0.448)	(-0.480)
Property type focus	0.816***	0.804***
	(4.950)	(4.757)
Geographical region focus	0.060	0.035
	(0.619)	(0.352)
Liquidity	0.479*	0.433*
	(1.763)	(1.764)
Expected dividend	2.538*	2.514*
	(1.782)	(1.694)
Leverage	0.059	0.043
	(0.343)	(0.251)
log (Company size)	0.028	0.034
	(0.785)	(0.923)
Construction business sales / Total sales	0.666***	0.660***
	(3.383)	(3.290)
ROS	-0.258**	-0.239*
	(-2.258)	(-1.907)
Corporate strategy dummy		-0.120*
		(-1.840)
Conc. of institutional ownership (Capital)	0.169	0.074
	(1.631)	(0.682)
Founder's family (Votes)	-0.179**	-0.195**
	(-2.044)	(-2.246)
Founder/CEO ownership (Votes)	-0.308***	-0.234**
	(-2.880)	(-2.043)
Other private ownership (Votes)	-0.371***	-0.258**
	(-3.028)	(-2.042)
Year dummies 1991-96	Yes	Yes
Adjusted R^2	0.619	0.654
Number of observations	114	74

unable to commit not to undertake diversifying actions in the future due to private benefits from diversification.

6. Corporate Strategy as Predictor of Future Behavior

To assess if the proxy variable for ex ante classification of corporate strategy is an accurate forward-looking measure, we test if it is a good predictor of actual corporate behavior in the future. We analyze the stock market reaction to 68 major property deals (50 acquisitions, 14 sales or 4 exchanges) undertaken by SRECs from 1990 to 1996.[21] The transaction value of each deal amounts to at least 5% of the value of the SREC's total assets (book value at the end of the year). We use an event window of days –5 to +5 and an estimation period of 89 days. Using the average of bid and ask prices, the abnormal returns are calculated using the market model with the *AFGX* (*Affärsvärlden's Generalindex*) and *AFBFX* (*Affärsvärlden's Bygg- och Fastighetsindex*); a broad-based market index and a real estate industry index, respectively, of the Stockholm Stock Exchange. The announcement dates of the deals were obtained from *Affärsdata*.[22]

Panel A of Table 9 reports that corporations classified as pursuing a non-focusing strategy did 31 deals while firms following a focusing strategy did 37. To analyze how the three types of deals affect the level of focus of the firm, we also classified them if they significantly increase focus, or if they do not increase focus, i.e. increase diversification or leave it unchanged. Since we measure the degree of focus over two dimensions, a deal is only classified as focus increasing if focus increases in both dimensions, or if focus increases in one dimension while the other dimension is unchanged. A striking pattern emerges. Corporations that ex ante were characterized as pursuing a focusing strategy almost exclusively do deals that increase focus; 31 out of 37 deals. On the other hand, corporations designated to pursue a non-focusing strategy did only 3 deals out of 31, which increased focus. It is particularly interesting to note that only firms following a focusing strategy increased focus by selling all assets of a certain property type or located in a specific geographical region. Hence, we conclude that the corporate diversification strategy variable is a good predictor of whether a firm will do focus increasing or diversifying property deals in the future.

[21] Initiations or completions of construction projects are not included.

[22] This is a very comprehensive database containing news bulletins, press releases and articles from the leading Swedish business papers and business news services about the firm.

Table 9. Characterization of Major Deals and Announcement Period Returns

In Panel A 68 major deals—acquisitions, sales or exchanges—by Swedish Real Estate Corporations (SRECs) involving more than 5% of firm asset value are classified according to if they increase focus, or increase diversification alternatively leave focus unchanged as measured by the change in the Herfindahl indices for property type and geographical region. An increase in focus is defined as a minimum increases in one of the Herfindahl indices of 10%. Each category is then divided according to if the deal is done by a firm characterized as pursuing a *focusing* (Foc.) or *non-focusing* (Non-foc.) *strategy*. The classification is by the business magazine *Börsveckan*. Panel B reports *Abnormal* (AR) and *Cumulative Abnormal Return* (CAR) for an 11 days event window for the 68 major deals classified according to if they pursue a focusing or non-focusing strategy. Event days were identified by Affärsdata, and the stock price data was obtained from the FINDATA Trust database. The market model with AFGX (*Affärsvärlden*'s generalindex) and AFBFX (*Affärsvärlden*'s construction and real estate) were used. The estimation period was 89 days. To test if the returns are significantly different from zero, the results of two-sided t-tests are reported. *, ** and *** denotes two-tailed significance at the 10%, 5% and 1% level.

Panel A

	Focus increases.		Diversification increases or Unchanged		Total	
Strategy	Foc.	Non-foc.	Foc.	Non-foc	Foc	Non-foc
Type of deal						
Acquisitions	22	2	6	20	28	22
Sales	7	0	0	7	7	7
Exchanges	2	1	0	1	2	2
Total	31	3	6	28	37	31

Panel B

	All SRECs (N=68)		Foc. SRECs (N=37)		Non-foc. SRECs (N=31)	
Day	$\%AR_t$	$\%CAR_t$	$\%AR_t$	$\%CAR_t$	$\%AR_t$	$\%CAR_t$
–5	0.2516	0.2516	0.494	0.494	-0.037	-0.037
–4	0.7486	1.0001	1.284**	1.778**	0.109	0.071
–3	-0.0895	0.9107	0.138	1.916*	-0.361	-0.290
–2	-0.0821	0.8286	-0.008	1.908	-0.170	-0.460
–1	-0.1278	0.7008	-0.395	1.512	0.191	-0.268
0	1.6270***	2.3278*	3.047***	4.560***	-0.068	-0.336
1	0.7858*	3.1136**	0.731	5.291***	0.851*	0.514
2	-0.3343	2.7793*	0.155	5.447***	-0.918**	-0.404
3	0.0298	2.8091*	-0.272	5.174**	0.390	-0.014
4	0.4763	3.2854**	0.668	5.843***	0.246	0.232
5	-0.1942	3.0912*	-0.004	5.839**	-0.420	-0.188

Panel B shows that the deals have different stock market reactions conditional upon whether the SREC is pursuing a focusing or non-focusing corporate diversification strategy. The cumulative abnormal returns (CARs) for the full sample are significantly positive around the event day. However, when splitting the sample, the reaction is significantly positive only for corporations classified ex ante as pursuing a focusing strategy, while negative — but insignificantly different from zero — for firms designated as following a non-focusing

strategy. Figure 2 illustrates these different reaction patterns. The results of a more detailed analysis (unreported) show that the most positive stock market reaction occurs when a focusing firm sells off all properties of a certain property type or located in a specific geographical region in order to focus its operations. Comparing the same type of deals, CARs are always more negative for non-focusing corporations than for focusing ones. It seems as if the actions taken by non-focusing SRECs are already discounted, whereas focusing SRECs get a positive reaction when they take an action which confirms their expected strategy. Anticipating similar actions in the future, investors are more likely to interpret the actual conditions of the deal as favorable. Hence, the stock market appreciates that corporations expected to pursue a focusing strategy actually do focus-increasing deals, thereby confirming that it is credible in its corporate diversification strategy choice, while the reverse if true for firms unable to credibly commit to a focusing strategy.

Two conclusions can be drawn form the results. First, firms that are ex ante characterized as pursuing a non-focusing strategy are privately controlled by either the founder/CEO or other private investors, and do in fact diversify more in the future, in particular geographically by acquiring firms in other regions. The latter conclusion follows from Tables 3 and 4, which show that there are no differences in average property types focus over time between firms expected to pursue any of the two strategies, but non-focusing firms are significantly more diversified on average than focusing firms and the difference is growing over time. Thus, these firms tend to be more diversified as a result of pursuing a geographic diversification strategy. Second, since we observe no contemporaneous discount for geographically diversified firms and no significant negative reaction when firms expected to follow a non-focusing strategy do diversify geographically, the effect of geographic diversification is fully discounted in the prices prior to diversification. In particular, the ex ante discount gauges expected losses in the diversification process. Diversification per se is not inefficient but the diversification process is since rents are expected to get dissipated when real estate in new regions is costly to acquire and highly specialized managerial capital gets more thinly spread.

7. Discussion

The basic message of this paper is that focus on a narrow set of activities and strategy matters even within a single industry like real estate. Firms focused on managing certain property types are valued at a premium since there are significant gains from specialization.

This occurs even if specialized firms are smaller and forgo some of the economies of scale in maintenance and administrative costs. More importantly, firms making a credible commitment to pursue a focusing strategy not to diversify geographically are traded at a premium since they avoid anticipated extra costs in a future diversification process. Firms controlled by single individuals like the founder/CEO are unable to credibly commit to such a strategy since they have large private benefits from diversification. By not carrying the full proportional costs of failures, such owners are prone to engage in overoptimistic winner picking by undertaking diversifying investments into new markets and areas of business, and also likely to hang on to losers too long. In particular, if the projects have substantial private benefits. Investors correctly anticipate that such firms pursue a non-focusing (diversifying or unclear) future course of action that is not in the interest of other shareholders and value them at a 20% discount prior to diversification. Agency costs associated with highly concentrated private ownership, therefore, explain the existence of the more important ex ante diversification discount. But how general is this mechanism?

