

CCGR

Centre for Corporate Governance Research

Research Report

No. 1 / 2008
September

Corporate finance and governance in firms with limited liability: Basic characteristics

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Corporate finance and governance in firms with limited liability: Basic characteristics

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CCGR Research Report 01/2008
September 2008

We are grateful for valuable comments from participants at the 3rd CCGR Workshop, the CCGR Conference on the Corporate Finance and Governance of Privately Held Firms, from William Birkeland, Richard Priestley, for a grant from the CCGR, and for data from CreditInform, Oslo Børs Informasjon, Statistics Norway, and Verdipapirsentralen. Part of this work was conducted while Bøhren was visiting Instituto de Empresa in Madrid and Humboldt-Universität zu Berlin.

Abstract

We analyze a wide range of corporate finance and governance characteristics in all active Norwegian firms with limited liability over the period 1994-2005. This sample includes about 77,000 nonlisted (private) firms and 135 listed (public) firms per year. Nonlisted firms have barely been addressed in the finance literature, despite our finding that they employ four times more people than listed firms, have about four times higher revenues, hold twice as much assets, and constitute over 99% of the enterprises. Indirect evidence suggests that this is also the typical situation worldwide. The unexplored nature of nonlisted firms makes us address a large set of characteristics, and to focus more on describing overall patterns in the data rather than making elaborate tests of behavioral hypotheses.

We find that the size distribution of firms in the economy is close to lognormal, which is consistent with independence between size and growth for the individual firm. Most nonlisted firms are small, but there are still many more large firms in the economy that are nonlisted as opposed to listed. Nonlisted firms have more liquid assets, invest less, but still grow like listed firms of comparable size, possibly because capital constraints cause underinvestment and hence higher marginal returns. Their debt is considerably higher and has shorter duration, which may be due to stronger information asymmetry between borrowers and lenders or to asset-liability matching. Nonlisted firms distribute much more of their earnings once they pay dividends. This may reflect that their owners value dividends more highly due to high transaction costs of selling illiquid stock, and that strong owners of nonlisted firms pay high dividends to reduce expropriation threats to weak owners.

Ownership concentration is much higher in nonlisted firms, particularly when persons control them. Concentration decreases with firm size, but is still very high even in large nonlisted firms. Persons hold most of the equity except in listed firms, where indirect ownership through corporations dominates. Ownership control through pyramids is rare, but holdings that are legally critical for control (i.e., 1/3, 1/2, or 2/3) are widespread.

The typical board is very small, stable over time, and homogenous in terms of gender and stakeholder mix. Larger boards, which are more often found in large, old, listed firms with low ownership concentration, tend to have younger directors, female directors, and employee directors. The much higher insider holdings in nonlisted firms makes the agency conflict between managers and owners negligible. In contrast, the potential conflict between inside and outside owners is large. Listed firms are in the opposite situation.

The operating performance (ROA) is higher when personal ownership is high, the board is small, the CEO is a director, when earnings are paid as dividends, and when the firm is nonlisted. This evidence suggests that personal ownership reduces agency costs more than ownership through intermediaries, that good boards are small boards, and that high dividend payout benefits owners by increasing the liquidity of their wealth and aligning their interests. And, most importantly, these findings show that listing status per se matters not just for corporate finance and governance, but also for the ability to create economic value. An exciting arena for future research is to uncover where this excess performance of nonlisted firms comes from, particularly in a setting where thousands of firms can choose whether to stay private, go public, or to delist.

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1. Introduction

We start this chapter by providing background and motivation for our study in section 1.1. The outline of the study is specified in section 1.2, followed by a summary in section 1.3.

1.1 Motivation

Existing research on corporate finance (Eckbo, 2007) and corporate governance (Becht et al, 2003) is heavily biased towards firms that are listed on a stock exchange (public; widely held) as opposed to nonlisted (private; closely held). There are at least two reasons why. First, listed firms may look more attractive to financial economists because the quality of these firms' behavior may be estimated by their observable market value and not just their book (accounting) value. Second, more is publicly known about listed firms because regulation puts stronger requirements on their information production. In particular, listed firms must produce standardized, audited accounting statements for the general public at least once a year, and data vendors like Compustat and Datastream make such information easily accessible to investors, analysts, and researchers worldwide. In contrast, reliable accounting data for nonlisted firms is much harder to obtain, although recent efforts by Amadeus to build a database for nonlisted European firms is a promising first step. Correspondingly, data on at least some corporate governance mechanisms in listed firms is public information in most countries. In contrast, no broad database exists for the governance mechanisms of nonlisted firms, such as their ownership structure, insider equity holdings, and board composition.¹

This missing research on the corporate finance and governance of nonlisted firms is problematic for at least two reasons. First, nonlisted firms account for a much larger fraction of the macro economy than listed firms. Chapter 5 will show that Norwegian nonlisted firms have in the aggregate four times more employees and sales, twice as much assets, and constitute more than 99% of all limited liability firms in the country. Although we lack comparable data from other countries, the indirect evidence we report will suggest that the relative size of nonlisted firms in the Norwegian economy is also a representative case internationally. Thus, nonlisted firms are probably more significant than listed firms in most other countries as well. Nevertheless, much less is known about how nonlisted firms behave and perform as economic entities.

Second, existing research findings on corporate finance and governance in listed firms may not be valid for nonlisted firm. This is because nonlisted firms seem fundamentally different. We will show repeatedly that listing status correlates systematically with key characteristics of the firm and its environment. For instance, nonlisted firms are less transparent to outside observers, cannot finance themselves in the public equity market, their shares can only be traded at high transaction costs, and their minority stockholders are less protected by regulation. The firms tend to have more concentrated ownership than listed firms of comparable size, higher insider ownership, smaller boards, be more often dominated by families (persons), and more often have their CEO as the chairman. According to the theory of corporate finance and governance, such differences in the firm's environment and governance structure may matter for the firm's behavior, such as its real investments, capital

¹ Amadeus provides data on ownership concentration from 2003 on for most countries they cover and on board composition as of the reporting date. As the reporting of governance data is not mandatory in most of the countries covered by Amadeus, the quality of their governance data is difficult to evaluate.

structure, dividend policy, and risk management. They are also potentially important for the firm's economic performance, such as its growth and return on capital invested.

Apart from addressing these two biases of existing research, access to micro-economic data on nonlisted firms also enables us to better understand the unique features of being listed. For instance, by analyzing the economic history of IPO firms before they go public, one may better understand why some IPO candidates choose to stay private when others go public, and how the pricing at the IPO depends on the firm's pre-listing characteristics. Another example is the role of stock liquidity in dividend policy. As nonlisted firms tend to have less separation between ownership and control than listed firms, their dividend payments are less important both for disciplining management and for signaling growth prospects to outside investors. Rather, dividends may primarily serve as a liquidity provider, since the stock is illiquid and is held by owners with very concentrated wealth. Nevertheless, almost all tests of dividend theories have been limited to listed firms. Finally, by studying boards in both listed and nonlisted firms, one may better understand the mostly ignored tradeoff between a director's conflicting roles as monitor and adviser (Adams and Ferreira, 2007). As the adviser role is probably more important in nonlisted firms because ownership concentration is high and the management team is small, the handicap of independent directors may be more easily observable than in listed firms (Bøhren and Strøm, 2008).²

The comprehensiveness of our data set is also potentially useful per se. First, it may allow the researcher to more precisely describe how a given firm characteristic varies across the full spectrum of firms, such as the shape of the frequency distribution for firm size in the economy. This is important not just for improving the power of statistical tests, but may also help us understand the dynamics of firms and industries. For instance, if a firm's growth is independent of its size, it can be shown theoretically that the distribution of size in a large group of firms is lognormal (Sutton, 1997). Thus, we may test this so-called Gibrat's law either by its assumptions (i.e., check whether size and growth are independently distributed variables) or by its implication (i.e., check whether the frequency distribution of size across firms has a lognormal shape). Either way, we need a large sample of firms and preferably the whole population to test a hypothesis of this kind. The second benefit of more comprehensive data is that it allows the researcher to explore a wider set of corporate finance and governance mechanisms, such as how the relative performance of listed and nonlisted firms depends on the joint impact of a battery of governance mechanisms, e. g., ownership concentration, insider holdings, joint ownership and management by families, and board turnover.

The existing literature has just recently started addressing the corporate finance and governance of nonlisted firms.³ Bennedsen et al (2006, 2007) analyze board size endogeneity and CEO succession using a small number of firm characteristics from a large sample of nonlisted and listed Danish firms. Four recent studies use data from the Amadeus database, which contains 44 accounting variables and some ownership characteristics for samples of listed and nonlisted firms in 40 European countries (chapter 4 provides more details on Amadeus). Giannetti (2003) explores how cross-national differences in capital market development influence the use of debt financing by listed and nonlisted firms. Giannetti and Ongena (2008) analyze how foreign bank entry influences growth and financing across small and large nonlisted firms. Klapper, Laeven and Rajan (2006) study how regulatory restrictions on firm startups influence the entry and exit of firms.

² After Sarbanes-Oxley, the overriding concern in corporate governance codes worldwide is to ensure sufficient monitoring by means of independent directors. As indicated above, this emphasis may be misplaced when the firm is nonlisted.

³ Studying family firms in the US and Europe, respectively, Villalonga and Amit (2006, 2006a) and Maury (2006) describe some of their governance mechanisms, a few corporate finance variables, and relate these characteristics to performance. Despite the fact that almost every family firm in any country is nonlisted, all their sample firms are listed.

Claessens and Tzioumis (2006) use Amadeus data from 19 European countries to describe how blockholdings, asset structure, leverage, and performance vary with listing status in large corporations. This study, which is the one that comes closest to ours, gives a useful first look into how corporate finance and governance characteristics differ between private and public firms within a small subset of the population. However, it also reflects that most of the work remains and that certain of their conclusions are premature. For instance, Claessens and Tzioumis cannot separate outside owners from inside owners, as Amadeus does not provide the latter. This distinction may be crucial for the relationship between governance and performance, at least in public firms (McConnell and Servaes, 1990; Becht et al, 2003). They also ignore board composition, which is known to interact both with other governance mechanisms and with performance (Hermalin and Weisbach, 2003). Also, their conclusion that industrial firms are the most common ultimate blockholders is misplaced. Industrial firms are owned by someone, and ultimate owners can only be identified by going behind potentially several layers of firms in a pyramid until one gets to persons or the state, who are the only ultimate owners by definition (La Porta et al., 2000). Finally, Claessens and Tzioumis (2006) only study large firms, which we will show differ considerably from the typical nonlisted firm in terms of basic finance and governance characteristics.

1.2 Outline

We use three approaches to improve on the situation described in section 1.1:

- i. Build a comprehensive, reliable database on corporate finance and governance characteristics for the population of listed and nonlisted firms with limited liability (*aksjeselskap*).
- ii. Describe these characteristics in an unusually detailed way, letting the firm's listing status (i.e., listed vs. nonlisted) be one of its governance characteristics.
- iii. Analyze how the firm's corporate finance and governance interact with performance.

Differences between listed and nonlisted firm will be highlighted under both item (ii) and (iii), and we pay particular attention to differences between nonlisted family firms and other nonlisted firms under (iii). As we currently lack data on family relationships, we will use personal owners as our proxy for family ownership.⁴

As a joint background for all three components of our study, chapter 2 briefly presents key elements of the existing theory and empirical evidence. We focus on corporate finance and governance differences between listed and nonlisted firms, and on how performance interacts with ownership and board characteristics. Chapter 3 summarizes major regulatory restrictions on corporate governance and on financial reporting.

Part (i) of our study as defined above starts in chapter 4, where we describe the database, which covers all Norwegian firms with limited liability over the period 1994-2005. We call this the CCGR database, since it is financed and operated by the Centre for Corporate Governance Research (CCGR; www.bi.no/ccgr) at the Norwegian School of Management (BI). Unlike in most other countries, Norwegian law mandates every limited liability firm to publish an audited annual report each year. This report consists of a profits and loss statement, a balance sheet with accompanying footnotes, a cash flow statement, the board of

⁴ Data on kinship and marriage will be added to the CCGR database by year-end 2008. This will enable us to determine genuine family relationships in terms of both owners, officers, and directors.

directors report, and the auditor's report.⁵ The firm must also publish the identity of its CEO and its directors, and the fraction of equity held by every owner.

The CCGR database as of September 2008 has 12 years of accounting data on corporate finance (1994-2005) and 6 years of data on corporate governance (2000-2005). There are about 130,000 firms with limited liability in a typical year, rising gradually from about 100,000 firms at the beginning of the sample period to 160,000 at the end. Applying a series of consistency filters, ignoring subsidiaries and instead using the consolidated accounts of their parents, and also requiring all firms to have positive sales, assets, and employment, our sample has on average roughly 77,000 firms per year. About 135 of these firms are listed on the Oslo Stock Exchange. The database has approximately 130 items of accounting data and 80 items of governance data per firm year.

Chapter 5 estimates the macro-economic significance of listed and nonlisted firms in Norway and elsewhere. Chapter 6 overviews the firms' corporate finance characteristics by reporting summary statistics for key variables, such as size, asset structure, capital structure, debt maturity, dividend payout, growth, and return on assets. We also analyze the shape of the frequency distributions for these characteristics, such as the distributional form for size across firms in the economy. Moreover, we relate some of these characteristics to each other and analyze how they depend on the firm's listing status and industry.

Part (iii) of the study is reported in chapter 7, where we first analyze ownership structure in considerable detail. We describe key non-financial governance mechanisms (ownership concentration, owner types, and insider ownership) and relate them to potential determinants, such as firm's size, industry, and listing status. Because our data set includes all firms in the economy, we can describe the ownership structure of any firm in terms of its direct (first-layer) owners as well as its ultimate (all-layers) owners. This means we can trace indirect ownership through all levels of a pyramid and show whether direct ownership is sufficient or whether we need to know ultimate owners, which requires much more comprehensive data.