There are several reasons why the ex ante mechanism linking anticipated costs in the diversification process to agency costs is of general interest and generate new insights. It changes focus away from the one-sided analysis of inefficient transfers within a diversified firm to a deeper understanding of the characteristics of a firm that decide to diversify. The new focus is also on the costs of the diversification process and on how investors are anticipating such costs by conditioning on the firm characteristics. The importance of conditioning on the characteristics of a diversifying firm is evident from the fact that such a firm trades at a discount prior to diversification. Moreover, after correcting for the selection bias, Campa and Kedia (1999) find no significant discount for the diversified firm. Since we find that the ex ante discount is larger and more important than the standard discount of an already diversified firm, our results are in line with the findings from an analysis of a larger sample of firms from different industries. However, even if Campa and Kedia find that investors condition on certain firm characteristics when assigning a discount, they do not explicitly look at ownership characteristics associated with agency costs as the pivotal determinant of the ex ante discount. Moreover, they ignore the possibility that it is not diversification per se but anticipated extra costs of the diversification process that causes investors to value the firm at a discount. They regard the diversification decision as an optimal response to relative underperformance or dire prospects, but our agency costs explanation is not consistent with such an interpretation. Their interpretation is also inconsistent with Schoar (1999) who finds that it is better firms that diversify, not less

efficient firms. Independently of how we interpret the results, the importance of firm characteristics and the existence of a prior discount cannot be ignored.

Moreover, the new focus on extra costs in the diversification process is also in line with the findings of Schoar (1999) who reports that average productivity for the new integrated diversified firm is lower even if it increases in the acquired parts. But the lower overall average does not explain the existence of a large diversification discount. This indicates that managerial capital becomes more thinly and inefficiently spread when too much time is devoted to the new acquisitions. This interpretation is also consistent with our interpretation that highly specialized and scarce managerial capital that is the pivotal resource in real estate becomes inefficiently allocated when assets in new geographical areas are acquired. Schoar (1999) also reports that rents appear to get dissipated since it is better firms that diversify and increase wages significantly in the newly acquired plants. Analyzing accounting data for U.S. REITS, Capozza and Seguin (1999) also report that newly acquired properties generate higher gross cash flows than incumbent assets but there are no net gains from the acquisitions since significant extra managerial costs are incurred. Thus, costs of integration associated with the diversification process are likely to be underestimated by the people instrumental behind the decision to diversify. Anticipated higher costs incurred in the diversification process (no operational gains and too expensive acquisitions) and uncertainty about how successful it is are likely reasons that investors value such firms at an ex ante discount.

Our findings also pinpoint the restrictive assumption in the existing literature that it is only future cash flows that are negatively affected by diversification since internal capital markets are inefficient. The implicit assumption is that value differences emanate exclusively from differences in future cash flows and not from differences in expected future returns. Lamont and Polk (1999) report that slightly more than half of the variation in cross-sectional excess value variations comes from variation in expected future cash flows. In particular, firms with a diversification discount have significantly higher returns than firms valued without a discount. The agency cost explanation put forward in this paper is consistent with investors requiring a higher return on firms that are expected to diversify since they have certain ownership characteristics.[23] Hence, a more detailed analysis may reveal that the ex ante diversification discount is caused both by a higher required return on such firms and by extra costs associated with the diversification process.

[23] We also did an analysis if there are any significant differences in return on assets (ROA) between the firms in our sample that are expected to pursue focusing and non-focusing strategies, respectively, but found no significant differences (unreported). Hence, the lower valuation of firms anticipated to follow a non-focusing strategy is likely to occur because investors discount such firms more heavily due to extra agency costs.

The agency costs explanation is more general since it is consistent with other types of related discounts. For example, the most well documented cases of how agency costs associated with private benefits of privately controlled firms have a negative, anticipatory effect on firm value comes from closed-end investment funds. Barclay, Holderness, and Pontiff (1993) report that a widely held fund is on average valued 4% below its Net Asset Value (NAV) but has an average discount of 14% if the fund is controlled by private persons who enjoy pecuniary and non-pecuniary benefits of control. In Sweden, where closed-end investment funds are the pivotal instruments for private control, the discounts are on average even higher; 24% during the 90s. The highest discounts are associated with funds controlled by families who extract significant private benefits of control under a dual-class share system and use the fund as a pyramid (La Porta et al (1998, 1999)). It is particularly interesting to note that there are no investment transfers within closed-end funds. From this perspective, the results of Chevalier (1999) are particularly interesting, since she reports that the same correlations between investments, which were detected in the diversified firm and interpreted as evidence of inefficient capital transfers, existed prior to diversification when no transfers were possible. Thus, the joint implication is that it is not likely that inefficient capital transfers are the cause of the diversification discount.

In a European institutional setting, where firms are often closely held and dual class shares are relatively frequent, it is more likely that other shareholders rationally anticipate that private owners in control have strong incentives to pursue diversifying strategies, since they can't credibly commit to abstain from such actions. However, the anticipatory effect of choice of corporate strategy is not limited to firms with concentrated private ownership.[24] For example, using a sample of all listed U.S. firms, Comment and Jarrel (1995) report that the market adjusted stock price return over 30 months prior to any change in focus is on average positive for firms that increase focus and significantly different from the negative average return of firms that diversify. Thus, our major finding of an ex ante diversification discount that gauges agency costs associated with a highly concentrated ownership structure is not

[24] Although Denis, Denis and Sarin (1997) study diversification in general and in a different institutional setting, it provides an agency cost based explanation of diversification. They find that the level of diversification is negatively related to managerial equity ownership as well as to the size of outside blockholders. Corporate control threats and financial distress generate a change of value reducing diversifying policies. However, when correcting for substantial flaws in the Compustat Data Base, Hyland (1999) finds no evidence that agency costs associated with managerial ownership explains the diversification discounts.

limited to the real estate sector but of more general interest to the literature on corporate focus.[25]

Our results also add new insights on diversification within the real state industry related to Capozza and Seguin (1999). They report that contemporaneous focus on property type does not have an effect on the market value of U.S. REITs after controlling for the indirect impact of focus via increased liquidity of more focused corporations, and there is no significant effect of geographical focus either.[26] The pivotal difference is that our paper establishes the significant negative effect of a non-focusing corporate strategy on shareholder value besides the negative impact of related diversification over property types per se, and besides the positive liquidity effect. The reason our results are more in line with the general skepticism towards diversification in the literature on corporate focus is probably that U.S. REITs are severely restricted in their actions. The requirements to distribute at least 95% of the taxable income as dividends and limitations on which assets to hold, de facto limits the U.S. REITs to pursue a focusing corporate strategy. Consistent with this conjecture, Damodaran, John and Liu (1997) report empirical evidence on the relationship between corporate strategy and organizational form of U.S. real estate corporations.

Finally, does our result that there are no potential gains from diversification within the real estate industry generalize to other industries? Arguably the most favorable scenario to find such gains is within a single industry. But since the technology in the real estate industry is portfolio management of properties, and that the pivotal factor is highly specialized managerial capital, benefits from focus on a narrow set of activities and a well-defined focussing business strategy surpassed the net gains from diversification. However, such gains from specialization may not outweigh the benefits from diversification in all industries. For example, gains from diversification are more likely in industries with large complementary assets like intangibles in R&D and marketing. A more general understanding of why we

[25] Our result about the effect of expected diversification strategy on shareholder value does also suggest a new interpretation of the Lang and Stulz (1994) finding that the value loss of diversified firms seems to be largest when extending operations from one to two segments. But they don't report significant marginal losses as the number of segments increase beyond two. The significant negative effect of expansion from one to two segments may proxy for a missing variable effect which may be the expected corporate diversification strategy. The expansion from one to two segments may be interpreted by investors as a signal of more future diversification, and, therefore, already discounted in the stock prices.

[26] There are several important differences between the two papers. We control for additional variables potentially correlated with market-to-NAV and focus variables—company size, leverage, and expected dividends—to reduce the risk of obtaining a spurious relationship between corporate focus and shareholder value. Moreover, Capozza and Seguin use a measure of liquidity (dollar trading volume) which is more likely to capture the effect of firm size on market-to-NAV than of market liquidity.

observe both diversification discounts and premiums across industries may start with a more careful look at the character and quality of firm assets within *single* industries, and concentrate less on cross-subsidization and overinvestment in multi-segment firms.

8. Conclusion

Even within a single industry a diversified firm may trade at a discount due to gains from specialization in the use of critical resources like managerial capital. The most important discount is not the contemporaneous one that measures the inefficiency of a diversified firm but the ex ante discount that investors associate with firms with certain ownership characteristics, which makes it impossible for such a firm to credibly commit not to diversify in the future. Thus, the ex ante discount gauges agency costs associated with type of owner in control of the firm. The existence of ex ante discounts is consistent with the view that investors anticipate extra costs in the diversification process and discount for the uncertainty that gains will be realized. The diversifying firm may pay too much when acquiring new assets, allocate too much of scarce and critical managerial resources to the process of integrating the new assets with the incumbent ones and pay too much when hiring and firing people when creating the new organization. Empirical results indicate that rents get dissipated in the diversification process. The unique link established in this paper between agency costs, corporate strategy, and ex ante diversification discounts suggests that a better understanding of diversification discounts may come from a deeper analysis of the diversification process and the characteristics of firms expected to pursue a diversifying strategy rather than from continued focus on the inefficiency of the diversified firm.

Appendix

Table A1. List of Annual Observations.

Swedish Real Estate Corporations (SRECs) which are included in the sample, and from which years the observations come. The total sample consists of 114 observations from 32 different SRECs from 1990 to 1996. A full time-series of 7 observations exists for 6 corporations. * indicates that the corporation pursues a *non-focusing strategy*; the other corporations follow a *focusing* strategy. The classification of strategies is according to the business magazine *Börsveckan*.

Name	Year
Andersons	1992
Aranäs	1990*, 1991*
BGB	1990*, 1991*
Bygg-Fast	1990*, 1991*
Diligentia	1996
Diös	1991, 1992, 1993, 1994, 1995, 1996
Exab (Changed name to M2 in 1996)	1990, 1991, 1992, 1993, 1994, 1995, 1996
FABEGE	1990, 1991, 1992, 1993, 1994, 1995, 1996
Fastighetspartner NF	1994*, 1995*, 1996*
Heba	1994, 1995, 1996
Hemstaden	1994, 1995
HILAB	1990, 1991, 1992, 1993, 1994
Hufvudstaden	1990, 1991, 1992, 1993, 1994, 1995, 1996
Klövern	1994*, 1995*, 1996*
LjungbergGruppen	1994*, 1995*, 1996*
Lodet	1990, 1991, 1992, 1993, 1994, 1995
NK	1992
Norrporten	1994, 1995, 1996*
Näckebro	1996
Piren	1990, 1991, 1992, 1993, 1994, 1995, 1996
PriFast	1991*, 1992*, 1993*, 1994*, 1995*, 1996*
Råckstahus	1994
Realia	1994*, 1995*, 1996
Regnbågen	1990*, 1991*
Reinhold Syd (Changed name to Bastionen Syd in 1992)	1990*, 1991, 1992
Riksbyggen	1991*, 1992*
SIFAB	1991, 1992, 1993, 1994, 1995, 1996*
Stancia	1994*
Storheden	1994, 1995, 1996
Tornet	1996*
Wallenstam	1990*, 1991*, 1992*, 1993*, 1994*, 1995*, 1996*
Wihlborg	1990, 1991, 1992, 1993, 1994, 1995, 1996*

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Chapter 5

The Difference in Acquirer Returns between Takeovers of Public Targets and Takeovers of Private Targets*

1. Introduction

Most of the existing empirical research on takeovers is performed on takeovers of publicly held targets, whereas there is very little research on takeovers of privately held targets. However, the few studies that exist on takeovers of private targets suggest that there are some important economic differences between the two types of transactions. For example, Chang (1998) studies a sample of 281 acquisitions of privately held targets in the US from 1981 through 1992, and documents that acquirers making a stock offer earn positive abnormal returns around the announcement of a takeover. Fuller et al. (2001) investigate acquirer returns for a sample of US takeovers where the acquirers have made multiple acquisitions of both public and private targets in the 1990s, and find that abnormal acquirer returns in takeovers of private targets are positive and significant for both cash and stock offers, although the returns are larger for stock offers. These results are in stark contrast to the general evidence of insignificant or negative acquirer abnormal returns following takeovers of public targets (see, e.g., Andrade et al. (2001)) and, in particular, the strong evidence of negative abnormal acquirer returns following stock offers for public firms (see, e.g., Travlos (1987)).

This study provides additional evidence on the difference in acquirer abnormal returns between takeovers of private targets and takeovers of public targets for a sample of 202 takeovers by listed Swedish firms over the time period 1990-2000 (142 takeovers of private firms; 60 takeovers of public firms). Acquirers of private targets earn on average a significant two-day abnormal return of 2.7% around the takeover announcement, whereas acquirers of public targets earn no significant abnormal return. Furthermore, the average acquirer returns

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in takeovers of private targets are significantly larger when an acquirer pays with stock compared to when it pays with cash (5.4% versus 1.0%). In contrast, there is no significant difference in average acquirer returns in takeovers of public targets between acquirers paying with stock and acquirers paying with cash. Thus, I document a similar pattern in acquirer returns as that identified in US studies, which suggest that there is a fundamental economic difference between acquisitions of private targets and acquisitions of public targets that is not dependent on a particular institutional setting. The difference is puzzling: Why does the stock market react so differently to two seemingly similar types of transactions? I aim to answer this question through cross-sectional analysis of acquirer returns for all takeovers in which the target's status as a private or public firm is used as one of the explanatory variables.

One potential explanation for the observed difference in acquirer returns is that it is due to a sample selection bias rather than due to the target's status as a public or private firm per se conveying fundamental information about the potential value of the deal for the acquirer's shareholders. Public and private firms typically have substantially different characteristics. For example, Pagano et al. (1998) find that firms that choose to go public tend to be larger, grow faster, and be more profitable than firms that remain private. Since the likelihood of a certain target firm being private or not depends on important economic characteristics (some of which are unobservable), target type is likely to be an endogenous variable in cross-sectional analyses of acquirer returns. This will make OLS estimates biased and inconsistent. Instead I employ a standard sample selection model (a so-called 'treatment effects' model) to consistently estimate the effect of target type on acquirer returns. Note that in the presence of sample selection, OLS estimates will be biased also if we analyze the cross-section of acquirer returns separately for takeovers of private targets or takeovers of public targets. Thus, virtually all of the existing evidence on the determinants of acquirer abnormal returns may suffer from a sample selection bias.

The main obstacle with my empirical approach is that to adjust for the potential selection bias I need data on characteristics of privately held firms, which are very hard to get in most markets. This is not the case in Sweden, where annual reports for *all* firms are readily available through several different commercial databases. This unique availability of data on privately held firms is the particular reason for why I choose Sweden as a research environment for my analysis of acquirer returns in takeovers of private targets versus takeovers of public targets.

The importance of correcting for a potential sample selection is supported in the cross-sectional analysis of acquirer returns; I find significant evidence of target type being

endogenous. However, the sample selection does not explain the significantly larger acquirer returns in takeovers of private targets or the additional gain to acquirers when the private target is bought with the acquiring firm's stock. Furthermore, these results remain robust when controlling for other variables that could potentially explain the difference in abnormal returns. The average larger gains in takeovers of private targets suggest that the acquirers underpay for the target, which is consistent with the acquirer having greater bargaining power in takeovers of private targets. This is further supported by the fact that the acquirer abnormal return is significantly increasing in the relative size of the private target, which is what we would expect if the acquirer underpays for the target. The larger return when an acquirer pays with stock for a private target is likely to be due to resolution of information asymmetries.

Chang (1998) analyzes the cross-section of acquirer abnormal returns for takeovers of private targets and find that the creation of a new blockholder from the target is associated with a significant increase in acquirer returns. Chang interprets this finding as evidence of increased monitoring explaining the positive acquirer abnormal returns in stock offers for private targets. In contrast, I find no evidence of monitoring being able to explain the larger gains in stock offers for private targets. Disregarding the fact that Chang's analysis is suffering from a potential selection bias, the difference in results could be due to the fact that listed Swedish firms typically have a higher degree of ownership concentration compared to listed US firms. However, given the potential sample selection problem in Chang's analysis, the ability of monitoring to explain the different stock market reactions to takeovers of public targets versus takeovers of private targets is unclear. Other underlying factors that distinguish private targets from public targets may explain his results.

Fuller et al. (2001) investigate bidder returns for a sample of US takeovers of public and private targets in the 1990s where the acquiring firm has taken over at least five public and/or private targets during the sample period. By focusing on bidder returns to acquirers that have made multiple acquisitions, they argue that they can attribute relatively more of the variation in bidder returns to factors other than new information about the bidder itself. Similar to my results, but in contrast with Chang's, they find that bidders in acquisitions of private targets earn significantly positive abnormal returns, regardless of method of payment. However, the bidder returns associated with stock offers are larger than the bidder returns associated with cash offers. Furthermore, consistent with my evidence, Fuller et al. find that the bidder returns in acquisitions of private targets are increasing in the relative size of the acquisition, which is interpreted as support for underpayment in acquisitions of private targets. Like Chang, Fuller et al. study the cross-section of bidder returns for takeovers of private targets

separate from takeovers of public targets. Hence, their results may also suffer from sample selection problems. However, their results are in line with the more robust findings of the present paper.