We describe board composition by a series of characteristics that distinguish one board from another, such as board size, CEO-chairman duality, employee directors, and gender mix. Like for ownership structure, we look for potential determinants, such as the relationship between board size, firm size, and listing status. We complete part (iii) by analyzing how the economic performance of the firm interacts with its corporate governance system, including its listing status. Particular attention is paid to how performance relates to different owner types, such as inside vs. outside owners and personal (family) vs. corporate owners. Chapter 8 provides an overall summary.

1.3 Summary

Existing research on the corporate finance and governance of firms with limited liability is extremely biased towards firms that are listed on a stock exchange. This is probably due to missing public data in most countries regarding nonlisted firms' market value, accounting statements, ownership structure, and board composition. Our study is special because it constructs and analyzes a high-quality database for an unusually wide range of corporate

⁵ As will be explained in section 3.2, small firms can opt out of the cash flow statement. They may also drop some of the footnotes or use simplified accounting rules for complicated transactions or transactions that require particularly difficult estimates, such as leasing obligations, stock-based payments, and financial instruments. Unless audited financial statements are submitted to a central registry within 17 months after fiscal year end, the firm is automatically liquidated by the court (www.brreg.no/presse/pressemedling/2007/04/regnskap_mangler.html).

finance and governance in the population of listed and nonlisted Norwegian firms with limited liability over the twelve-year period 1994-2005.

The lacking economic insight into nonlisted firms is problematic in a macro-economic setting, as we will show that these firms constitute a much larger share of the economy than listed firms. Existing findings from listed firms may also be invalid for nonlisted, which are less transparent, cannot tap public equity markets, and have very illiquid shares. Moreover, we will show that they are often smaller, have much higher insider ownership, and are family-dominated. Theory suggests that such firm characteristics, which are seldom observed in listed firms, matter for behavior and performance. Also, benchmarks from nonlisted firms make it easier to discover the uniqueness of the listed, such as why some choose to go public whereas others prefer to remain private. Existing research has barely addressed such issues.

Chapter 2 sets the stage by presenting key elements of the existing theory and evidence, whereas chapter 3 summarizes the regulation of corporate governance and financial reporting. Chapter 4 describes the CCGR database, which is considerably more extensive than what has been available for research purposes in the past. This is probably because Norwegian law is special by mandating every limited liability firm to publish an audited annual report consisting of a profits and loss statement, a balance sheet with footnotes, a cash flow statement, the board of directors report, and the auditor's report. The firm must publish the identity of its CEO and its directors, and the holdings of every owner. The CCGR database has twelve years of corporate finance data and six years of corporate governance data. Applying several consistency, activity, and double-counting filters, the sample used in our study has roughly 77,000 firms in a given year, of which 134 are listed.

Chapter 5 documents the macro-economic significance of listed and nonlisted firms, and chapter 6 reports corporate finance characteristics, such as asset structure, capital structure, debt maturity, and dividend payout. We relate some of these characteristics to each other and to listing status. Chapter 7 on corporate governance analyzes ownership concentration, owner types, insider ownership, and board composition, and we relate these characteristics to potential determinants. Ownership structure is described by both direct and ultimate ownership. Board composition involves characteristics like board size, director tenure, CEO-chairman duality, board turnover, employee directors, and gender mix. Finally, we analyze how the governance mechanisms interact with performance, paying particular attention to whether listing status per se matters for this relationship.

Every chapter is ended by a short summary, whereas chapter 8 recaptures the major points from all the preceding chapters.

2. Theory and existing evidence

Section 2.1 summarizes theory and empirics on the difference between listed and nonlisted firms, and section 2.2 discusses how corporate governance mechanisms relate to agency costs and economic performance. Since the literature on corporate finance is too comprehensive and often tangential to our study, we refer to the survey by Eckbo (2007) and limit ourselves to issues that are particularly relevant to our setting, such as relationships between financing mix and listing status and the use of dividends as a liquidity provider.

2.1 Listing status

This literature studies the firm's choice between being listed and nonlisted and how the anatomy of corporate finance and governance differs between listed and nonlisted firms. We start by summarizing the most important theory.

One stream of the literature analyzes the advantages listed firms offer their owners through better stock liquidity, increased diversification opportunities, and more efficient risk-sharing (Pagano, 1993; Admati, Pfleiderer and Zechner, 1994). Agency theory argues that if listed firms have less concentrated ownership than nonlisted firms, these liquidity and risk benefits may be offset by the cost of reduced monitoring incentives (Coffee, 1991; Bhidé, 1993). However, Bolton and von Thadden (1998) and Maug (1998) show that even moderate ownership concentration produces a positive net listing benefit.

Burkart, Gromb and Panunzi (1997) and Pagano and Roell (1998) study the optimal level of monitoring under tradeoffs between closer monitoring and lower management incentives. This setting is particularly relevant for firms with powerful owners and professional managers with low equity-based incentives. The authors show that high ownership concentration, which is more prevalent in nonlisted firms, may produce excessive monitoring, as tight outcome control by active owners reduces the manager's incentive to exert effort.

Recent work by Boot, Gopalan and Thakor (2007) integrates several of these ideas by showing that stock liquidity is a two-edged sword. In their model, different owners may have different views on the firm's best strategy, and managers may also differ from each other in terms of beliefs and abilities. The authors show that the major determinant of optimal listing status in such a setting is the cost and benefit of having a liquid stock.

According to their model, the benefit of being listed is the reduced cost of capital caused by the owners' ability to trade their shares at low transaction costs. This liquidity is costly, however, as high liquidity allows the ownership structure to change more easily. The resulting higher uncertainty about future ownership structure exposes management to more unpredictable owner intervention and hence to a more random level of alignment between managers and owners. This potential mismatch reduces managements' incentives to exert effort and hence lowers the value of the firm. In contrast, although nonlisted firms have a higher cost of capital due to an illiquid stock, agency costs are lower due to a more stable ownership structure and accordingly a better fit between the beliefs of managers and owners.

Stated differently, being listed is costly because the current employment contract for the manager can only reflect an expectation of what different future owners consider the optimal degree of management discretion. The employment contract in a nonlisted firm with a stable ownership structure can handle any discrepancy between the beliefs of owners and managers by tailoring the level of managerial flexibility to the known and stable differences in beliefs.

Thus, Boot, Gopalan and Thakor (2007) posit that the optimal listing status involves a tradeoff between the cost and benefit of liquid ownership rights. The new insight is that because higher liquidity makes the ownership structure more unpredictable, governance costs increase. The authors also show that being nonlisted is more attractive the lower the market price of the stock, and the higher the volatility of this price. Although the model ignores the out-of-pocket listing costs and also the free-riding cost in firms with low ownership concentration, adding these costs to their model would increase the benefit of being nonlisted.

To conclude, the theoretical literature on listing status suggests that the benefits of being listed consist of lower transaction costs, better diversification opportunities, and improved risk-sharing in the market for ownership rights. The costs are out-of-pocket listing expenses, reduced monitoring, and less tailor-made employment contracts.

Switching to empirics, no existing study relates directly to the theories on listing status as summarized above. However, two papers come reasonably close. Analyzing the announcement return to bidders in acquisitions across 17 Western European countries, Faccio, McConnell and Stolin (2006) distinguish between transactions involving listed targets and nonlisted targets. They find no excess bidder returns when the target is listed, but a significantly positive return of 1.48% with nonlisted targets. Similar bidder return differences have been documented in US acquisitions (Moeller, Schlingemann and Stulz, 2004).

Officer (2007) takes the next step by exploring the determinants of abnormal bidder returns when the target is nonlisted. The sample is US firms where a listed parent sells its nonlisted subsidiary. He finds that the acquisition discount for a nonlisted target depends on the seller's liquidity constraint. First, the discount is larger the more liquidity-constrained the seller prior to selling. Second, it is larger the more costly the seller's debt and the lower its stock return the year before the sale. Officer (2007) concludes that the price obtained when selling a nonlisted firm is lower the more serious the seller's liquidity problem. This effect is stronger when the asset being sold is illiquid as well, such as the shares of a nonlisted firm.⁶

Giannetti (2003), Claessens and Tzioumis (2006), Klapper, Laeven and Rajan (2006), and Giannetti and Ongena (2008) all use data from the Amadeus database, and they all study nonlisted firms in many European countries. Only Giannetti (2003) and Claessens and Tzioumis (2006) address the role of listing status.⁷ Giannetti (2003) analyzes how the legal protection of creditor rights in a country influences the firms' capital structure and debt maturity. She finds that firms use more debt when equity markets are less developed, and that stronger creditor rights protection improves the ability to finance intangible assets with debt. Moreover, for a given level of creditor rights protection, nonlisted firms have more debt and shorter debt maturity than listed firms. Giannetti concludes that stronger protection of creditor rights primarily benefits nonlisted companies.

Claessens and Tzioumis (2006) is the only paper we know that describes corporate finance and governance differences between listed and nonlisted firms at any length. They analyze how blockholdings, assets, leverage, and performance correlate with listing status in large corporations across 19 European countries. The authors find that in most countries except in Eastern Europe, nonlisted firms more often have majority blockholders. Unlike in

⁶ What happens if the bidder is nonlisted? According to Bargaron et al. (2007), the announcement gain to target shareholders is significantly lower when the bidder is privately held. However, this effect is driven by the fact that management owns a higher equity fraction in nonlisted bidders than in listed bidders. Thus, the key in their sample is the difference in managerial incentives for the bidder rather than listing status per se.

⁷ Klapper, Laeven and Rajan (2006) study how regulatory restrictions on market entry influence the characteristics of new firms and the growth of incumbent firms. Giannetti and Ongena (2008) analyze how the entry of foreign banks in Eastern European countries changes the financing and growth of nonlisted firms.

listed firms, the most common ultimate owner of a block in nonlisted firms is not a family, but an industrial firm. Moreover, nonlisted firms have on average more intangible assets, higher asset turnover, and more debt financing. Finally, controlling for country, industry, size, and age, they find that in 644 matched pairs, nonlisted firms have lower EBIT and higher returns on assets and equity. As we argued in section 1.1, however, some important unresolved questions remain in this study. First, Claessens and Tzioumis do not distinguish between inside and outside owners, do not identify families as an owner type, and ignore board composition. The obvious reason is that Amadeus does not contain such data. Second, their conclusion that industrial firms are the largest ultimate owner is misleading, as industrial firms are not ultimate owners. To find such owners, one needs to eliminate all intercorporate shareholdings, which requires access to the population of firms in the economy.⁸

2.2. Corporate governance mechanisms

Agency costs are driven by potential conflicts of interest between the firm's stakeholders (Jensen and Meckling, 1976; Shleifer and Vishny, 1997; Tirole, 2001; Becht et al., 2003). In our setting, it is particularly useful to decompose this overall agency problem into the first and the second agency problem, respectively (Villalonga and Amit, 2006). The first agency problem concerns potential conflicts of interest between owners and non-owners, such as stockholders vs. managers. The second agency problem is due to lacking unanimity between owners with unequal power, such as majority vs. minority owners.

It is generally believed that whereas the first agency problem produces the more serious cost in listed firms, the second dominates in the nonlisted (La Porta et al., 2000, Faccio et al., 2001; Villalonga and Amit, 2006). This is because each stockholder tends to be small in listed firms, both relative to managers and to each other. Thus, the monitoring and incentive problem between owners and managers is major, whereas the potential conflict between majority and minority stockholders is minor. In contrast, because owners are thought to have larger stakes in nonlisted firms, they are less at the mercy of managers (i.e., the first agency problem is minor). However, the controlling owners may more easily induce decisions that benefit themselves at the minority's expense (i.e., the second agency problem is major).

Corporate governance mechanisms are vehicles for reducing agency costs, i.e., tools for reducing the value destruction caused by the first and the second agency problem. We classify these mechanisms as ownership structure (2.2.1), board composition (2.2.2), financial policy (2.2.3), endogeneity and optimality (2.2.4), and corporate environment (2.2.5). Each section outlines the major theoretical ideas and summarizes key empirical findings, focusing on the relationship between economic performance and the governance mechanism in question. Much more comprehensive expositions are available in the surveys of Shleifer and Vishny (1997) and Becht et al. (2003).

⁸ As Claessens and Tzioumis (2006) use the Amadeus classifications, it seems Amadeus does not track down ultimate owners through the full ownership pyramid, but stops at the second layer due to lack of ownership data for all firms in the economy. Moreover, Amadeus reports ultimate owners' control rights, but not their cash flow rights. Finally, it seems Amadeus reports ultimate owners by what they call total ownership. Whether or not this item is reported for a given country seems to depend on whether Amadeus' national data supplier produces such data. For instance, Amadeus does not report total ownership for Norway, which may be because their Norwegian data provider (CI) does not estimate this variable.

2.2.1 Ownership structure

This section discusses three basic ownership dimensions within a governance-performance framework, which are concentration, types, and insiders, respectively.⁹

We distinguish between inside ownership (i.e., equity holdings by the firm's directors and officers) and outside ownership (i.e., equity holdings by owners who are neither on the board nor on the management team). The important point to notice about outside ownership concentration is that its theoretical relationship to performance is unclear. This is because ownership concentration reflects the net impact of several benefits and costs which are hard to rank *ex ante*. Outside owners with high equity stakes may be beneficial by ensuring that the principals have sufficiently strong incentives and power to monitor their agents, and by reducing the free-riding by small shareholders. These benefits make the seriousness of the first agency problem fall as ownership concentration increases.

The costs of concentrated ownership are reduced liquidity of the stock, lower diversification benefit for the large owner, increased majority-minority conflicts, and reduced management initiative due to excessive monitoring. This makes the second agency problem more serious as ownership concentration grows. Since theory cannot specify how the sum of the two agency costs varies with ownership concentration, the shape of the relationship between outside ownership concentration and performance must be determined empirically.