The evidence of positive acquirer returns in takeovers of private targets in this paper, as well as the evidence in the studies s by Chang (1998) and Fuller et al. (2001), highlights the importance of investigating the economic effects of acquisitions for *all* acquisitions. Studying takeovers of public firms in isolation and making general inferences about the division of gains in takeovers, the effect of method of payment, etc. can obviously lead to the wrong conclusions.

The remainder of the paper is organized as follows. Section 2 describes the data. Section 3 reports the average acquirer abnormal returns around the acquisition announcements. Section 4 presents hypotheses for why acquirer returns are different depending on whether the target is public or private and whether it is a cash or stock offer. Section 5 reports cross-sectional analyses of the abnormal returns. Section 6 concludes the paper.

2. Motivation for and description of the sample

The research approach in this paper demands data on private target characteristics that is hard to obtain in most countries. Sweden is one exception. In Sweden annual reports for incorporated firms are public information. Every Swedish corporation is required to submit their annual reports to the governmental agency *Patent-och Registreringsverket* (PRV). Swedish law guarantees every resident's right to receive (at a cost) a copy of any firm's annual report. There are several commercial databases that compile the annual reports in an easily searchable electronic form. I use the *Market Manager* database, which contains virtually all annual reports turned in to PRV, as my source of data on target characteristics. I know of no country outside Scandinavia for which annual reports for every single corporation are available in this manner. This wealth of data allows me to control for selection problems that may otherwise cause biases in cross-sectional analyses of acquirer returns.

An additional advantage of using Sweden as a research environment is that takeovers of privately held targets can be identified through another unique database – *Förvärv & Fusioner* – that tracks and records partial and complete acquisitions involving Swedish corporations (listed as well as unlisted) as acquirers or targets from the beginning of 1993 and onwards. Due to limited data availability on foreign firm characteristics, I only consider

takeovers in which both the acquirer as well as the target is a Swedish firm. Furthermore, for the purpose of this study I need return data for the acquirer. Hence, I only consider acquisitions where the acquiring firm is listed on the *Stockholm Stock Exchange* (SSE) or the *SBI Marknadsplats*.[1]

The final sample consists of 142 acquisitions of privately held firms and 60 acquisitions of publicly traded firms The sample of acquisitions of privately held firms spans the period January 1, 1993 through December 31, 2000 and is identified through the *Förvärv & Fusioner* database. The sample of takeovers of publicly traded firms spans the period January 1, 1990 through December 31, 2000 and is identified through the *Förvärv & Fusioner* database and by examining records of stock delistings from the SSE (for the period prior to 1993). I use a longer sample period for takeovers of publicly traded firms in order to obtain a sample size suitably large for econometric analysis. The results are not sensitive to the mismatch in sample periods, however. I initially identified 1,048 acquisitions of privately held firms and 81 acquisitions of public firms for the respective time periods. To be included in the final sample all takeovers needed to fulfill all of the following criteria:

1. Neither the acquirer nor the target is a bank or an insurance company.
2. The takeover is completed, in the sense that the acquirer gains at least 50% of the votes of the target firm.
3. Accounting information for the acquirer and the target is available from the *Market Manager* database for at least the fiscal year-end preceding the takeover. (There is no information available in some cases because the acquirer or the target was too young to have submitted an annual report to PRV or because the acquired firm completely merged with the acquirer and failed to submit its last annual report as an individual firm.)
4. The relative size of the target is 5% or more of the acquirer's size prior to the acquisition according to at least one of the following size measures: (i) the book value of total assets; (ii) sales; or (iii) the market value of equity (only valid for takeovers involving public targets). I use this requirement to discard relatively tiny acquisitions that would mostly add noise to the results if included.

[1] *SBI Marknadsplats* is comparable to the *Neuer Markt* in Germany.

5. The acquirer's stock returns are available in the *Stockholm Information Exchange's (SIX's)* stock price database for at least 40 days prior to the takeover announcement.[2]
6. The announcement day of the acquisition can be identified in the *Affärsdata* news database.[3]

A vast majority of the excluded acquisitions of private targets failed to fulfill criterion 4. The most common reason for exclusion of takeovers of public targets (7 observations) is that the acquirer or the target is a bank or insurance company.

Table 1 reports the distribution of the 202 takeovers by calendar years and type of target. Since there seems to be some clustering of acquisition activity (the period 1996-1998 for private targets and the period 1994-1997 for public targets), I will control for the possibility of time trends in the cross-sectional analysis of acquirer abnormal returns. Table 1 also displays the distribution of takeovers by method of payment. Cash offers include non-

Table 1. Distribution of acquisitions by calendar year

The sample is 202 completed takeovers announced 1/1/1990 - 12/31/2000 by firms listed on the *Stockholm Stock Exchange* or the *SBI-list.* All variables are defined in Table A1 in the Appendix. The takeovers were identified using the *Förvärv &Fusioner* database for the 1993-2000 time period and using records of stock delistings from the *Stockholm Stock Exchange* for the 1990-1992 time period (publicly traded targets only).

	Takeovers of privately held targets			Takeovers of publicly held targets		
Year	All offers	Cash offers	Stock and mixed offers	All offers	Cash offers	Stock and mixed offers
1990	-	-	-	4	3	1
1991	-	-	-	4	1	3
1992	-	-	-	1	0	1
1993	12	8	4	3	0	3
1994	18	11	7	8	3	7
1995	14	13	1	10	5	5
1996	19	15	4	8	5	3
1997	28	12	16	7	2	5
1998	22	14	8	4	2	2
1999	14	8	6	3	1	2
2000	15	5	10	8	5	3
Total	142	86	56	60	27	33

[2] This database contains stock prices for all publicly traded Swedish firms from January 1, 1979 and onwards.

[3] The *Affärsdata* news database is an extensive information source containing articles and newsflashes from: (i) Both major daily business papers (*Dagens Industri* and *Finanstidningen*). (ii) Both major weekly business magazines (*Veckans Affärer* and *Affärsvärlden*). (iii) The two main financial news agencies; *TT* and *Direkt.* All newsflashes from *TT* and *Direkt* contain information on when it reached the stock market (date + hour and minute), thus eliminating announcement date uncertainty. (iv) All news articles from all the largest Swedish newspapers (e.g., *Dagens Nyheter* and *Svenska Dagbladet*). (v) Over 30 other newspapers and magazines related to business.

convertible debt exchanges and stock offers include preferred stock and convertible debt exchanges. Due to the limited sample size, I treat stock offers and mixed offers of cash and stock as one group. In Table 1 we see that a majority (60.6%) of the acquisitions of private targets is paid for by cash, whereas stock or mixed payments are used in a majority (55.0%) of the acquisitions of publicly held targets. Henceforth, I will refer to all stock and mixed offers simply as stock offers.

3. Estimation of acquirer abnormal returns

I estimate a market model (MM) by OLS for each firm using daily stock returns from the *TRUST* database.[4] *Affärsvärlden's Generalindex*, a value-weighted index of all firms listed on the SSE, is used as the proxy of the market portfolio. Defining the announcement date as day 0, the MM parameters are estimated using all available stock returns for an individual stock over the estimation period day -211 through day –11. To ensure that enough return data is available for estimation of MM parameters, I require that the sample firms have stock returns available for at least the period day –40 through day –11.[5] Furthermore, because the sample contains some firms with infrequently traded stock the MM, parameters are estimated using the Dimson (1979) procedure to deal with the potential bias (towards zero) of betas due to non-synchronous trading. I measure announcement-period abnormal returns as the two-day cumulative abnormal return (CAR) from day –1 through day 0.

Table 2 shows the average two-day CAR for acquiring firms at the announcement of a takeover split by type of target and method of payment. Panel A shows the average and median CAR for acquirers of private targets. On average, acquirers of privately held firms earn a significant two-day CAR of 2.74% (t = 4.48). Splitting the acquirers by method of payment, we see that acquirers making stock offers earn a significant CAR of 5.44% (t = 4.18) and acquirers making cash offers earn a significant average CAR of 0.97% (t = 2.11). The difference in average CARs is significant at the 1%-level (z = 4.22).[6]

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[4] See MacKinlay (1997) for an overview of the event study methodology employed in this paper.

[5] The shortest return series in the sample for estimation of the MM parameters is 34 days (day -44 through day -11). The standard deviations of the abnormal returns are adjusted for the sampling error in the estimated MM parameters that results from short return series.

[6] $$z = \frac{ASCAR_1 - ASCAR_2}{\sqrt{\frac{1}{N_1} + \frac{1}{N_2}}}$$

where $ASCAR_1$ and $ASCAR_2$ are the average standardized two-day CARs for stock offers and cash offers, respectively, and N_1 and N_2 are the corresponding number of observations.

Table 2. Average and median abnormal stock returns for acquirers at the announcement of a takeover by type of target and method of payment

The sample is 202 completed takeovers announced 1/1/1990 - 12/31/2000 by firms listed on the *Stockholm Stock Exchange* or the *SBI-list*. To obtain abnormal returns, the market model is estimated by OLS for each firm from daily stock returns obtained from the *SIX* database. The estimation period is day -211 through day -11 where day 0 is the announcement date. The return on *Affärsvärlden's Generalindex* is used as a proxy for the return on the market portfolio. Since the sample includes several small stocks, betas have been estimated using the Dimson (1979) procedure to deal with the potential bias (towards zero) of betas due to nonsynchronous trading of these stocks. The two-day CARs are measured from day –1 through day 0. To test the hypothesis of no abnormal returns, a *t*-test is used for the mean values, and the Wilcoxon signed-rank test is used for the percent positive. *, **, or *** denotes that the value is significantly different from zero (using a two-tailed test) at the 10%, 5%, and 1% levels, respectively.

	Number of observations	Average two-day CAR (%)	Median two-day CAR (%))	*t*-Statistic	Percent positive
Panel A: Privately held targets					
All offers	142	2.74	1.01	4.48***	64.1***
Cash offers	86	0.97	0.36	2.11**	59.3*
Stock and Mixed Offers	56	5.44	2.95	4.18***	71.4***
Panel B: Publicly traded targets					
All offers	60	0.25	0.27	0.44	55.0
Cash offers	27	-0.02	0.22	-0.03	55.6
Stock and Mixed Offers	33	0.46	0.28	0.48	55.5

The significant Wilcoxon signed-rank test for the proportion of positive returns for stock offers further strengthens the result that acquirers gain from stock acquisitions of privately held targets. The signed rank test for cash offers is also significant, but only at the 10%-level. In general, the above evidence suggests that acquirers earn positive abnormal returns when acquiring a privately held target.

Panel B reports the average and median CARs for acquirers of public targets. In contrast to the acquirer returns in takeovers of private targets, we see that the average acquirer CARs are insignificant for the total sample as well as for stock and cash offers. Hence, acquirers of public targets seem to earn normal returns on average at the announcement of a takeover, indicating that the takeover market for public firms is competitive. There is no significant difference in the average CARs between cash and stock offers (z=0.02).

The above results suggest that there is a fundamental difference in the stock market's estimate of the value of the transaction for the acquiring firm's shareholders depending on whether the target is privately or publicly held. This is especially true for stock offers. These results are similar to those obtained by Chang (1998) and Fuller et al. (2001) on US data. Hence, it seems as if there is a universal economic difference in the market's estimation of

acquirer gains depending on whether the target as a private or public firm. In the rest of the paper I investigate possible explanations for this difference.

4. Hypotheses

In this section, I discuss some hypotheses that could potentially explain the difference in acquirer returns between takeovers of private targets and takeovers of public targets in general, and the difference between stock and cash offers in particular.

4.1 Bargaining power

The difference in acquirer returns may be due to differences in the bargaining environment. Acquirers in takeovers of private targets are likely to have a relatively more favorable bargaining situation compared to acquirers in takeovers of public targets. For example, due to higher information gathering costs, it is likely that there are fewer potential rival acquirers in takeovers of private targets. This limited competition will decrease the price offered to target shareholders and allow the acquirer to capture a greater portion of the value of anticipated synergies (Fishman (1988)). Furthermore, a demand for liquid assets and increased personal diversification among the private target's shareholders may create a pressure to sell, which is also likely to strengthen the acquiring firm's bargaining power. Finally, increased ownership concentration in the target benefits the acquirer, because the benefit to target shareholders from free-riding decreases as the likelihood of each shareholder being pivotal to the success of the takeover increases (see, e.g., Holmström and Nalebuff (1992)). Since ownership concentration in privately held firms is higher than in public firms, the absence of free-riding behavior may allow acquirers of private targets to capture a larger share of the value created in the takeover. This particular argument may be more valid in the US institutional setting than in the Swedish setting, considering the generally high ownership concentration of listed Swedish firms (see Cronqvist and Nilsson (2001)).

Given that acquirers have greater bargaining power in takeovers of private targets than in takeovers of public targets, the probability of acquirers making a positive NPV acquisition should be higher when the target is privately held. This hypothesis is hard to test directly, because I lack good proxies for the acquirer's bargaining power. Therefore I view this hypothesis as a residual hypothesis. If there is a positive effect of the target being private on acquirer returns after controlling for other potential explanations, I will interpret such a result as consistent with the bargaining hypothesis.

4.2 Asymmetric information about target value

When target shareholders are better informed than outsiders about the value of their firm, acquirers want to avoid cash offers because target shareholders will only accept a cash offer that is greater than the true value of the firm. Hansen (1987) shows that acquirers in this case are better off by making a stock offer because of a "contingent-pricing effect." By receiving an ownership stake in the combined entity, the target's shareholders are forced to share part of the risk that the acquirer overpays. Because of the same contingent-pricing effect, target shareholders will be more likely to accept a stock offer when they believe their firm is undervalued. Thus, a stock offer may convey favorable information about the target's value. It is reasonable to assume that the value of a privately held target is more uncertain than the value of a target listed on a stock exchange. Public targets are continuously priced on the stock market, and the amount of publicly available information will tend to be higher for public firms due to disclosure rules, analyst following, higher degree of business press coverage, etc. Because of the higher risk of overpayment in takeovers of private targets, the stock market is likely to view stock offers as a more favorable signal of the private target's value compared to cash offers. If this is the case, we expect acquirer gains to be increasing in the relative size of the target for stock offers, since for a given degree of undervaluation the returns to the acquirer will be greater the larger the target is compared to the acquirer. Because there is less uncertainty of the value of a public firm, stock offers are likely to convey less favorable information about target firm value in takeovers of public targets compared to takeovers of private targets.

4.3 Asymmetric information about acquirer value

A takeover announcement may not only signal information about the expected gains to the acquirer from the acquisition per se, but also convey information about the value of the acquiring firm. If the acquiring firm uses its own stock to acquire another publicly held target with a large number of shareholders, it faces the adverse selection problem identified by Myers and Majluf (1984). In their model, an equity issue signals the management's belief that the firm is overvalued. Similarly, a stock-financed acquisition of a public target may signal that the acquiring firm is overvalued. However, Hertzel and Smith (1993) extend Myers and Majluf's model with a private placement alternative, and show that the willingness of the private placement investor to commit funds to the firm may signal that the firm is undervalued. This result follows from the assumption that the private investors can learn the true value of the issuing firm during the negotiations with the issuing firm's management.

Thus, stock payments for privately held targets and listed targets with a concentrated ownership structure may signal that the acquirer is undervalued, because of the willingness of target shareholders to accept stock as payment.

4.4 Monitoring

Chang argues (1998) that stock payments in acquisitions of privately held targets will be more likely to create new blockholders in the bidding firm compared to stock payments in acquisitions of public targets, and that this can explain the positive effect of stock payments on acquirer returns in takeovers of private target. The creation of a new blockholder can increase acquirer shareholder wealth through increased monitoring of managerial performance or an increased probability that the acquirer is, in turn, taken over (Shleifer and Vishny (1986); Zeckhauser and Pound (1990)). However, this monitoring argument has to be modified in a non-U.S. setting, such as in my Swedish sample, since most firms already have owners with significant ownership stakes. Hence, if monitoring by a new blockholder is valuable, it has to be because he monitors the control group rather than a professional management team. However, in order to be an effective monitor of the control group, the new blockholder needs to receive a significant fraction of votes in the acquiring firm after the acquisition so that he becomes a potential threat to the control group's power.

The value of a large new vote shareholder should be particularly great when the control group is a family coalition. Controlling families typically participate in the management of the firm and control voting rights in excess of their cash flow rights through the use of dual-class shares and stock pyramids (see La Porta et al. (1999)). This gives the controlling families a disproportionate degree of control compared to their equity investment, and creates large incentives to engage in extraction of private benefits rather than to pursue a policy of shareholder wealth maximization (Bebchuk et al. (2000)). Recent empirical evidence on Swedish data by Cronqvist and Nilsson (2001) suggests that there is a significant negative effect on firm value of concentrated family control of votes, and that this negative effect is larger than the effect of vote ownership by other types of controlling owners (such as widely held corporations and financial institutions).

5. Cross-sectional analysis of acquirer abnormal returns

In this section I perform a cross-sectional analysis of the two-day acquirer CARs for all takeovers. I use a dummy variable indicating whether the target is privately or publicly held and various other explanatory variables as determinants of acquirer returns. My objective is

to test if the documented difference in abnormal returns between acquirers of privately and publicly held targets remain after controlling for sample selection bias, variables related to the hypotheses in the previous section, and other factors that may explain cross-sectional differences in acquirer abnormal returns.