Empiricists measure ownership concentration by either the Herfindahl index,¹⁰ the fraction held by the largest owner, or by the aggregate holding of several large owners, such as the three largest. Performance is normally measured by Tobin's Q or by book return on assets (ROA). Among the 33 empirical ownership-performance papers from 1932 through 1998 surveyed by Gugler (2001), 27 deal with outside concentration. They mostly find either a positive or no link between outside concentration and performance. Recently, however, Lehmann and Weigand (2000) estimate a negative relationship in German listed firms. Bøhren and Ødegaard (2006) find the same result in Norwegian listed firms over 1989-1997.

Agency theory argues that for given ownership concentration, owner type matters because the identity of powerful owners makes a difference for how governance is executed. Direct ownership represented by personal investors is considered a better monitoring and incentive vehicle than indirect ownership, where widely held corporations or the state invest other people's money. It has still been argued that indirect ownership through institutions may outperform ownership by persons, provided the institutions' lower monitoring costs due to higher professionalism dominate the negative incentive effect of delegated monitoring. Finally, since foreign investors may be informationally disadvantaged relative to national investors, they may primarily invest abroad to capture diversification benefits rather than to improve governance. Thus, it has been argued theoretically that because increased holdings by foreigners reduce monitoring quality, performance may suffer. The empirical evidence on the role of owner identity is mixed, and Gugler (2001) considers the issue as remarkably

⁹ The governance literature has mostly ignored ownership duration, where the issue is whether the holding period of influential owners matters for the firm's performance (Bøhren et al., 2008). Since our data set is probably too short to analyze ownership duration properly, we will ignore it except by referring to the non-documented popular opinion that controlling shareholders in family firms often hold their shares longer than other owner types.

¹⁰ The Herfindahl index is the sum of squared equity fractions across all the firm's owners or a subset of them. It has a maximum of one when a single investor owns everything and approaches its minimum of zero as the ownership structure gets increasingly diffuse.

unexplored. In general, the answer is still open as to how owner type interacts with performance. The exception is family ownership, which we discuss separately below.

The primary governance role of outside owners is to monitor management from a distance, including the use of hands-off strategies like voting by foot. In contrast, inside ownership concentration reduces the need for such indirect control, as owners are directly involved with the firm's strategic decision-making in the board room. Thus, compared to outside ownership, inside ownership addresses the first agency problem more directly and comprehensively. The convergence-of-interest hypothesis predicts that insider holdings and economic performance are positively related (i.e., reduces the first agency problem). On the other hand, powerful insiders may entrench themselves and expropriate wealth from outside owners (i.e., the second agency problem grows). However, as insiders carry a larger fraction of destructed market value the higher their stake, the threat of expropriation may diminish as the insider stake becomes sufficiently large. Consequently, like for outside concentration, governance theory cannot specify the relationship between insider ownership and performance without a priori restrictions on each separate cost and benefit.

Four of the six empirical insider papers surveyed by Gugler (2001) find a non-monotone relationship between performance and insiders. Performance increases with insider holdings at low insider stakes, then decreases, then either still decreases, slightly increases or stays constant. Like McConnell and Servaes (1990) find for US firms, Bøhren and Ødegaard (2006) find that the relationship between insider holdings and performance for Norwegian listed firms increases with insider holdings up to around 40% and then decreases. This is consistent with the notion that the first agency problem dominates at low insider holdings, the second dominates at high, and that the sum of the two is lowest around 40% insider holdings.

Family ownership involves both ownership concentration, owner type, insider owners, and management. By definition, family firms are dominated by a family, either through ownership, directorship, management, or some combination. Thus, the first agency problem is small in family firms, as ownership concentration is high, ownership is executed directly rather than through intermediaries, the large owner is often on the board, and this owner may also be the CEO. Thus, family owners are good owners relative to the first agency problem, provided this benefit is not offset by a tendency to recruit officers and directors based on kinship and marriage rather than competence. The second agency problem works against the family firm, however, as their owners are not just large, but may also be an unusually coherent group. This may make it particularly difficult for small shareholders to protect their rights. Thus, the first agency problem is minor in family firms, but the second is potentially more serious than elsewhere.

Within the subsample of listed firms, family firms are at least as common as other firm types around the world (Faccio and Lang, 2002). Still, the empirical literature on the governance and performance of listed family firms counts less than ten papers in the leading finance journals over the last ten years (Claessens et al., 2000; Anderson and Reeb, 2003; Cronqvist and Nilsson, 2003, Maury, 2006; Villalonga and Amit, 2006; Bennedsen et al., 2007). These papers mostly find that family firms outperform non-family firms in terms of market value. Thus, the benefit of a minor first agency problem seems to dominate the cost of a major second agency problem. However, Villalonga and Amit (2006) show in their sample of very large US family firms that the existence of a superior market valuation depends critically on the family's role in ownership, control, and management. First, history matters, as superior performance is only found in the first generation. Compared to similar non-family firms, family firms in the second generation are underperforming, whereas third and later generation family firms are like other firms. Second, the founder is critical, as abnormal value

creation only happens when the founder is either the CEO or a chairman monitoring a professional CEO. Typically, the equity of first generation family firms with active founders is worth 25% extra, but family ownership without active board or management involvement produces no excess value, even in the first generation. Third, mechanisms that separate ownership from control, such as pyramids and dual class shares, destroy market value.

Using a sample of listed firms from 13 Western European countries, Maury (2006) finds that higher market value for family firms is limited to countries with high minority protection, and to firms where the family does not have majority control. This is consistent with findings by Faccio et al (2001) from Asia, supporting the notion that sufficiently weak minority protection makes the second agency problem dominate the first. However, Maury finds that book returns on assets is higher in family firms regardless of minority protection, provided the family holds at least one top officer position. Also, unlike for market value, profitability is stronger the more the active family owns.

Overall, the limited empirical evidence mostly shows that listed family firms have higher book returns to capital invested than other listed firms. This suggests that the sum of private benefits and security benefits is higher in family firms than elsewhere. In contrast, the market value of these firms, which only reflects the security benefits shared by all stockholders, is not higher unless the family provides certain combinations of ownership, control, and management. In particular, the market value benefits if the family is not too strong relative to the other owners, if the family takes officer and director positions, and, most importantly, if the founder is actively involved. This is consistent with the basic agency idea that firms are more efficiently run when the first agency problem is small, and that the second agency problem reduces market value when powerful stockholders capture a high portion of the underlying value creation in terms of private benefits.

2.2.2 Board composition

The board structure may matter for performance by influencing the alignment of interest between principals and agents, the production of information for the directors' monitoring and advice functions, and for the board's effectiveness as a decision-maker. As for interest alignment, having owners on the board concerns insider ownership, which we discussed in section 2.2.1. Alignment may also depend on director independence, the argument being that independent directors may be better monitors, but weaker advisors. Regarding information production, directors with multiple directorships may provide valuable information networks to other firms, but may also become too busy. Finally, decision-making effectiveness concerns the costs and benefits of a heterogeneous board. Increased diversity may be obtained by increased board size, gender mix, age differences, and more employee directors. The cost of such diversity is less focus, higher conflict levels, and longer decision-time.

The empirical state of the art is reflected reasonably well by a recent study of all boards in Norwegian listed firms from 1989 to 2002 (Bøhren and Strøm, 2008). The authors find that owners on the board (alignment) and directors with multiple directorships (information) relate positively to performance. Increased diversity produced by larger board size, more gender mix, and more employee directors (effectiveness) all correlate negatively with performance. No significant link exists between independence and performance, supporting the notion that although more independence increases monitoring incentives, it reduces management's willingness to share private information with the monitors. The negative association between board size and performance and the lacking relationship between independence and performance are also robust empirical results internationally.

2.2.3 Financial policy

The firm's financing and dividend decisions can be used to limit management discretion over free cash flow. In particular, investments may be financed with debt rather than equity, and earnings may be paid out as dividends rather than retained in the firm (Easterbrook, 1984; Jensen, 1986). Thus, owners may reduce agency costs through high leverage and high cash payout. This governance mechanism is particularly useful for outside owners, who are often unable to monitor management closely. Inside owners are in a different position, as they can exert control closely in the board room rather than just block management's access to corporate resources by forcing cash flow out of the firm as dividends or debt repayment (Khan et al., 2006). On the other hand, inside owners can use high payout to reduce the second agency problem. Thus, the use of financial policy as a disciplining mechanism may depend on the ownership structure in general and the mix of owner types in particular.

Except for Agrawal and Knoeber (1996), who model the debt to equity ratio as one of seven governance mechanisms, existing research tends to treat financial policy as control variables that reflect governance-independent determinants of performance, such as the interest tax shield. There is no clear empirical evidence that corporate finance variables are used as disciplining mechanisms along the lines suggested by corporate governance theory.

2.2.4 Endogeneity and optimality

We have thus far described many corporate governance mechanisms and argued that they may matter for performance. This raises two questions which are particularly relevant in empirical tests. The first is whether governance mechanisms are endogenous or exogenous, both relative to each other and to performance. The second is how an optimal governance structure can be detected in the data.

Governance mechanisms may substitute or complement each other. For instance, high dividend payout may be less important when insider ownership concentration is high (substitutes), and gender diversity may be easier to obtain when the board is large (complements). This makes governance mechanisms endogenous relative to each other. They may also be endogenous relative to performance, which happens when causation runs from performance to governance rather than just the other way, which we have assumed so far. Such reverse causation may for instance occur when firms with high performance attract particular owner types, as opposed to when certain owner types make the firm perform well.

Either way, endogeneity makes empirical tests more challenging. First, single-equation models have performance as the dependent variable and governance mechanisms and control variables as independent variables. Therefore, internally related governance mechanisms create multicollinearity, which may bias the tests towards too seldom finding significant relationships between governance and performance. Thus, one should ensure that failure to reject the null hypothesis is not due to endogenously related governance mechanisms.

The second challenge is that single-equation models are generally misspecified when the independent variables are endogenous. The relationship is better described as a system of equations, where mechanisms and performance alternatively appear as independent and dependent variables in the different equations. However, as theory has little to say about the relationship between the governance mechanisms, there are few *ex ante* arguments for restricting coefficients and choosing instruments in a systems estimation. Thus, although single-equation models are known to be misspecified, a system approach is not an obviously better alternative. With access to a time series, like in the CCGR database, a better option

may be to lag the independent variables by regressing performance on governance mechanisms from a previous period. We will follow such an approach in chapter 7.

The single-equation approach has also been criticized by Demsetz (1983), but for a different reason. He argues that if governance mechanisms are optimally installed, every mechanism satisfies the zero marginal value condition. This means small changes in any mechanism leaves firm value practically unaltered. Moreover, the set of optimal governance mechanisms may vary from firm to firm, depending on governance-exogenous characteristics like risk and size. Thus, the equilibrium condition implies that no governance mechanism is significantly related to performance in a cross-section. Conversely, Demsetz argues that significant relationships reflect disequilibrium and a potential for value improvement.

Coles et al. (2007) question the validity of this idea by showing that when managerial ownership is optimally tailored to the productivity of management and capital, reasonable parameter values produce a quadratic cross-sectional relationship between managerial ownership and Tobin's Q. Thus, the curve is not horizontal, as suggested by Demsetz' logic. Moreover, the equilibrium hypothesis assumes every governance mechanism can be chosen freely, which is not the case in practice. For instance, any Norwegian firm with more than 200 employees must choose one third of its directors by and from its employees, no investor can hold more than 10% of the equity in a bank, and every listed firm must have at least 40% of each gender among its directors from 2007 on. Thus, as regulation may force governance mechanisms away from their free optimum, the equilibrium hypothesis cannot be used to argue that the expected coefficients are zero in a regression of performance on governance.

2.2.5 Corporate environment

The governance mechanisms considered so far are specific to the investor, such as owner type, or specific to the firm, such as dividend payout. However, these mechanisms and their relationship to performance may also be driven by exogenous factors in the firm's environment. Two such factors are legal regime and competition, respectively.

La Porta et al. (2000) initiated a new research tradition in governance by arguing theoretically and showing empirically that the ownership concentration in a country depends on how well the legal regime protects owners in general and minority owners in particular. The evidence is generally consistent with the idea that legal protection and ownership concentration are substitutes. However, since we analyze governance differences between firms within a given country, legal regime per se plays no role in our study.¹¹

Competition may influence not just the governance mechanisms, but also their relationship to the firm's performance. In particular, competition in the firm's product, labor, and takeover market may act as substitutes for the governance mechanisms discussed so far. The general idea is that more competition reduces admissible inefficiency, including bad management. Product prices move closer to marginal production costs in the most efficient firm as competition gets tougher, making it harder for any firm to survive. Conversely, monopoly power enables inefficient firms to persist. Thus, regardless of the firm's governance system, i.e., the specific design of its ownership structure, board, and financial policy, competition disciplines management towards making value-maximizing decisions.

¹¹Norway has a civil law regime, which generally provides weaker owner protection than common law. Nevertheless, the protection of ownership rights in Norway is better than in the average common law country (La Porta et al., 2000). This may be one reason why Bøhren and Ødegaard (2001) find that Oslo Stock Exchange firms in the period 1989-1999 have less concentrated ownership than any other European country except the UK. For instance, the average holding of the largest owner in a listed firm in the mid-1990s was 3% in the US, 14% in the UK, 45% in continental Europe, and 30% in Norway.

This means the firm's governance system will only matter for managerial effort when competition is soft. Thus, the competition argument predicts that the relationship between corporate governance and performance is weaker the stronger the competition.

Several attempts at formalizing this intuitive idea have shown that the theoretical relationship between competition and managerial effort is ambiguous.¹² However, the very limited empirical literature supports the basic intuition. Palmer (1973) finds that the relationship between ownership structure and performance in US manufacturing firms is stronger the higher the firm's market power. Giroud and Mueller (2007) study what happens to the performance of US firms when takeover threats are reduced through new antitakeover provisions at the state level. They find that in industries with strong product market competition, neither the firm's market value nor its operating performance changes as the takeover threat falls. In contrast, firms in non-competitive industries experience both abnormally low stock returns at the announcement of the new law and reduced operating performance once the law is in effect. These findings suggest that the significant relationship between governance and performance found in the literature over the years may be driven by firms in non-competitive industries. Giroud and Mueller conclude that future tests of the governance-performance relationship should include competition as a control variable.

2.3 Summary

The academic literature on listing status studies the decision to go public and how the firm's corporate finance and governance depends on the listing status. The theory posits that the listing benefit consists of lower transaction costs, better diversification opportunities, and improved risk-sharing. The costs are the out-of-pocket listing expense, reduced monitoring activity, lower private benefits, and less tailor-made incentive contracts. Data from the US show that nonlisted targets create more wealth for bidders than listed targets, and more so the less liquid the seller of the target and the assets of the target. Nonlisted European firms have more blockholders than listed firms, more intangible assets, more debt, and shorter debt maturity. The literature on listing status is very limited, probably due to the lack of data for the listed firm's pre-listing period and for the vast majority of firms that choose not to list.

The first agency problem concerns conflicts of interest between owners and non-owners, whereas the second is due to lacking unanimity between owners with unequal power. Corporate governance mechanisms are tools for reducing the value destruction caused by these two agency problems. The mechanisms we discuss are ownership structure, board composition, financial policy, and disciplining forces in the firm's environment.

Ownership structure reflects outside ownership concentration, owner type, and inside ownership. The theory specifies costs and benefits of ownership concentration, but not their net effect on performance, which can so far only be determined empirically. The theory on owner types posits that direct monitoring through personal ownership is better than indirect ownership through intermediaries. Generally, the first (second) agency problem is expected to be more (less) serious the lower the ownership concentration, and personal ownership will have a stronger effect than indirect ownership under either one.

¹² More competition always produces stronger incentives for agents to work harder. This is because more competition reduces profits, increases the liquidation risk and reduces the value of firm-specific investment in human capital. On the other hand, as more competition produces lower product prices and thereby erodes the value of cost-reducing efforts, it may be optimal for the principal to induce less effort by the agent. Schmidt (1997) shows that the net effect of these two opposing forces is ambiguous. The empirical IO literature tends to find an inverted U-shaped relationship between competition and innovation. The strongest effect of competition on effort occurs in oligopolistic markets, such as computers and automobiles.

The empirical literature on ownership focuses exclusively on listed firms and mostly finds a positive or no link between outside ownership concentration and performance. The evidence on owner identity is mixed and underexplored, and insider ownership mostly correlates positively with performance up to insider holdings around 40% and negatively thereafter. This is consistent with the notion that the first agency problem dominates at low insider stakes, the second at high, and that their net cost is lowest somewhere in between.

Family ownership involves ownership concentration, owner type, insider ownership concentration, and management. The first agency problem is particularly small in family firms, but the second may be more serious than elsewhere. The evidence mostly shows that listed family firms have higher book returns to capital than other listed firms, suggesting that the sum of private benefits and security benefits is highest in family firms. In contrast, the market value, which only reflects the security benefits shared by all owners, is only higher if the family is moderately strong relative to the other owners, if the family takes officer and director positions, and, most importantly, if the founder is active. This is consistent with the notion that firms are more efficient when the first agency conflict is small, and that the second agency conflict destroys market value when strong owners reap large private benefits.

The board structure may influence the alignment of interest between principals and agents, the production of information for monitoring and advice, and the board's decision-making effectiveness. The evidence suggests that owners on the board (interest alignment) and directors with multiple directorships (information production) relate positively to performance. In contrast, increased diversity through larger board size, more gender mix, and more employee directors (effectiveness) correlate negatively with performance. No significant link exists between independence and performance. Thus, good boards are small and have members with high ownership stakes, wide networks, and homogenous background.

Owners may lower the first agency problem through high leverage and high cash payout, as this financial strategy reduces the free cash flow and thereby management's possibility to finance value-destroying projects. This governance mechanism is particularly useful for outside owners, who cannot monitor management in the boardroom. However, there is no clear evidence that corporate finance variables are consistently used for such purposes.

Estimating governance-performance equations in practice is not straightforward. First, governance mechanisms may substitute or complement each other and hence be internally related. They may also be endogenous relative to performance, creating reverse causation. Such endogeneity may produce multicollinearity and misspecifications in single-equation models, whereas a system of equations is difficult to estimate due to a weak theoretical rationale for choosing instruments in the system. Thus, although single-equation models are known to be misspecified, a system approach is not necessarily better. This is why we will utilize the time series nature of the CCGR database by using single-equation models, but regress performance on governance mechanisms that are not contemporaneous, but from a previous period. Second, it has been argued that if governance mechanisms can be chosen freely and are optimally installed, equilibrium implies that no governance mechanism relates significantly to performance in a system of equations. This argument is weakened by the fact that governance mechanisms in every country are subject to regulatory restrictions.

Competition may substitute for governance mechanisms that are specific to the investor or the firm. Thus, regardless of the firm's ownership structure, board composition, financial policy, and listing status, competition may discipline management towards making value-maximizing decisions. Recent empirical tests support this intuition by showing that the stronger product market competition weakens the link between performance and governance.

3. Institutional framework

This chapter summarizes major regulatory restrictions on the governance (section 3.1) and the financial reporting practice (section 3.2) of Norwegian firms with limited liability. Regulatory differences between listed and nonlisted firms are discussed as we go along.

3.1 *The regulation of corporate governance*

The legal tools for influencing a firm's governance system consist of the two corporate laws (*Aksjeloven* and *Allmenaksjeloven*), the securities law (*Børsloven*), the listing requirements of the Oslo Stock Exchange (*Børsforskriften*), and the Corporate Governance Codes issued by the Oslo Stock Exchange (*Norsk anbefaling for eierstyring og selskapsledelse*).¹³ This section describes this judicial regime from a corporate governance perspective. Our discussion of how listed firms are regulated draws heavily on Bøhren and Ødegaard (2000, section 2.2).

We start by clarifying the differences between the two alternative legal forms of a limited liability corporation. Subsequently, we discuss the role of the fiduciary duty, the regulation of the stockholder meeting, legal restrictions on board composition, mechanisms for separating cash flow rights from voting rights, regulatory protection of minority stockholders, and the reporting and disclosure system for ownership.

3.1.1 *The legal form*

The corporate law from 1976 was changed by an amendment in 1996 stating that a limited liability firm can be an AS (*aksjeselskap*) or an ASA (*allmennaksjeselskap*).¹⁴ An ASA must have a share capital of at least 1 million NOK. A listed firm must be an ASA, whereas a nonlisted can always choose the AS form, where the minimum share capital is 0.1 million NOK. Further regulatory differences between these two legal forms will be clarified throughout this chapter. By year-end 2005, only 446 of the 157,710 Norwegian firms with limited liability were organized as an ASA. 165 of them were listed.

3.1.2 *The fiduciary duty*

Unlike in the US, but consistent with the European stakeholder idea of the firm (Allen, Carletti and Marquez, 2007), there is no law, public regulation or consistent legal practice giving the board and the management team an explicit duty to maximize share value. On the other hand, no regulation obliges the firm to prioritize other stakeholders than owners or to trade off conflicts of interest between stakeholders in specific ways, such as rules for handling lacking unanimity between owners, creditors, and employees. Therefore, owners cannot rely on the courts to enforce equity value maximization. Nevertheless, the general disciplining pressure on professional managers towards equity value maximization has probably increased over our sample period, both for listed and nonlisted firms. This is due to a growing use of earnings-, stock-, and options-based incentive contracts and also to the trend in Europe and Asia to challenge the stakeholder idea by the narrower stockholder approach to corporate governance. This tendency is evident worldwide in the corporate governance codes,

¹³Aksjeloven, Allmenaksjeloven, Børsloven, and Børsforskriften are available at www.lovdato.no. The Corporate Governance Codes can be downloaded at www.oslobors.no/ob/norskeselskaper.

¹⁴ This amendment is referred to as law no. 80 of 1995 and was introduced to align Norwegian corporate law with EU law.

which have been issued by more than 50 countries and mostly by stock exchanges (see www.ecgi.org/codes/all_codes).

Corporate governance codes make explicit recommendations beyond the mandatory limits set by the law. In particular, they make normative statements on issues like the structure of the shareholder meeting, the board of directors, and the management team. Firms listed on the Oslo Stock Exchange (OSE) must publish a statement in their annual report specifying item by item whether or not the firm complies with the OSE governance code. Non-compliers are expected to give a valid reason. This is called the principle of comply-or-explain. Like in other countries, the OSE code focuses on owners as the key stakeholder, and the recommendations mostly try to ensure that shareholder interests are met.

There is no governance code for nonlisted firms. Chapter 7 will show that their governance system is fundamentally different from what it is in listed firms. This means the nature of the agency problem is also different. Hence, good governance structures in listed firms may be bad in nonlisted firms and vice versa. Also, because so little is known about how governance and performance interact in nonlisted firms, making governance codes for such firms is premature from an academic point of view.

3.1.3 The stockholder meeting

Any owner can put items on the agenda for the regular stockholder meeting (*generalforsamling*). Owners with at least 5% of the cash flow rights in an ASA (10% before 1999) and 10% in an AS can force an extraordinary stockholder meeting. As voting rules apply to attending owners rather than all owners, ownership without presence has no power. Companies with less than 20 owners are not required to have standard-form stockholder meetings. Instead, the board may mail the issues to the shareholders, who in turn vote by mail. Stockholders cannot vote by mail in any other companies.

Changes in the corporate charter (*vedtekter*) require a 2/3 super-majority, whereas most other issues need simple majority (1/2). Non-voting shares are not powerless relative to voting shares in charter amendments. Although there must be a super-majority of 2/3 of the voting shares is required, there must also be a 2/3 super-majority among *all* shareholders as well. According to this second requirement, non-voting shares have full power.

3.1.4 The board

Limited liability firms with more than 200 employees must have a two-tiered board unless a majority of the employees vote against it. Firms with 200 employees or less can still have a two-tiered board if owners and employees agree.¹⁵ The supervisory board (*bedriftsforsamling*) elects the regular board (*styre*) and makes the final decision on significant new investments and rationalizations which reduce the number of employees.

If the firm employs more than 200 people, one third of the directors in both boards must be elected by and from the employees. The use of labor representation presupposes a majority vote among the employees if the firm employs less than 201.¹⁶ This lower bound and the flexible system for firms passing the bound means that many quite large firms have no employees on the board. Also, the fraction of employee directors will vary considerably in firms where employees are on the board. All votes in both boards are on a one-person-one-

¹⁵ The newspaper, shipping, petroleum, and financial services industries are exempted from the two-tiered board regulations.

¹⁶ Employees may elect up to one third of the directors and at least two directors if the firm employs between 51 and 200. Labor may also elect one director in firms with more than 30 and less than 51 employees.

vote basis except when the charter assigns double voting rights to the chair. Therefore, even though the two-tier system assigns formal voting rights to employees, the decisive power is still in the owners' hands, since they never have less than 2/3 of the votes.¹⁷

The CEO cannot be the chairman if the share capital is at least 3 million NOK. As of the end of 2007, the board of all ASA firms must have at least 40% of each gender among its stockholder-elected directors. There is no corresponding gender rule for employee directors.

3.1.5 Cash flow rights and voting rights

One-share-one-vote is the basic principle in the corporate law. However, the law opens up for two exceptions which enable the firm to separate ownership (cash flow) rights from control (voting) rights by, provided the exceptions are stated in the corporate charter. First, an ASA can issue up to 50% of its shares as non-voting. There is no upper limit for an AS. Second, firms may write voting right restrictions into the charter.¹⁸

There is no general regulation on voting restrictions (*stemmerettsbegrensning*).¹⁹ Stockholders may increase their power by establishing voting pacts (*aksjonæravtale*) with each other, which is only regulated to a limited extent. If a listed firm is aware of a voting pact between its shareholders, it must file the pact with the OSE. As the parties themselves have no filing obligation, however, public information on voting pacts from the OSE is rather useless. Moreover, the charter may rule that shareholders with a voting pact are considered one shareholder. In private communications with former and current OSE officials, we are told that voting pacts in Norwegian listed firms are rare. Hence, this lack of data may not seriously limit our ability to capture a realistic picture of separation in listed firms. However, we lack reliable information about the use of voting pacts in nonlisted firms. Finally, a stockholder may transfer voting right to others by proxy votes (*fullmakt*). There are no restrictions on the use of proxy votes, but their existence can only be observed if they are actually used at the stockholder meeting.

Unlike countries like Italy, which has a cap on how much two firms can reciprocally own in each other, Norway has no general regulation on intercorporate investments.²⁰ To fully capture the effect of intercorporate investments, all equity stakes in a firm must be traced through all layers of intermediate corporate shareholdings (like mutual funds or interlocking

¹⁷ The board of commercial banks is regulated by both the corporate law and the bank law (*forretningsbankloven*). These regulations impose the same type of two-tier board structure on banks as for non-banks. The supervisory board of the bank (*representantskap*) elects the regular board, and the control function of the supervisory board is similar to that of non-bank supervisory boards. As will be discussed in chapter 4, financial firms are not in our sample.

¹⁸ As pointed out in section 3.1.3, non-voting shares cannot vote on matters that require a simple majority, but enjoy full rights in one of the two voting rounds for charter amendments, which require a 2/3 super-majority. Examples of cases involving charter amendments are new stock issues, mergers, voting right restrictions, and changes in corporate objectives.