5.1 Method

I consider a model of the following form:

$$CAR = X\beta + \alpha Z + u_1 \tag{1}$$

where *CAR* is the two-day acquirer abnormal return, X is a vector of explanatory variables, Z is an indicator variable equal to one if the target is privately held and equal to zero if the target is publicly held, and u_1 is the error term which is assumed to be $N(0, \sigma_1^2)$. Now suppose that whether a target is private or public is determined by the following underlying selection function:

$$Z^* = W\gamma + u_2, \tag{2}$$

where W is a vector of variables determining whether a target firm is privately or publicly held and u_2 is the error term which is assumed to be $N(0,1)$. A private target ($Z=1$) is observed if and only if, $Z^* > 0$, and a public target ($Z=1$) is observed if and only if $Z^* \leq 0$.[7] Now, if equations (1) and (2) are independent, equation (1) can be estimated using OLS. However, if they are dependent, i.e., if the error terms are correlated, OLS estimates will be biased and inconsistent. There are economic reasons to believe that equations (1) and (2) are in fact dependent. For example, firms with a high degree of asymmetric information face an adverse selection problem when seeking external financing, which is likely to affect the propensity of firms to go public. At the same time, stock market reactions to acquisitions are also likely to depend on the degree of uncertainty about the acquired firm's value. Since the degree of asymmetric information is inherently unobservable and unlikely to be fully captured by proxy variables, the effect of the degree of asymmetric information for a particular firm is likely to end up in the error terms of both equations, thereby making them dependent.

Now, let f (•) denote the standard normal density function and F (•) denote the standard normal cumulative distribution function. Barnow et al. (1981) show that if the errors terms u_1

[7] Equation (2) is thus equivalent to a probit model of the likelihood of a target firm being private.

and u_2 have a non-zero covariance, σ_{12}, the expected value of *CAR*, conditional on X and Z, is given by the following function:

$$E[CAR \mid X, Z] = X\beta + \alpha Z + \sigma_{12} h(W, Z; \gamma), \tag{3}$$

where $h(W,Z;\gamma) = f(W\gamma)/F(W\gamma)$ if Z=1, and $h(W,Z;\gamma) = -f(W\gamma)/(1-F(W\gamma))$ if Z=0.[8] I obtain consistent estimates of β, α, γ, and σ_{12} by simultaneously estimating (2) and (3) using full information maximum-likelihood. To formally test for independence of (1) and (2), I perform a Wald-test on the estimated correlation coefficient of u_1 and u_2 under the null hypothesis of zero correlation.

5.2 Variables

This section describes the explanatory variables used in the selection function to predict target type, as well as the explanatory variables used to explain the cross-sectional differences in acquirer abnormal returns. Table 3 contains the mean and median values of the variables split by type of target. To assist the reader, a summary of the variable definitions are presented in Table A1 in the Appendix.

5.2.1 Explanatory variables in the selection function

I use four target firm characteristics as explanatory variables in the selection function: the log of target age, the log of target size, target leverage, and target average industry-adjusted ROA. Pagano et al. (1998) use firm size, leverage, and operating performance as variables explaining a firm's decision to go public, and suggest firm age as another potential explanatory variable, although they cannot observe firm age themselves. Other firm characteristics that they use are capital expenditures and one-year sales growth, which proxy for the firm's growth opportunities. Unfortunately *Market Manager* does not report capital expenditures during most of the time period studied so I am prevented from using this variable. Furthermore, because several target firms (about 10% of the sample) are very young and lack accounting data for more than one year, I choose not to include sales growth.[9]

The log of target age, where age is defined as the years since incorporation, and the log of target size, where size is defined as the book value of total assets expressed in 1997 SEK, are

[8] A models of this type is often referred to as a 'treatment effects model' in the econometric literature, since *Z* typically indicates the presence or absence of some treatment, for example, participation in an experiment or going to college.

[9] I have run estimations including the log of one-year sales growth in the selection function for the reduced sample. However, sales growth was not significant in the selection function, and all other results remained qualitatively the same. Therefore, I only report the results using the full sample.

Table 3. Mean and median for explanatory variables

The sample is 202 completed takeovers announced 1/1/1990 - 12/31/2000 by firms listed on the *Stockholm Stock Exchange* or the *SBI-list.* All variables are defined in Table A1 in the Appendix.

	Takeovers of privately held targets		Takeovers of publicly held targets	
Variable	Mean	Median	Mean	Median
Relative size of target	0.391	0.125	0.510	0.368
Proportion stock offers	0.394	n/a	0.550	n/a
Fraction shares exchanged in stock offers	0.201	0.102	0.244	0.228
Proportion of non-cash takeovers with a new blockholder from target	0.393	n/a	0.394	n/a
Vote ownership of new blockholder	0.228	0.226	0.180	0.135
Proportion of acquirers with a family in control prior to the acquisition	0.655	n/a	0.567	n/a
Proportion of related acquisitions	0.662	n/a	0.650	n/a
Acquirer market-to-book equtiy	2.051	1.284	1.929	1.172
Acquirer book value of total assets (MSEK)	1,493	408	10,974	4,025
Acquirer leverage	0.521	0.525	0.587	0.572
Acquirer average industry adjusted ROA	0.108	0.122	0.098	0.086
Target book value of total assets (MSEK)	278	69	2,903	1,172
Target leverage	0.674	0.692	0.600	0.624
Target average industry adjusted ROA	0.028	0.023	0.017	0.010
Target firm age	21.0	13.0	35.6	29.0

included because information asymmetries are likely to be higher for young and small firms, which increases the adverse selection costs of going public. Hence, young and small firms are more likely to be privately held than old and large firms. The descriptive statistics in Table 3 confirm this conjecture. Public targets are more than ten times the size of private targets and almost twice as old.

Target leverage is included because private firms face a smaller universe of potential equity investors, which is likely to increase the comparative cost of equity, resulting in more reliance on debt financing compared to public firms. Consistent with this, Table 3 shows that privately held targets have higher average and median levels of leverage compared to public firms.

Target average industry-adjusted ROA is included because a more profitable firm is likely to need less external equity, and hence has less of a need to be listed on a stock exchange. On the other hand, a firm with a high industry-adjusted ROA is likely to be a high quality firm, which would lower the adverse selection costs of going public. Average industry-adjusted ROA for target firms is calculated over the three fiscal years preceding the takeover bid. The industry-adjustment is performed each year by deducting the median ROA of the target's

publicly traded industry peers from the target's ROA. The industry classification is based on the 16 industry-groups that are listed in Table A2 in the Appendix. Table 3 shows that private targets tend to have a higher industry-adjusted ROA compared to public targets.

Besides the target characteristics, I also include the log of acquirer size as an explanatory variable. Takeover targets tend to be smaller than the acquiring firms at the same time as listed firms tend to be bigger than unlisted firms. Hence, the set of feasible takeover targets should include more private firms than public firms for small acquirers. That is, I expect a negative relation between the log of acquirer size and the likelihood of the takeover target being a privately held firm. Table 3 shows that firms acquiring privately held targets indeed are much smaller compared to firms acquiring publicly held targets (the median of total assets is almost ten times greater for firms acquiring publicly held targets).

5.2.2 Explanatory variables in the acquirer return models

In this section I describe the explanatory variables I use in the estimations besides the dummy indicating whether the target is privately or publicly held.

To test if there is an effect of method of payment after controlling for selection bias and other variables, I include one dummy variable indicating a stock offer in a takeover of a private target and one dummy variable indicating a stock offer in a takeover of a public target. That is, I allow the relation between the method of payment and acquirer abnormal returns to differ depending on target type. Furthermore, I also include the interactions of these variables with the relative size of the target, since if a stock offer signals undervaluation of the target, acquirer gains should be increasing the larger the target is relative to the acquirer.

I also include the relative size of the target, defined as the book value of the target's total assets divided by the book value of the acquiring firm's total assets, as an explanatory variable. Public firms generally belong to the largest firms in a country's economy. This means that private targets will tend to be smaller than public targets (which has already been confirmed in my sample), and consequently, since I only consider public acquirers, the relative size of the acquisition will tend to be larger in takeovers of public firms. Table 3 shows that the relative size of the acquisition is larger in takeovers of public firms (the differences in mean and median are significant at least at the 5%-level). Relative size of the target can proxy for many effects, since it should be that for given gains from an acquisition, acquirer returns are greater when the target is large relative to the acquirer (Asquith et al. (1983)). Hence, the difference in acquirer returns between takeovers of private and public targets may be explained by the difference in relative size. For example, if managers suffer

from hubris (Roll (1986)) or are empire builders (Jensen (1986)), and are therefore likely to overpay for target firms, the expected cost of this hubris or empire building will be greater the larger the relative size of the acquisition.

I control for the monitoring hypothesis by including the proportion of votes controlled by a new blockholder emerging from the target following stock offers. A blockholder is defined as an owner controlling 5% or more of the firm's votes. The data on creation of new blockholders is gathered from the annual publication "*Owners and Power in Sweden's Listed Companies*" (Sundqvist and Sundin (1990-2001)) and news articles from the *Affärsdata* database. In Table 3, we see that a new blockholder is as likely to emerge in stock acquisitions of public targets as in stock acquisitions of private targets. A new blockholder is created in almost 40% of the stock acquisitions regardless of the type of target, although the new blockholders tend to control fewer votes after takeovers of public targets. This finding contrasts Chang's (1998) finding that a new blockholder is created in only 8% of takeovers of listed firms involving stock offers and is a result of the high ownership concentration of Swedish listed firms. I also include the interaction of vote ownership by a new blockholder with a dummy variable indicating that the acquiring firm has a controlling family owner. As argued in the hypotheses section, agency costs are likely to be the largest when a firm has a controlling family owner. Thus, firms with a controlling family are the ones most likely to benefit from the addition of a new large vote owner. An acquiring firm is considered to have a controlling family owner if a family or a group of closely affiliated individuals that are not related (such as co-founders of the firm) controls 25% of the firm's votes and is the largest shareholder coalition in terms of votes. The ownership data is collected from the most recent volume of "*Owners and Power in Sweden's Listed Companies*" published prior to the takeover announcement. For acquirers who went public a short time prior to the takeover and therefore do not appear in the most recent volume of the book series, I collect data on acquirer ownership structure by studying articles in the *Affärsdata* database about the firm's IPO.

Besides the variables mentioned above, I also include a set of control variables that may affect acquirer returns in general.

The dummy variable indicating family control is included because controlling families may have incentives to engage in empire building, which could be costly to non-controlling shareholders.

Previous studies of acquirer returns have found that acquirer returns are greater when acquirer and target are in a related line of business (e.g., Morck et al. (1990)). Synergy gains

are likely to be greater when there is a horizontal relationship between acquirer and target and thus the likelihood of overpayment is smaller. To control for this effect, I include a dummy variable indicating whether the acquisition is related. I classify acquisitions as related if the target firm belongs to the acquirer's industry group. The different industry groups are listed in Table A2 of the Appendix. Note that all acquisitions involving firms classified as conglomerates or investment companies are considered to be non-related acquisitions.

The stock market may view an acquisition more favorable if the acquirer is a well-managed firm. A good management may find it easier to realize potential synergies. Previous research has found that the acquirer's Tobin's q affects acquirer abnormal returns (Lang et al. (1989); Servaes (1991)), where q has been interpreted as a measure of the quality of the management. I include the acquirer market-to-book ratio, defined as the market value of equity plus the book value of debt divided by the book value of total assets (measured at the fiscal year-end prior to the acquisition) as a measure of firm performance. The market-to-book ratio can be viewed as a simple version of Tobin's q. As an alternative measure of managerial performance, I also include the acquirer's average industry-adjusted ROA.

I include the target's industry-adjusted ROA as a measure of target firm performance. If the target is a poor performer, there may be more potential efficiency gains to be realized.

Acquirer and target leverage (defined as the book value of all non-equity liabilities divided by the book value of total assets) are included to control for possible interactions between capital structure considerations and the method of payment. Acquirer leverage may also proxy for the degree of agency problems between the controlling party and non-controlling shareholders, since a high level of debt is likely to discourage wasteful investments due to the bankruptcy risk (Grossman and Hart (1982)).

Finally, I include time dummies for the years 1993-2000, to control for time trends and differences in market conditions.

Table 4. Estimation results for models of abnormal acquirer returns

The sample is 202 takeovers announced 1/1/1990 - 12/31/2000 by firms listed on the *Stockholm Stock Exchange* or the *SBI-list*. The models are estimated using maximum-likelihood. The dependent variable is the acquirer two-day CAR from day -1 through day 0 (=announcement date). All independent variables are defined in Table A1 in the Appendix. The p-values for the coefficient estimates (from standard z-tests for the coefficient estimates) are calculated using heteroskedasticity robust standard errors.

Dependent variable: Acquirer two-day CAR										
	(1)		(2)		(3)		(4)		(5)	
Independent variables	Coef.	*p*-value	Coef.	*p*-value	Coef.	*p*-value	Coef.	*p*-value	Coef.	*p*-value
Dummy = 1 if private target	0.025	0.024	0.025	0.017	0.025	0.020	0.016	0.176	0.016	0.181
Dummy = 1 if private target and stock offer	0.040	0.002	0.032	0.013	0.025	0.046	0.031	0.017	0.025	0.044
Dummy = 1 if public target and stock offer	-0.002	0.845	-0.010	0.395	0.001	0.936	-0.005	0.655	-0.007	0.632
Relative size	0.020	0.002	0.018	0.001	0.016	0.000				
Vote ownership by new blockholder from target			0.002	0.986	-0.010	0.925	0.002	0.986	-0.010	0.923
Interaction variable = Vote ownership by new blockholder x family control dummy			0.147	0.251	0.167	0.202	0.165	0.207	0.167	0.201
Interaction variable = private target x stock offer x relative size					0.015	0.492			0.014	0.516
Interaction variable = public target x stock offer x relative size					-0.017	0.462			0.007	0.785
Interaction variable = private target x relative size							0.020	0.002	0.016	0.000
Interaction variable = public target x relative size							-0.004	0.832	-0.008	0.519
Intercept	-0.017	0.048	-0.016	0.042	-0.015	0.040	-0.008	0.399	-0.007	0.447
Wald test of all coefficients (excluding the intercept) being equal to zero (p-value)	16.72 (0.002)		19.74 (0.003)		24.35 (0.000)		19.54 (0.007)		22.78 (0.000)	
Wald test of independence of selection function (p-value)	3.33 (0.068)		4.19 (0.041)		3.62 (0.057)		4.47 (0.035)		3.28 (0.070)	
Number of observations	202		202		202		202		202	

5.3 Results

The estimation results of the model of acquirer returns for the full sample are presented in Table 4. Since the selection function is not the focus of this paper, the coefficient estimates for this function are not reported in Table 4. However, in Table A3 in the Appendix I present the coefficient estimates obtained when estimating model (1) in Table 4. Because I always use the same explanatory variables in the selection function, these estimates are representative of all estimates obtained for different specifications of the acquirer return model. The first important observation is that the hypothesis of zero correlation between the error terms in the selection function and the acquirer return model can be rejected for all models in Table 4 (at least at the 10%-level). This result suggests that one should be careful when interpreting cross-sectional analyses of acquirer returns unless this selectivity bias is controlled for.

In model (1) of Table 4, I include the private target dummy, the two dummies indicating stock offers in takeovers of private and public targets, respectively, and the relative size measure. According to this specification, a takeover of a private target is, on average, associated with a significantly larger two-day CAR of 2.5% compared to a takeover of a public target (p-value = 0.024). Furthermore, acquirers paying with stock for a private target earn an additional average two-day abnormal return of 4.0% (p-value = 0.002). We also see that relative size is positively related to acquirer returns. However, as I report below, this effect is solely attributable to takeovers of private targets.

In model (2), I add the vote ownership by a new blockholder and the interaction of this variable with a dummy variable indicating that the acquirer has a controlling family owner. Neither of these two variables enters significantly. Furthermore, none of the previous results is significantly altered. The insignificance of vote ownership by a new blockholder from the target contrasts Chang's (1998) conclusion that monitoring benefits explain the positive acquirer returns in stock offers for private targets. Thus, the positive information from stock payments must have another explanation.

So far the result is consistent with the hypotheses that stock offers in takeovers of private targets convey positive information about target and/or acquirer value. In model (3), I further test these hypotheses by interacting both dummy variables for stock offers with the relative size variable. As mentioned in the hypotheses section, if a stock offer signals undervaluation of the target firm, I expect the positive effect of a stock offer for a private target to be increasing in the relative size of the target. As we can see, both interaction variables are insignificant. The magnitude on the dummy for a stock offer decreases, but the coefficient is

still significant at the 5%-level. Hence, this result does not support that a stock offer signals undervaluation of the private target. The positive effect of a stock offer for a private target may instead convey positive information about the acquirer's value, in line with Hertzel and Smith's (1993) argument that the purchasers of private placements can learn the true value of the selling firm and will thus not invest in firms that are overvalued, which, in turn, means that the average private placement firm will be undervalued.

The generally positive effect on acquirer returns of the target being private is consistent with acquirers having greater bargaining power when negotiating with the owners of a privately held firm, thereby increasing the likelihood that the acquirer underpays for the target. If acquirers generally underpay for private targets, the positive effect of acquiring a private target should be increasing in the relative size of the target. In models (4) and (5), I exchange the relative size variable in models (2) and (3), respectively, for the interaction of the target being private and relative size and the interaction of the target being public and relative size. That is, I allow the relation between relative size and acquirer abnormal returns to depend on the type of target. Consistent with acquirers underpaying for private targets, there is a significant and positive relation between relative size and acquirer abnormal returns (p-value<0.01) when the target is privately held, whereas there is no significant relation when the target is a public firm.

In Table (5), I test the robustness of the results to inclusion of time effects and the control variables described in the previous section. I report the results from adding the controls to model (4) in Table 4. Model (1) of Table 5 displays the results from including only the time dummies. In model (2) of Table 5, the control variables excluding the time dummies are included. Finally, in model (3), both time dummies and control variables are included. The previous results are robust in all of the three models. In unreported estimations, I performed the same analysis for all of the model specifications in Table 4. All results were robust. Interestingly, none of the control variables are significant (some of the time-dummies are significant, however). Thus, whether the target is private or public seems to be the most important factor in explaining acquirer gains.