¹⁹ In financial institutions, however, no investor can own or vote for more than 10% of the share capital except by special permission from the Ministry of Finance. As this rule is stated in terms of both cash flow rights and voting rights, the ownership cap also applies to non-voting shares. By putting a ceiling on the maximum gap between the cash flow right and the voting right, this regulation limits the ability to separate these two rights in banks. As stated earlier, financial institutions will only be included in our sample as owners and not as owned.

²⁰ Financial firms cannot freely hold other firms' shares. Insurance companies can hold up to 15% of the cash flow or voting rights in other firms, and mutual funds can own up to 10%. Banks have no such direct restrictions on fractions, but there is one cap on the total amount of equity investments across all firms and another cap on the investment in each separate firm. The upper limit on total equity holdings is a certain percentage of the bank's equity and subordinated debt. The general property of this regulation is that the smaller the investing bank and the larger the firms it invests in, the smaller the maximum fraction that can be owned.

pyramids of listed and nonlisted firms) back to the ultimate personal owner or the state. Our data set allows for this approach, which we follow in chapter 7.

3.1.6 Minority protection

The basic regulatory tool for minority protection is the principle of equal proportional rights (*en-aksje-en-stemme*). The law states that no corporate charter can limit the owner's right to attend the stockholder meeting, be present by a proxy representative, bring along an advisor, put a case on the agenda for voting, receive the same information as any other stockholder, and to bring decisions made at the stockholder meeting up for the courts. The law also gives a pre-emptive right for every stockholder to participate in equity issues. This right can only be waived by a 2/3 majority vote of the outstanding shares (voting plus non-voting).

Several other regulations prevent the transfer of wealth from small to large stockholders. A flagging system informs small investors of listed firms when shares are transferred to or from large investors. The rules at the end of the sample period is that investors passing up or down through the thresholds of 5%, 10%, 20%, 33%, 50%, 67% and 90% of the outstanding cash flow or voting rights must notify both the firm and the OSE.²¹ Stockholders in listed firms passing the 40% voting rights threshold (45% before December 1997) must give a tender offer (*pliktig tilbud*) to all the other stockholders.²²

There is neither a flagging system nor a 40% mandatory bid rule for nonlisted firms. However, the 90% freezeout (*tvangsinnløsning*) rule is independent of listing status. In particular, an investor holding over 90% of the shares is obliged to buy the shares from any stockholder who wants to sell. This rule is symmetric, as the 90% majority owner has the right to buy the remaining shares from the minority.

The insider trading (*innsidehandel*) rules state that regardless of whether or not you are affiliated with the firm, it is illegal to trade in its shares based on private information which is pricing relevant and currently not reflected in the price. Key employees in listed firms are barred from trading around certain corporate events, like the management team two months before the annual report is published. Such firm insiders in listed firms must report all their trades to the OSE no later than the morning after the trading day.²³ In a nonlisted ASA, such information must be reported to the board, which keeps the information in a register which is not open to the public. A stockholder in an AS has no such reporting obligations.

These stockholder protection rules are independent of the number of shares held or whether they are voting or non-voting. Several additional ownership rights are granted to shareholders who represent a certain minimum of the share capital. Holders of at least 5% of the outstanding share capital in an ASA or 10% in an AS can force the appointment of an additional auditor and initiate an extraordinary stockholder meeting. Shareholders owning at least 10% of the outstanding share capital in either firm type can prompt an investigation of management's actions or sue any member of the management team, the two boards, the

²¹ The steps of the flagging rules have changed over the sample period. From 01.01.94 to 01.12.97, they were 10, 25, 50, and 75%. After 01.12.97 to the end of the sample period, the thresholds specified in the main text have remained unaltered.

²² The listing requirements ensure a minimum shareholder dispersion at the initial public offering (IPO). At least 25% of the shares must be owned by the general public, and at least 500 investors (50 investors for small firms) must own at least one round lot. After the IPO, there is no explicit regulation of ownership dispersion except that if a concentrated ownership structure produces a sufficiently low trading volume, the firm may be delisted at the discretion of the OSE. As of April 2008, the minimum requirement on the number of shareholders does not exist anymore.

²³ Before 1997 the regulation allowed a delay of up to 3 months in reporting insider trades.

auditor, and other stockholders.²⁴ However, minority shareholders are not protected by a cumulative voting system, and they cannot vote by mail except when the board of firms with less than 20 owners choose to have their stockholder meeting by mail (see section 3.1.3).

3.1.7 The recording of ownership

Every ASA must report each transaction of its equity to the VPS (*Verdipapirsentralen*), which is the securities registry. The notification specifies the identity of the buyer and seller, the time of the transaction, the number of securities traded, and the price.²⁵ A change in the number of securities outstanding must be reported, such as stock splits, treasury stock issues, and issues of new shares. Thus, the VPS files contain the full ownership structure for every listed and nonlisted ASA. The database is computer readable and has been operative since 1989. It provides a consistent time series of complete ownership structure data for any owner over nineteen years, which is exceptional by international standards. More details can be found in Bøhren and Ødegaard (2000, section 2.3).

Firms organized as an AS must keep a so-called Ownership Book (*Aksjeeierbok*), which keeps track of all trades in the firm's stock. This register is open to the public. However, it is only available on a firm-by-firm basis, and is not computer-readable.

3.2 Financial accounting regulation

The accounting law (*Regnskapsloven*), which was passed in 1998, does not distinguish between ASA and AS firms, but between small, medium-sized, and large firms. ASA firms are automatically large, and the accounting rules of large and medium-sized firms are fairly close.²⁶ This section summarizes the major differences in financial reporting requirements between small firms and other firms. These rules are specified in Accounting Standard 08.²⁷

A small firm in a financial reporting sense is an AS that meets at least two of the following three requirements:

1. Less than 60 million NOK of sales
2. Less than 30 million NOK of assets
3. Less than 50 employees.²⁸

Starting with the population of all 157,710 limited liability firms in 2005 in table 4.1, we find that 82,569 pass the sample filters (to be presented in chapter 4). 76,767 of these firms are small in a financial reporting sense. Thus, the accounting rules for small firms apply to 93% of the basic sample. However, because a subsidiary may use its owner's accounting principles, the actual fraction of firms following the small firm rules is probably lower.

²⁴ These hurdles are lower for ASAs with more than 100 employees. Just 10% of the shareholders of such firms are needed to support the claim, even if they represent less than 10% of the share capital.

²⁵ Unlike many European countries, Norway does not allow the system of bearer shares. This means the identity of any owner is known from the VPS database except when international investors deposit their shares in nominee accounts with an investment bank.

²⁶ All limited liability firms were exposed to the same accounting regulations until January 01 1999. From 2005 on, the IFRS (International Financial Reporting Standards) is mandatory for consolidated accounts unless the firm follows US GAAP.

²⁷ The Accounting Law is available at www.lovdatab.no, whereas the Accounting Standard 08 is at www.regnskapsstiftelsen.no.

²⁸ Up until January 01 2004, the lower bounds were 40 million, 20 million, and 50 employees, respectively.

The accounting regulation for small firms is special along two dimensions. First, certain items do not have to be reported. A small firm may choose to not report the cash flow statement and does not have to account for its subsidiaries by a consolidated accounting statement, provided the consolidated accounting variables do not exceed the firm size threshold as specified above. The cost of stock-based incentive pay does not have to be expensed, and production costs may only reflect the variable part. Small firms may neither specify the value of the deferred taxes nor the insured pension liabilities.

The second difference is that although the profit and loss statement, balance sheet, footnotes, and the board report are mandatory components of the financial reporting for all firms, some of these items can be specified by simpler procedures in small firms. This option relates to about 15 items. For instance, income from multi-component contracts may not have to be recognized until every component is sold, lease obligations may not be capitalized, and stocks may be reported at their historic cost. Some footnotes may be ignored, such as breakdown of wages, specification of extraordinary items, and transactions with subsidiaries.

From a data quality point of view, it is important to notice that all firms must have their accounting statements audited by a statutory auditor. Listed companies must have a state-authorized auditor, whereas other companies can choose between state-authorized or state-registered auditors.²⁹ The audited accounting statements must be submitted to the Public Accounting Register every year (*Brønnøysundregistrene*; www.brreg.no/english). Failure to do so within 17 months after fiscal year-end produces automatic liquidation by the court. Chapter 4 describes how the CCGR database relates to this register.

3.3 Summary

The regulation of corporate governance occurs through the corporate law, and listed firms are also regulated by the securities law, the listing requirements of the Oslo Stock Exchange (OSE), and the OSE Corporate Governance Code. A firm is either an AS or an ASA, the ASA legal form is mandatory for listed firms, and nonlisted firms above a minimum size can choose between the two. Less than 1% of the firms are ASA firms.

Charter amendments require a 2/3 majority vote by all stockholders, regardless of whether the stock is voting or non-voting. Most other issues need simple majority by voting stockholders. Any owner can put items on the agenda for the ordinary stockholder meeting, and no charter can limit the owner's right to attend, be present by proxy, bring an advisor, put a case on the agenda, receive the same information as other stockholders, and bring decisions made at the stockholder meeting to court. Unless waived by a 2/3 majority, every stockholder has a pre-emptive right to participate in new equity issues. You need at least 5% of the cash flow rights in an ASA and 10% in an AS to call an extraordinary stockholder meeting or ask for an additional auditor. A flagging system informs all investors of a listed firm when large

²⁹ According to Hope and Langli (2007), "The educational requirements for state-authorization are the most extensive and demanding. Several European countries have a similar arrangement of two types of auditors within the profession, for example, Denmark, France, Germany, the Netherlands and the United Kingdom. In particular, the Danish and Norwegian two-level systems of auditors are very similar. The law reserves exclusive rights to perform all statutory audits for the registered and state-authorized auditors. However, the registered auditors are excluded from auditing joint-stock companies with more than 200 employees, all listed companies, and some companies in specific fields like banking, financial services, and insurance. Eilifsen (1998) concludes that, except for Norwegian statutory auditors' additional responsibility related to controlling their client firms' tax obligations, the Norwegian regulatory arrangements and the statutory auditor's responsibilities bear close resemblances to those found in other countries, especially in the other Nordic countries. Similarly, in their study of auditing regulation in Europe, Buijink, Maijor, Meuwissen, and Van Witteloostuijn (1996) classify Denmark, Finland, Norway and Sweden as one cluster."

investors trade in its stock, and stockholders in listed firms passing the 40% voting rights threshold must give a tender offer to all remaining stockholders. Whereas the flagging rule and the mandatory bid rule only apply to listed firms, only, a 90% freezeout rule applies to all firms. Stockholder with at least 10% of cash flow or voting rights can prompt an investigation of management's actions or sue management, the board, the auditor, and their co-owners.

Limited liability firms with more than 200 employees must have a two-tiered board unless vetoed by the employees or if the firm belongs to a few exempted industries. The supervisory board elects the regular board and makes the final decision on large investments and disinvestments. One third of the directors come from the employees in firms with more than 200 people. CEO-chairman duality is illegal if the share capital exceeds 3 million NOK, and ASA boards must have at least 40% of each gender among its stockholder-elected directors as of year-end 2007. Trades by corporate insiders in listed firms must be reported to the OSE the next morning. Insiders in nonlisted firms have no such reporting obligations.

Cash flow rights can be separated from voting rights through non-voting shares and by voting restrictions in the charter. Stockholders may establish voting pacts, transfer voting rights by proxy votes, and build pyramids by intercorporate investment. The CCGR database has no information on share classes, voting pacts, voting caps, and proxy votes. Since we know the ownership structure of all firms, however, we can undo all pyramiding of cash flow rights.

ASA firms must report each transaction of its outstanding equity to the securities registry. AS firms must keep track of all trades in the stock in a register which is open to the public, only available on a firm-by-firm basis, and not computer-readable.

The accounting law does not distinguish between ASA and AS firms, but between small, medium-sized, and large firms. ASA firms are automatically large firms, and the accounting regulation of large and medium-sized firms are rather similar. Small firms, which account for the vast majority of the population, can choose not to report certain accounting items, certain items can be specified by simpler procedures, and some footnotes may be ignored. All firms must submit audited accounting statements to a public register every year. If this does not happen within 17 months after the end of the fiscal year, the firm is automatically liquidated by the court.

4. The CCGR database

Section 4.1 specifies the data sources of the CCGR database, describes its contents, and compares it to alternative databases. We report the size of the population, the filtering procedure, and the resulting size of the sample of listed and nonlisted firms in section 4.2. The system for classifying firms into industries and industry sectors follows in section 4.3.

4.1 Sources and contents

As pointed out in section 3.2, every Norwegian firm with limited liability is legally obliged to publish full accounting statements every year. It must also report the identity of its CEO, the directors, and the owners, as well as each owner's equity holding in the firm. This information is submitted to a state agency (*Brønnøysundregistrene*). The core of the CCGR database is constructed from data delivered by CreditInform (www.creditinform.no), which specializes in credit ratings and buys data from the state agency partly in electronic format, partly and mostly in paper format. The CCGR database includes every firm with limited liability registered in Norway.³⁰ It covers the period 1994-2005 for accounting information and general firm information, whereas data on governance (ownership structure, board composition, and CEO identity), founding year, auditor remarks, and credit ratings is for the years 2000-2005. We will extend the time series with data for 2006 and 2007 during the project period. This means there will be 14 years of accounting data (1994-2007) and 8 years of governance data (2000-2007) in the database by the end of 2008.³¹

Appendix 4.A1 provides a full specification of the entries in the CCGR database. There are about 130, 70, and 40 data items per firm per year in the accounting, governance, and misc. category, respectively.³² The governance data contains all equity holdings of at least 5%, and also smaller holdings for some firms. Although we know the holding of every owner of an ASA firm from the VPS database, this has limited value for our purpose, as the owners in the VPS database are anonymized and cannot be matched with the owner or insider data in the CCGR database. The governance data includes both first layer and ultimate (all-layers) ownership. It also provides group structure (*konsern*) information, such as what subsidiaries a parent owns and what parent a subsidiary is owned by.