I have been able to rule out some explanations for the larger acquirer returns in takeovers of private targets, but I have not been able to find a definite answer for what is the economic source of the gains. Although the evidence is consistent with a greater likelihood of underpayment in takeovers of private targets because acquirers have greater bargaining power, it may not be the only explanation for the positive gains. There may be some other generally positive information related to acquisitions of private targets. Thus, until we can

Table 5. Estimation results for models of abnormal acquirer returns: Robustness to year effects and control variables

The sample is 202 takeovers announced 1/1/1990 - 12/31/2000 by firms listed on the *Stockholm Stock Exchange* or the *SBI-list*. The models are estimated using maximum-likelihood. The dependent variable is the acquirer two-day CAR from day -1 through day 0 (=announcement date). All explanatory variables are defined in Table A1 in the Appendix. The p-values for the coefficient estimates (from standard z-tests for the coefficient estimates) are calculated using heteroskedasticity robust standard errors.

	Dependent variable: Acquirer two-day CAR					
	(1)		(2)		(3)	
Independent variables	Coefficient.	*p*-value	Coefficient.	*p*-value	Coefficient	*p*-value
Dummy = 1 if private target	0.019	0.117	0.018	0.186	0.020	0.157
Dummy = 1 if private target and stock offer	0.031	0.030	0.027	0.044	0.028	0.050
Dummy = 1 if public target and stock offer	-0.004	0.700	-0.007	0.539	-0.006	0.599
Interaction variable = private target x relative size	0.018	0.002	0.020	0.001	0.018	0.001
Interaction variable = public target x relative size	0.001	0.948	-0.002	0.920	0.001	0.960
Vote ownership by new blockholder from target	-0.013	0.901	0.024	0.826	0.008	0.945
Interaction variable = Vote ownership by new blockholder x family control dummy	0.174	0.194	0.116	0.410	0.127	0.368
Dummy = 1 if the acquirer has a family in control			0.012	0.128	0.015	0.113
Related acquisition			0.000	0.961	0.003	0.797
Acquirer market-to-book equity			0.001	0.465	0.001	0.558
Acquirer average industry-adjusted ROA			-0.052	0.428	-0.042	0.503
Target average industry-adjusted ROA			-0.016	0.457	-0.015	0.505
Acquirer leverage			0.008	0.755	0.000	0.996
Target leverage			-0.019	0.471	-0.014	0.604
Intercept	-0.021	0.210	-0.008	0.665	-0.018	0.423
Year dummies for 1993-2000	Yes		No		Yes	
Wald test of all coefficients (excluding the intercept) being equal to zero (p-value)	33.78 (0.007)		45.58 (0.000)		54.71 (0.000)	
Wald test of independence of selection function (p-value)	2.80 (0.094)		4.00 (0.045)		3.43 (0.064)	
Number of observations	202		202		202	

come up with good proxy variables for the acquirer's bargaining power, we will not be able to definitely conclude that greater bargaining power is the source of the positive returns to acquirers in takeovers of private targets. The situation is similar for the evidence of the additional positive gains earned by acquirers in stock offers to private targets. I document a strong effect, but can ultimately not pinpoint the source of this effect. Hence, further research on the sources of the positive acquirer gains in takeovers of private targets is warranted.

6. Conclusions

In this paper I analyze acquirer abnormal returns when the target is a privately held firm compared to when the target is a publicly held firm, using 202 Swedish takeovers (142 private targets; 60 public targets) from 1990-2000. I document that acquirer abnormal returns are significantly positive when the target is a privately held firm and insignificant when the target firm is listed on a stock exchange. Furthermore, I find that the acquirer abnormal returns in takeovers of private targets are especially large in stock offers. These results are robust when performing a cross-sectional analysis of acquirer returns for all takeovers, even after controlling for sample selection problems and other factors that could potentially explain the difference in returns. Sample selection is present, but does not explain the return difference. In particular, the larger returns associated with stock offers for private targets cannot be explained by increased monitoring by new shareholders as suggested by Chang (1998), neither does it seem as if the larger returns can be explained by stock payments signaling that the target is undervalued (Hansen's (1987) "contingent-pricing effect").

The evidence that acquirers of private targets on average earn larger abnormal returns compared to acquirers of public targets is consistent with acquirers having a more favorable bargaining situation in takeovers of private targets. The larger returns to acquirers paying with stock could reflect resolution of information asymmetries about the acquiring firm's value, similar to the positive announcement reactions to private placements (see Hertzel and Smith (1993)).

Appendix

Table A1. Variable definitions

Variable		Definition
Two-day CAR	=	The two-day cumulative abnormal return (CAR) from day −1 and day 0, where the announcement day is defined as day 0.
Relative size of the target	=	Book value of the target's total assets / Book value of the acquiring firm's total assets. Measured at the fiscal year-end prior to the takeover announcement.
Total assets	=	Book value of total assets at the fiscal year-end prior to the takeover announcement. Expressed in terms of end-of-1997 million SEK.
Controlling family owner	=	A family owner that is the largest vote owner in the firm.
Vote ownership of controlling family	=	The fraction of votes controlled by a controlling family prior to the acquisition.
Fraction shares exchanged in stock offers	=	The number of shares issued to target shareholders by the acquiring firm/ Total number of shares outstanding after the acquisition.
New blockholder from the target	=	A shareholder of the target firm who has 5% or more of the votes in the acquiring firm after the takeover is completed and who is unaffiliated with any of the acquirers' existing blockholders prior to the acquisition.
Vote ownership of new blockholder	=	The total vote ownership in the acquiring firm by new blockholders from the target.
Related acquisition	=	A takeover in which the acquiring firm and target firm belong to the same industry.
Market-to-book equity	=	Market value of equity / Book value of equity. Measured at the fiscal year-end prior to the takeover announcement.
Leverage	=	Total non-equity liabilities / Total assets (book values). Measured at the fiscal year-end prior to the takeover announcement.
Return on assets (ROA)	=	EBDIT / Total assets (book value). Measured at the fiscal year-end prior to the takeover announcement.
Industry adjusted ROA	=	ROA - median ROA for all public firms operating within the same industry as the firm
Industry adjusted average ROA	=	The average industry adjusted ROA over year −3 to year −1, where year 0 is the year of the takeover announcement

Table A2. Distribution of acquirer and target firms across industries

The full sample is 202 completed takeovers announced 1/1/1990 - 12/31/2000 by firms listed on the *Stockholm Stock Exchange* or the *SBI-list.* The takeovers were identified using the *Förvärv &Fusioner* database for the 1993-2000 time period and using records of stock de-listings from the *Stockholm Stock Exchange* for the 1990-1992 time period (publicly traded targets only). The table presents the distribution of acquirer and target firms across 16 broad industry groups. The industry classification is based on the SNI-classification, which is developed and used by *Statistics Sweden.* The level of detail of the SNI-codes is comparable to that of SIC-codes. Because the number of listed Swedish firms are limited (in the range of 200-400 for a given year in the sample period), the SNI-codes have been used to group the firms into 16 broader industry groups, including one group for conglomerate firms and investment companies, and one group for miscellaneous industries not captured by the other groups. This broader grouping ensures that each industry group contains enough listed benchmark firms for calculation of industry-adjusted operating performance.

	Takeovers of public targets		Takeovers of private targets	
Industry group	Acquirer	Target	Acquirer	Target
Manufacturing of food, beverages and tobacco	2	2	0	1
Manufacturing of pulp and paper	1	0	1	0
Manufacturing of chemicals, plastics, petroleum, and non-metallic mineral products	9	7	3	2
Manufacturing of metal, machinery and equipment	20	32	8	7
Printing and publishing	10	8	1	1
IT and engineering services	35	33	9	10
General services	6	11	1	3
Wholesale trade	15	24	2	4
Retail trade	1	2	1	1
Transportation	3	4	2	2
Construction	5	6	2	3
Real estate	4	6	13	14
Exploration and mining of minerals, oil and natural gas	1	2	0	0
Power utilities	3	3	0	0
Conglomerates and investment companies	26	0	16	11
Other non-financial industries	1	2	1	1
Total number of firms	142	142	60	60

Table A3. Coefficient estimates of the likelihood of a target being private

The table presents the coefficient estimates of the selection function estimated jointly with model (1) in Table 4. The selection function is a model of the likelihood that a target firm is a private firm using target and acquirer firm characteristics as explanatory variables. See Table A1 in the Appendix for variable definitions.

Coefficient estimates of the selection function estimated in conjunction with model (1) in Table 4		
	Dependent variable: Private target =1, Public target =0	
Independent variables	Coefficient	*p*-value
Log (Target age)	-0.045	0.697
Log (Target size)	-0.548	0.000
Target leverage	1.931	0.013
Target average industry adjusted ROA	-1.617	0.356
Log (Acquirer size)	-0.239	0.034
Constant	15.216	0.000

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