The only alternative database we are aware of is Amadeus, which has about 45 accounting items (starting around 1995 for the countries with the longest time series) and ownership data (from 2003 on) reflecting the size and type of blockholders. Unlike the CCGR database, Amadeus does not report insider equity holdings, family ownership, family directorships, family management, group structures, or time series of board composition. Items like credit ratings and auditor remarks are not included, and industry classifications only refer to the most recent date.

³⁰ The database also has corresponding data on all other organizational forms of enterprise, such as partnerships, foundations, and mutuals. Our study will not use this type of data.

³¹ The CCGR database serves as a joint infrastructure for several projects under the CCGR umbrella. The data may also be made available on a case-by-case basis for BI faculty and students who are not associated with the CCGR. Therefore, we have spent considerable effort setting up a database with a minimum of errors and a maximum of functionality. The requirements on data quality and traceability as well as the size of the database necessitate close attention to procedures for loading, storing, transforming, querying, and extracting the data. Pål Rydland has built the CCGR database and performed the data quality tests. Since it contains sensitive personal information via the social security number of owners, officers, and directors, we have been granted permission to store data by the Data Inspectorate (*Datatilsynet*; www.datatilsynet.no).

³² An additional 126 data items are reserved for consolidated accounting data.

4.2 Population, filters, and sample size

Table 4.1 shows details of the sample construction for all limited liability firms in panel A and for the subsample of firms listed on the Oslo Stock Exchange (OSE) in panel B.

[Table 4.1]

Panel A initially allows all business enterprises of any organizational form into the sample, such as partnerships, mutuals, foundations, and limited liability firms. The first filter, which excludes firms without limited liability, generates the relevant population for our study, which has around 130,000 AS and ASA firms on average per year and more firms later in the sample period than in the beginning. Filters 2 and 3 are activity restrictions, ensuring that the firm has positive sales and assets, respectively. These filters reduce the average number of firms from roughly 130,000 to 120,000. Filter 4 deletes firms that do not pass non-negativity restrictions on various accounting statement items, whereas 5 and 6 put consistency restrictions on the relationship between a sum and its components. Filter 7 excludes firms that never have employees over the sample period, whereas filter 8 adds the requirement for nonlisted firms that employees are either positive or missing in that year. The two employment filters are the most restrictive of all filters, reducing average sample size before the filter by almost 30%.

To produce our sample, we consider the first and the last year a firm passes all these filters and include all years between. These firms are called the sample candidates in the table. Next, we exclude financial firms. Finally, we exclude subsidiaries and instead use the consolidated (group) accounts of the parent company to reflect the combined activity of parent and subsidiary in the absence of double-counting.

This filtering procedure leaves us with the basic filter and the basic sample, which we will use in the following. This sample has about 77,000 firms per year, rising from about 59,000 in the beginning to 83,000 in the end of the sample period. Only 134 of the firms are listed on average. That is, 99.8% of the firms are nonlisted and 0.2% are listed.

Panel B shows the details of the filtering process for the listed firms. The major reduction in sample size occurs in filter 2, which excludes so called PCC banks (*grunnfondsbank*).³³ Whereas panel A shows that the number of firms is constantly increasing over time both for the population and the basic sample, panel B documents that this tendency is less clear for listed firms. For instance, the number of firms in the basic sample grows until 1998, declines thereafter until 2003, and then rises again.

In the chapters that follow, we state amounts in terms of bill. NOK as of December 31 2005, which is the end of the sample period. Growth rates are in real terms, i.e., percentage change in excess of observed inflation. We use the consolidated accounts of the parent company rather than its unconsolidated accounts except when the firm's consolidated assets are less than 85% of its non consolidated assets.

4.3 Industry classification

All firms are classified according to its NAIC industry code as specified in Appendix 4.A2, which also assigns industries to nine aggregate industry sectors. For expositional simplicity, we will only deal with these industry sectors in the following. Table 4.2 shows alternative measures of aggregate size across these industry sectors in 2005.

³³ A PCC is partly an ownerless foundation, partly a regular stock company owned by holders of listed PCC securities.

[Table 4.2]

Table 4.2 documents that the service and trade sectors jointly account for 68% of all firms with limited liability in 2005. At the opposite extreme, the energy sector has only 0.4% of the firms. However, energy is the largest sector as measured by sales and assets, whereas service holds this position by employments. Chapter 6 will have more to say about the distribution of firm size across the sectors.

4.4 Summary

The CCGR database, which includes every firm with limited liability registered in Norway, currently covers twelve years of accounting data and six years of governance data. The available data set is considerably more extensive than what has been available for research purposes in the past. This is because Norwegian law mandates every limited liability firm to publish an annual report each year that consists of a profits and loss statement, a balance sheet, accompanying footnotes, a cash flow statement, the board of directors report, and the auditor's report. The rules governing the structure and contents of these accounting statements, which must be audited by a publicly certified auditor, apply to all limited liability firms, independently of listing status, age, and industry. The firm must publish the identity of its CEO, directors, and owners, and the fraction of equity held by every owner. This information, which is stored centrally in a public database, is the major source of the CCGR database, which has about 240 items per firm year. This data set includes credit ratings, founding year, zip code, and also the NAIC industry code, which we use to classify firms into nine broad industry sectors.

There are about 130,000 firms with limited liability in the CCGR database per year, rising from about 100,000 firms at the beginning of the sample period to 160,000 at the end. Applying a series of consistency filters, requiring all firms to be active, and excluding financial firms and subsidiaries, our sample has on average roughly 77,000 firms per year. About 0.2% of them are listed on the Oslo Stock Exchange.

5. Macro-economic significance

We start this chapter by documenting the absolute and relative size of nonlisted and listed firms in the Norwegian economy. Section 5.2 focuses on listed firms by first relating the aggregate market value of their equity (i.e., market cap) to Norway's GNP. To better understand whether the relative importance of listed firms in Norway is a typical case internationally, we compare the ratio of market cap to GNP across a wide range of countries.

5.1 Norwegian firms with limited liability

The most common economic measures of firm size are sales, assets, and employees. Table 5.1 shows such figures for our sample as defined in table 4.1. The table documents that the aggregate sales of firms with limited liability is about 50% of GNP. The book value of assets is around 55%, and these firms employ 1.2 million people.³⁴ The separate figures for nonlisted and listed firms at the bottom of the table show that sales and assets represent about 40% of GNP in nonlisted firms and about 15% in listed firms. The nonlisted firms employ close to 1 mill. of the 1.2 mill. people working in Norwegian firms with limited liability.

[Table 5.1]

Table 5.2 looks more closely at the relative size of nonlisted and listed firms by showing their aggregate size as a fraction of all limited firms. Nonlisted firms have in the aggregate about four times higher revenues than listed firms, employ four times more people, and hold two times more assets. The fraction for employees is higher in the second part of the sample period than in the first, whereas the opposite is true for sales and assets.

[Table 5.2]

The table documents that according to standard measures of size, nonlisted firms are much more significant than listed firms in the national economy. We are unaware of similar statistics from other countries, but we will get a feeling for the general validity of the Norwegian case by comparing the ratio of market cap to GNP across countries in section 5.2.

5.2 Listed firms across the world

Although we lack data like those in table 5.2 for other countries, we may use some indirect evidence. The most common way of measuring the significance of listed firms in the overall economy is by the ratio of market cap to GDP, estimating market cap as the stock price times the number of shares outstanding.³⁵ Table 5.3 documents this ratio over the sample period across a wide range of countries.

[Table 5.3]

Panel A shows the ratio of market cap to GDP in 26 European countries, which are ranked from lowest to highest according to their mean ratio over the twelve years in the rightmost column. The mean and median EU ratios per year and for the period as a whole are reported in the two last rows. According to the figures for Norway as stated in bold, the market value of listed firms is on average 41% of GDP. The ratio is generally increasing over time from 29% at the beginning of the sample period to 67% at the end. The volatility of the

³⁴ The total 2005 labor force in Norway was 2.3 million (Source: Statistics Norway).

³⁵ The GNP, which we use in table 5.1, would probably be a more suitable measure of domestic value creation. However, the data source we use for table 5.3 is based on GDP, only.

ratio around the long-term trend is primarily due to fluctuating stock market valuations rather than large ups and downs in the fraction of economic activity that is listed.

Panel A reveals large differences in the ratio of market cap to GDP across European countries. Not surprisingly, Eastern European countries have lower ratios than others, although their ratios grow strongly in the second half of the sample period. If we compare Norway to the overall EU figures at the bottom of panel A, we find that the Norwegian ratio of market cap to GDP is somewhat lower than the EU average, but quite close to the median. Thus, if the relative significance of listed firms in the economy can be measured by market cap to GDP, the situation in Norway as documented in table 5.2 is rather typical for European countries.

Panel B shows market cap to GDP across three levels of GDP per capita (high-middle-low income) and for the world as a whole. These figures generally support the impression of Norway as being a rather typical country in this respect. It seems fair to conclude that nonlisted firms in the aggregate account for a much higher portion of economic activity than listed firms in most countries in the world.

5.3 Summary

Nonlisted firms have in the aggregate four times higher revenues than listed firms, employ four times more people, and hold twice as much assets. Thus, nonlisted firms as a whole are considerably more significant than listed firms in the Norwegian economy. Although the data we use to establish this conclusion is not available for other countries, one may get a feeling for the general validity of this case by comparing the ratio of listed firms' market cap to GDP in Norway to what it is in other countries. This comparison suggests that the relative importance of nonlisted firms we have found in the Norwegian economy is a typical case.

Thus, it is also true internationally that compared to listed firms, nonlisted firms account in the aggregate for a much higher portion of economic activity. This finding makes it even more remarkable that so little is known about the corporate finance and governance of firms that are not on the stock exchange. The next chapter takes a first step towards addressing this lacking insight by showing key corporate finance characteristics of nonlisted firms and comparing them to those of listed firms.

6. Corporate finance

This chapter presents a wide range of corporate finance characteristics for Norwegian companies with limited liability, using the basic sample from table 4.1. We classify these characteristics into seven groups in sections 6.1-6.7, calling them size, asset structure, capital structure, profitability, growth, dividends, and technology, respectively. The corporate finance variables are defined in Appendix 6.A1.

Our objective is to describe the corporate finance characteristics per se rather than making strong attempts at explaining how they have come about. Doing the latter for every characteristic would take us too far astray, given the overall objective of this report, which is to give a first look and to pinpoint interesting patterns which may be analyzed later in a more focused and elaborate way. Thus, we describe a given corporate finance characteristic the way it turns up in the data, mostly trying to understand it only in terms of a small set of simple, general firm properties, which are firm size, listing status, age, and industry. For instance, we explore whether the asset structure seems to vary with firm size, industry, and listing status, but do not test for theoretically well-founded determinants of asset structure. In the capital structure and dividends sections, however, we move somewhat closer to a hypothesis testing mode, such as when exploring how the relationship between dividends and firm size depends on whether the firm is listed or nonlisted, young or old, and whether it is in manufacturing or service. Similarly, we relate the firm's capital structure to several classic determinants from the theory of corporate finance. Even there, however, the objective is not to test theories per se, but to demonstrate the richness of the CCGR database.

The analytical tools we use in chapters 6 and 7 are descriptive statistics tables, histograms, and statistical regressions. Since the combined set of characteristics and analytical tools is so large, we have chosen not to report histograms except in a very few illustrating cases. Cross-sectional results for a given year always refer to 2005, which is the most current sample year. Time-series results cover the full sample period, i.e., 1994-2005.

Table 6.S1 summarizes descriptive statistics of the corporate finance variables that will be discussed in the following (S is short for Summary). Table 6.S2 shows the corresponding corporate finance variables by industry sector and then by firm size. While these two tables refer to the final sample year (2005), the third summary table 6.S3 shows the pattern year by year over the whole sample period. We will refer to these summary tables as we go along.

[Table 6.S1]

[Table 6.S2]

[Table 6.S3]

6.1 Size

Table 6.1.1 presents descriptive statistics for firm size, classifying a firm as small if it has less than 20 employees, medium if it employs between 20 and 99, and large otherwise.³⁶ Two striking patterns emerge in panel A. First, most firms (92%) are small. In fact, we will show later than more than half the firms employ less than five. Second, large firms only represent 1% of all firms, but account for roughly 60% of activity as measured by employment, assets, or sales. Medium sized firms constitute 6% of the sample and about 15% of the activity.

³⁶ This definition of a small firm as one with less than 20 employees differs from the cutoff of 50 used by the accounting regulation (section 3.2). The present definition is more consistent with the literature on small and medium-sized firms.

[Table 6.1.1]

Panel C shows the corresponding distribution for listed firms. This panel tells a very different story. More than two thirds of listed firms are large, and these large firms account for almost all the activity. In fact, listed firms with more than 1,000 employees represent about one fourth of these firms and about 90% of the activity.

The fact that the nonlisted firms in panel B represent 99.8% of all firms explains why the distribution across small, medium, and large firms corresponds to what we found for all firms in panel A. Although the vast majority of nonlisted firms (93%) are small, it is important to notice that almost 900 nonlisted firms are large. This is almost ten times more than in the listed firms sample. Thus, finding enough nonlisted firms to match listed firms according to the 100 employees size minimum is easy in the CCGR database.

The distribution of aggregate activity across industry sectors is reported in table 6.1.2. While the energy sector has the lowest number of firms, energy firms are more often large than in any other industry sector (12%). Moreover, 91% of the employment in energy firms takes place in large firms. In contrast, there are roughly five times more firms in agriculture, but large agricultural firms only account for 37% of that industry sector's employment. Finally, the service industry sector has by far the largest number of firms. 94% of them are small, but the majority of their employment and sales still occurs in large firms.

[Table 6.1.2]

Looking more closely at the distributional properties for size, panel B of the summary table 6.S1 shows that a median nonlisted firm recorded assets of 1.8 million NOK in 2005, sales of 2.7 million NOK, and 2.3 employees. In contrast, the median listed firm in panel D has 638 million in assets, 271 million in sales, and 248 employees. Thus, a typical listed firm is 100-350 times larger than a typical nonlisted firm, depending on the size measure used. This table also reports many additional characteristics of the frequency distribution, which can also be visualized in terms of histograms. To save space, we only show one example in figure 6.1.1, which is the histogram for size as measured by sales across all firms with limited liability in 2005. Notice that this distribution closely resembles a lognormal, although the statistical test for log normality is rejected.³⁷ We find the same close resemblance to a lognormal distribution in the subsamples of nonlisted and listed firms. The corresponding histograms based on assets and employees have the same feature.

[Figure 6.1.1]

We report time variation for the corporate finance variables in table 6.S3. The median nonlisted firm (panel B) becomes gradually larger over time in terms of assets, whereas the median listed firm (panel D) gets smaller both in terms of employment, assets, and sales.

Summarizing, we started this section by classifying firms as small, medium and large, depending on whether they have less than 20 employees, 20-99, or at least 100. Whereas over two thirds of the listed firms are large, the vast majority of nonlisted firms are small. Still, there are about ten times more large firms among the nonlisted than the listed firms in our sample. The distribution of size across firms is also very different across industries. For instance, 91% of the employment in energy firms takes place in large firms, but only 54% does in the service industry, which has by far the largest number of firms. Regardless of whether we measure size by sales, assets, or employees, the distribution of size across the sample closely resembles a lognormal. Thus is true regardless of whether we consider all firms, listed firm, or nonlisted firms.

³⁷ The insert in the bottom right corner reports the goodness-of-fit statistics and p-values for the Anderson-Darling (A-D), the Cramér-von Mises (C-von-M), and the Kolmogorov-Smirnov (Kolmogorov) test, respectively.

In the following, we often want to compare nonlisted and listed firms of similar size. For this purpose, we construct a subsample called large nonlisted firms, defining it as the 5% largest nonlisted firms by sales. That is, a large nonlisted firm is not defined by the 100 employees minimum from now on, but by being among the nonlisted firms with the top 5% sales. This subsample has about 4,000 firms in a given year. Although the median large nonlisted firm is still considerably smaller than the median listed firms (e.g., 33 vs. 248 employees), there are still many nonlisted firms that size-match a listed firm. For instance, about 800 nonlisted firms are larger than the median listed. About 400 nonlisted firms have sales above 1 bill., whereas only about 40 listed firms do. Thus, in general, it is easy to find nonlisted firms that match listed firms quite well in terms of size.

6.2 Asset structure

We first examine the asset structure in 2005 as reported in table 6.S1. The median nonlisted firm has 1.8 million in total assets, 1.0 in current assets, no inventory, 0.3 million in cash and receivables, and 0.2 million in working capital (panel B). The median listed firm has 638 million in total assets, 231 in current assets, 2 million of inventory, 89 million in cash and receivables, and a working capital of 82 million (panel D).

To control for the finding in section 6.1 that most nonlisted firms are much smaller than listed, panel C shows the corresponding figures for what we from now on call the large nonlisted firms, which are the top 5% nonlisted firms by sales. Whereas listed firms report a median current-assets-to-assets ratio of 36%, it is 78% in nonlisted firms of similar size (panel B shows it is 79% for nonlisted firms as a whole). Thus, the assets are indeed much more liquid in nonlisted firms. Finally, table 6.S3 shows no clear time pattern in the asset structure of listed firms, whereas large nonlisted become less inventory-intensive over time.

We next examine investment in depreciable assets (IDA). Although table 6.2.1 shows variation across industries, tables 6.S2 and 6.S3 document that the median IDA is surprisingly low for nonlisted firms and decreases to 2%-3% at the end of the sample period. The corresponding figure for listed firms is typically 20%. Also, median depreciation is around 24% of depreciable assets in nonlisted firms, but is mostly below 20% in listed firms.

[Table 6.2.1]

The difference between the depreciation ratio and IDA decreases with size (table 6.S2), suggesting that larger firms have higher net investment. Moreover, and remarkably, panel C of table 6.S1 shows that the median IDA in 2005 is 16% for large nonlisted firm, whereas panel D shows it is and 31% for listed. The corresponding median depreciation ratios are 24% and 19%, respectively. This suggests that while listed firms plentifully replenish fixed assets and increase capacity year by year, nonlisted firms of similar size do not.³⁸

Summarizing this section, we find that listed firms have a less liquid asset structure than nonlisted firms. Listed firm also invest considerably more in fixed assets relative to the depreciation rate. In particular, whereas nonlisted firms hardly keep constant capacity by investing to offset depreciation, the real investment of listed firms tends to be considerably higher than their depreciation.

³⁸ For the subsample of nonlisted firms that report 2005-adjusted assets above 10 million NOK, the IDA varies over time, but is always below the depreciation ratio (table 6.S3, panel B). For listed firms (table 6.S3, panel D), the IDA varies considerably over time, being around 40% in the early part of the sample and in the low teens in 2002 and 2003. Nonetheless, the corresponding depreciation-to-IDA also changes over time and is almost always below the investment ratio.

6.3 Capital structure

Table 6.S1 describes the distribution of the main capital structure characteristics in 2005. For the median nonlisted firm, total debt accounts for 77% of total assets, 90% of the total debt is current, and the working capital comprises 15% of the assets. In the median listed company, 47% of the assets are financed with debt, 64% of the debt is current, and the working capital is 10%.³⁹ Panel C shows that this pattern also holds for large nonlisted firms: The median large nonlisted firm is more leveraged than similar listed firms (75% vs. 47%), has more current debt (82% vs. 64%), and more working capital (16% vs. 10%).

Table 6.S2 examines corporate finance characteristics across industries. For nonlisted firms, leverage is very homogenous except in energy, where debt financing is considerably less common. We find more industry variation in listed firms, but leverage is still smaller than for nonlisted firms in every industry. The stronger heterogeneity for listed firms also occurs for debt maturity, which is unusually long in energy and very short in construction.⁴⁰ Capital structure dynamics is shown in table 6.S3. Leverage stays very stable around 50% in listed firms, but increases over time for the large nonlisted. Debt maturity decreases over the sample period in both firm types.

Table 6.3.1 estimates the relationship between leverage and a series of determinants. Based on existing theory and empirics, Giannetti (2003) posits that regardless of listing status, leverage correlates positively with asset tangibility (tangible assets provide better collateral), firm age (older firms have better reputation), and firm size (larger firms have lower business risk). A negative relationship is expected between leverage and growth (high growth triggers more asset substitution), non-debt tax shields (better tax-reduction substitutes for interest payments), and ROA (profitable firms can finance more from earnings).

[Table 6.3.1]

We examine a similar model, which we estimate with different samples and econometric techniques to check for robustness. In particular, we use all firms from the whole sample period in model (1), all firms from 2005 in (2) to check if the pooling in model (1) matters, nonlisted firms from 1997 in (3) to check if the estimated equation is stable over time, and finally large firms in model (4) to check if more size homogeneity matters. We define large firms by sales in model (4) as the 90% largest of the listed firms and the 5% largest of the nonlisted firms. We add squared terms for size and age in every model to account for nonlinearity, and we control for industry effects. Finally, we restrict the sum of the estimated coefficients to be zero for the two listing dummies as a group and for the ten industry dummies as a group. Thus, any coefficient shows the expected effect of the type compared to the average effect in the group. For instance, the coefficient for the nonlisted dummy shows the expected leverage effect of being nonlisted relative to the average effect of listed and nonlisted firms as a group.⁴¹

The first thing to notice from table 6.3.1 is that the estimated relationships are very stable across the four models, which explain about one fourth of the variation in leverage. Second,

³⁹ One fourth of the nonlisted firms have current debt as their only debt type, while this is only the case for about 5% of the listed. The distribution of total debt resembles the log normal distribution for both listed and nonlisted firms, although the lognormality tests are rejected for a sample truncated at 5% and 95%.

⁴⁰ This larger heterogeneity across industries in listed firms may also be due to the fact that with approximately 135 listed firms a year and with nine industries, the sample per industry becomes very small.

⁴¹ Since we use listing status dummies for each firm, we cannot also control for unobservable fixed effects at the firm level by using, say, demeaned variables. Random effects estimation may handle this problem, but that would involve the restrictive assumption that the leverage effect of observable and nonobservable firm effects are independent (Hsiao (2003)).

and most importantly in our setting, having controlled for a series of other determinants such as size, growth, and industry, nonlisted firms have significantly higher leverage than listed firms. Thus, listing status matters for capital structure, as nonlisted firms have consistently higher debt than similar listed firms. This is also what Giannetti finds in six of her eight countries (Belgium, France, Italy, Portugal, UK), whereas the relationship is insignificant in the remaining two (Netherlands and Spain).

Third, the table shows that leverage correlates positively with asset tangibility, negatively with asset returns, and that industry matters. All these results are consistent with the prediction. Fourth, leverage is higher when firms are small and when they grow quickly.⁴² Both findings are inconsistent with the hypothesis, but in line with Giannetti's result that these relationships differ from country to country, possibly reflecting differences in legal creditor protection.⁴³ Finally, leverage and age are inversely related in the subsample of large firms, but positively elsewhere. This lack of robustness suggests one should specify the samples carefully and not just bundle nonlisted and listed firms of all kinds into one sample.

Summarizing, we find that financing patterns vary systematically with listing status. Compared to listed firms, nonlisted firms of any size finance their assets with more debt and use more short-term debt. Leverage is more homogenous across industries in nonlisted firms. The finding that nonlisted firms use more debt persists across several multivariate regression models where we control for many potential leverage determinants, and where we use several alternative samples. These tests also show that regardless of listing status, firms use more debt when they are small, when they grow, and when they have low profitability.

6.4 Profitability

Distributional properties of the profitability variables in 2005 are shown in Table 6.S1. Overall, nonlisted firms tend to have higher book returns to capital invested than listed firms, the median return on assets (ROA) being 7% in nonlisted firms and 5% in listed. The median return on equity is 35% and 11%, respectively. As the ROE depends on leverage and ROA does not, we focus on ROA in the following.⁴⁴

The ROA difference becomes larger if we compare firms of similar size. Panels C and D demonstrate that the median ROA is three percentage points higher in large nonlisted firms than in listed firms (8% vs. 5%). In fact, the ROA is highest for the nonlisted at every percentile in the histogram except for the very lowest. We will make a comprehensive analysis of the relationship between profitability and listing status in section 7.3, controlling for several other variables such as corporate finance, ownership structure, and firm size.

Summarizing, we find that nonlisted firms have higher returns to assets than listed firms, the median ROA being 7% and 5%, respectively. This difference grows by one percentage point if we instead compare to the subsample of large nonlisted firms. We will analyze the relationship between ROA and firm characteristics in section 7.3.

⁴² The inverse relationship we find between leverage and size is particularly robust, as it persists if we alternatively measure size by employment and sales.

⁴³ For instance, leverage and size correlate negatively in Italy and the Netherlands and positively in France and the UK.

⁴⁴ Panel D of table 6.S3 shows that the median ROA for listed firms is falling towards the middle to the sample period to around 3%, rising back to about 5% at the end. In contrast, the ROA stays consistently around 7% in nonlisted firms.

6.5 Growth

This section analyzes the real growth in assets, sales, and net operating income. According to table 6.S1, assets in the median nonlisted firm have grown by 2% in 2005, while sales have grown by 5%. The median net operating income has decreased by 34%, reflecting a much higher variation in earnings than in size. In contrast, median assets in listed firms have grown by 16%, sales by 13%, and net operating income dropped by 7%. Large nonlisted firms are more comparable to listed, as their median growth rates are 9%, 10%, and 4%, respectively.

Table 6.S3 shows growth rates over the sample period. They vary considerably over time regardless of whether we focus on assets, sales or earnings. Also, there is no clear pattern, as no particular combination of size and listing status generates unique growth rates. Thus, our finding for 2005 is not the typical case for the full sample period. For instance, large nonlisted firms have on average median asset growth of 7% and sales growth of 8% per year. The corresponding figures for listed firms are 8% and 9%, respectively.

In summary, we find that growth rates in both assets, sales, and net income vary considerably over time, and that there is no clear relationship in the aggregate data between growth on the one hand and firm size and firm type on the other. However, in order to better understand whether size and growth are indeed independent as assumed in Gibrat's Law (Sutton, 1997), one needs to formally relate size and growth to each other at the firm level. This is an elaborate procedure that we will not pursue in this study.

6.6 Dividends

Table 6.6.1 shows the percentage of firms that pay dividends (payers) and the fraction of earnings paid out by those that decide to pay (payout ratio). Since 2005 appears to be a very unusual year, we exclude this final sample year from the time series summary statistics in the rightmost column. The table shows that roughly one third of all limited liability firms pay dividends in a given year. Although there is no striking difference between listed firms and nonlisted firms as a whole, large nonlisted firms pay dividends considerably more often than other firms; typically every second firm as opposed to every third. The payout propensity increases over time from the middle of the sample period.

The payout ratios are strikingly different. The median nonlisted firm that has decided to distribute dividends pays out almost twice as much of its earnings as the median listed firm; typically 75% vs. 40%. Among the nonlisted, the payout tends to decrease with firm size. These relationships are stable over time, and the payout ratios grow over time in every sample, particularly after year 2000.

[Table 6.6.1]

The higher payout by the nonlisted firms that decide to pay is consistent with the transaction cost idea that dividends and capital gains are substitutes. The more costly it is for the firm's owners to create home-made dividend policy by trading the company's shares in the market, the more dividends the company will pay. The data is also consistent with the notion that the majority owners pay high dividends to reduce the second agency problem, i.e., the potential conflict of interest between the strong and weak stockholders, which is more serious the more concentrated the ownership structure.

The fact that nonlisted firms pay much higher dividends than listed firms once they decide to pay apparently suggests that listed firms actually pay less than what their owners prefer. Such a conclusion would be premature, however, since it implicitly assumes that any

existence of dividend clienteles is independent of the firm's listing status. However, the distribution of dividend preferences among the owners may depend on listing status. Chapter 7 will shed light on the validity of this assumption by showing how the ownership structure differs between listed and nonlisted firms. It will also show how ownership concentration differs, which is relevant for the agency explanation.

Table 6.6.2 examines the proportion of payers and the dividend payout ratio in a regression setting. The potential determinants are listing status, firm size, age, growth, and ROA. We also control for industry membership, and we test the models on the sample of all firms and the subsample of large firms (i. e., the 90% largest among the listed and the 5% largest of the nonlisted).

The logistic regression shows that firms pay dividends more often when they are old, slow-growing, and profitable. Larger firms pay more often in general, but the opposite is true within the subsample of large firms. Similarly, nonlisted firms pay dividends more often in general, but the relationship is not statistically significant among large firms.

The second model shows that a dividend payer in the sample of all firms tends to pay out more of its earnings when the firm is old, grows slowly, has low returns to assets, is small, and nonlisted. This relationship is also observed in large firms, but listing status and growth are no longer statistically significant determinants.

[Table 6.6.2]

Summarizing, we have found that although the propensity to pay dividends does not differ remarkably with listing status, the typical fraction of earnings paid out once the firm decides to pay is much higher among nonlisted firms. Regardless of listing status, the payout is also higher the smaller, older, slow-growing, and unprofitable the firm. This may suggest dividend payments are vehicles for reducing the cost of low stock liquidity and for mitigating the conflict of interest between strong and weak stockholders. The relationship between listing status and dividend payout is less clear when we only study large firms of either type.

6.7 Technology

This section briefly describes distributional properties of the assets-to-employees ratio (AtE) and the sales-to-employees ratio (StE). These two ratios, which are alternative measures of labor intensity, may be thought of as crude proxies of production technology. The higher the ratios, the less labor intensive the production.⁴⁵

Table 6.S1 shows that the median AtE in 2005 is 2.3 for listed firms and 0.5 for nonlisted. The median StE is 1.2 and 0.9, respectively. The frequency distribution of either ratio resembles the lognormal distribution for both samples, although our tests for log normality are rejected. Thus, for the sample as a whole, nonlisted firms are more labor intensive than listed firms. Panel C shows, however, that although large nonlisted firms are more labor intensive than listed firms according to AtE, the opposite is true according to StE. Finally, both ratios for nonlisted firms increase monotonically throughout the sample period, reflecting higher asset intensity. For example, panel B in table 6.S3 documents that the median value of assets to employees in a nonlisted firm has grown from 0.31 to 0.47 million. A similar pattern can be observed in the other subsamples.

⁴⁵ Cross-sectional differences in such ratios may also reflect differences in operational efficiency, particularly within a given industry. This alternative interpretation is less of a problem in our setting, as we only compare listed firms as a whole to nonlisted firms or large nonlisted firms as a whole to get a rough feeling for potential technology differences.

Summarizing, this section documents that for the sample as a whole, nonlisted firms are more labor intensive than listed. However, the difference is less obvious for large firms. Labor intensity drops over time regardless of listing status and firm size.

6.8 Summary

This chapter presents key corporate finance characteristics in the basic sample of firms as specified in chapter 4. We classify these characteristics into firm size, asset structure, capital structure, profitability, growth, dividends, and technology, respectively. Our major objective is to provide rich descriptive statistics rather than test existing theories of corporate finance.

Although listed firms are much larger than most nonlisted firms, there are still considerably more large firms in the economy that are nonlisted. For the sample as a whole, nonlisted firms are more labor intensive, but not when we only compare large firms. Labor intensity falls over time regardless of firm size and listing status.

Growth rates in assets, sales, and net income vary considerably over time, and there is no obvious relationship between growth and listing status. Regardless of whether we measure size by sales, assets, or employees, the histogram of size in the basic sample closely resembles a lognormal distribution. This is consistent with independence between growth and size at the individual firm level.

Listed firms have less liquid assets than nonlisted firms, and they also invest more relative to depreciation. In particular, nonlisted firms tend to keep constant capacity by investing to offset depreciation, whereas the real investment of listed firms is considerably higher than depreciation. As we also find that their growth rates in sales and earnings are fairly similar, this may suggest the marginal value of investments is higher in nonlisted firms, possibly because capital constraints make them underinvest.

Financing patterns vary systematically with listing status, as nonlisted firms fund their assets with more debt and use debt with shorter duration. The finding that nonlisted firms use more debt persists across a series of multivariate regression models. In these models, we control for many potential leverage determinants, and we use several alternative samples. These tests also show that regardless of listing status, firms use more debt when they are small, when they grow, and when they have low profitability.

Nonlisted firms have higher returns to assets than listed firms, and the difference grows when we only compare large firms of both types, where the median ROA is 8% in nonlisted firms and 5% in listed firm. The propensity to pay dividends does not vary much with listing status, but the typical fraction of earnings paid out is much higher both economically and statistically when the firm is nonlisted, although the relationship is weaker among large firms. Regardless of listing status and firm size, the dividend payout is higher the smaller, older, slow-growing, and unprofitable the firm. This may suggest that high dividend payments are vehicles for reducing the cost of low stock liquidity and for mitigating the conflict of interest between strong and weak stockholders. More elaborate analysis is needed to settle this issue.

7. Corporate governance

Based on existing theory and empirics of corporate governance from chapter 2, we report our findings on ownership structure in section 7.1, board composition in 7.2, and the relationship between governance and performance in 7.3.

We present the descriptive statistics for ownership structure and board composition in terms of joint summary tables. Table 7.S1 shows distributional properties per ownership and board variable for 2005, and table 7.S2 reports three of these properties (the 75th percentile, the median, and the mean) by year for the sample period 2000-2005. Tables 7.S3 and 7.S4 group the 2000-2005 governance variables by industry sector and firm size, respectively. To save space, the three latter tables only report the findings for all firms as a group. We will comment whenever there are large differences between subsamples in these three tables.

[Table 7.S1]

[Table 7.S2]

[Table 7.S3]

[Table 7.S4]

7.1 Ownership structure

Because the CCGR database includes all firms in the economy, we can describe the ownership structure by both the standard direct (first-layer) equity holdings and by the ultimate (all-layers) holding. That is, if a stock in firm A is held by a Norwegian corporation B and not by a person, the state, or a foreigner (i.e., the three ultimate owner types in our setting), we can trace the identity of the corporate owner through firm B and possibly through other firms owning B until we find the ultimate owner in terms of a person, the state, or a foreigner. The ultimate fraction in firm A held by a person, the state, or a foreigner is the sum of direct and indirect fractions in A held by such an ultimate owner. The indirect fraction is the product of the equity fractions held along the path of indirect holdings from the ultimate owner to firm A (LaPorta et al, 1999).⁴⁶ By comparing the results based on direct and ultimate ownership, we can clarify whether first-layer ownership is sufficient or whether it is crucial to undo ownership pyramids and pin down the ultimate owners behind all layers, which requires much more comprehensive ownership data which seldom exists.⁴⁷ Since the nonlisted firms dominate the sample of all firms by any standard for aggregate size, we mostly focus on the three samples of all firms, large nonlisted firms, and listed firms.

We report the findings on ownership concentration in section 7.1.1, owner types in 7.1.2, and insider ownership in 7.1.3, respectively. All the corporate governance variables are defined in Appendix 7.A1.

⁴⁶ The control right, as opposed to the cash flow right described above, is the direct voting fraction held in A plus the minimum of the voting fractions held at any point along the indirect path. We will only use cash flow rights in the following.

⁴⁷ The CCGR database currently lacks ultimate ownership for insiders. Moreover, the VPS database, which is our source of detailed ownership data for listed firms, only provides direct holdings by anonymized investors. Therefore, we only have first-layer ownership for listed firms. Ultimate ownership for insiders in nonlisted firms will be produced at a later stage.

7.1.1 Ownership concentration

Table 7.S1 shows ownership concentration statistics for all firms in panel A, nonlisted firms in panel B, large nonlisted firms in panel C, and for listed firms in panel D. Every panel reports the findings on ownership concentration based on direct holdings (subscript D) first and ultimate holdings (subscript U) next. The ownership concentration measures we report are the holdings by each of the five largest owners, their cumulative holdings as coalitions, the holdings of the largest and smallest outside owner, the Herfindahl index, the number of owners, the mean and median holding per owner, the number of blockholders with at least a 5% stake and a 10% stake, and the aggregate fraction held by these two blockholders types.

The largest direct (first-layer) owner in a Norwegian AS or ASA holds on average 70% of the firm's stock in 2005. This exceeds the 2/3 super-majority required for charter amendments by a comfortable margin. The second largest owns 19%, there are ten owners altogether per firm, and the mean holding per owner is 63%.⁴⁸ According to table 7.S2, concentration is very stable over the 2000-2005 period, and table 7.S3 documents that there is variation across industry sectors. For instance, the mean holding of the largest owner is 72% in trade and 63% in agriculture, fishing, forestry, and mining. Finally, table 7.S4 shows that when firms are grouped according to size, some of the concentration proxies suggest that ownership concentration decreases as firm size grows, at least over certain size intervals. For instance, the mean direct holding of the largest owner is 73% in the first (lowest) size decile, decreases monotonically to 65% in the ninth decile, and then rises again in the tenth decile.

Thus, the average firm has very high ownership concentration and very few owners. In fact, table 7.S1 also shows that this is the case in most firms. One fourth of all firms are owned by one person, and three quarters of the firms have an owner who holds a simple majority (i.e., at least 50%). More surprisingly, but consistent with the concentration pattern reflected in the size deciles above, panel C documents that when we move from all firms to the subsample of large nonlisted firms (i.e., the 5% largest nonlisted by sales), concentration does not drop. The largest owner in large nonlisted firms holds 71% vs. 70% for all firms, the mean holding is the same (63%), whereas there are slightly more owners per firm (13 vs. 10). There is similar heterogeneity across industries as for all firms, and concentration tends to increase with firm size at the very highest size decile (not shown in the tables). Finally, it does not matter whether we use ultimate (all-layers) or direct (first-layer) holdings. For instance, the largest ultimate owner in the sample of all firms holds on average 71%, as opposed to 70% based on direct (72% vs. 71% in large nonlisted). Thus, the largest stockholder in a Norwegian firm which is not a subsidiary will normally not exercise control through a pyramid of other firms.⁴⁹

Overall, these descriptive statistics show that most nonlisted firms have a very concentrated ownership structure regardless of firm size and industry membership.⁵⁰ Moving on to listed firms in panel D of table 7.S1, ownership concentration falls dramatically. The largest direct owner holds on average 25%, the second largest has 11%, there are about 3,900

⁴⁸ The median number of owners per firm is 2, and the median holding per owner is 50%.

⁴⁹ Not surprisingly, this conclusion changes when we allow subsidiaries into the sample. If we include them, we find that concentration is higher both for direct and ultimate holdings, and that ultimate concentration is lower than direct. For instance, the largest ultimate owner in large nonlisted firms holds on average 67%, as opposed to 83% based on direct. This 16 percentage points difference is due to the fact that some of the direct cash flow rights are held by firms that in turn are held by several other owners. We find that this difference is three times larger for large firms than for all firms. This reflects that equity ownership by corporations is much more common in large firms, and particularly in subsidiaries.

⁵⁰ Since we do not yet know the data quality for ultimate ownership in listed firms, we will focus on nonlisted firms when analyzing ultimate ownership in the following.

owners per firm, and it takes the five largest for a simple majority. About 5% of the firms have a majority owner. At the opposite extreme of low concentration, one tenth have a largest owner with less than 10%. These figures are quite stable over time, but there is considerable variation across industries (not shown in the table). For instance, the largest owner holds on average 35% in a transport firm and 20% in a construction firm.

Figure 7.1.1.1 shows the histogram for ownership concentration in the sample of all firms for 2005, where we measure ownership concentration as the direct fraction held by the largest stockholder. The histogram reflects the point already noticed that ownership concentration is in general very high. The new point is the overrepresentation of holdings that are critical for control. In particular, the largest owner more often holds 1/3, 1/2, or 2/3 of the equity than other fractions. Thus, the regulatory thresholds for stockholder control are reflected in the observed ownership structure. This is an illustrating example of the general point that regulation matters for corporate governance.

[Figure 7.1.1.1]

Table 7.1.1.1 regresses ownership concentration on firm and owner characteristics. We measure ownership concentration by the Herfindahl index of direct holdings.⁵¹ The independent variables are listing status, the type of the largest owner (to be discussed in detail in section 7.1.2), firm size, firm age, industry sector (see section 4.3), and calendar year. To save space, we do not report the coefficient estimates for the fixed effects (year and industry).

[Table 7.1.1.1]

For the sample of all firms with no ownership restrictions, the model shows that concentration is higher if the firm is nonlisted, small, old, and when the largest owner is a person, the state, or a foreigner. Unreported coefficients show that concentration is unusually high in trade, and unusually low in agriculture, forestry, fishing and mining, and that it varies over time. The model explains 7% of the variation in ownership concentration, and the results are practically unchanged when we restrict the sample to multiple owner firms (i.e., firms with Herfindahl index < 1). When we estimate the model on large firms in the section to the right in the table, the model explains two to five times more of the variation in ownership concentration. Once more, concentration is higher in nonlisted firms. It also falls with firm size, but less convincingly so in multiple owner firms, where also age no longer relates systematically to concentration.

Overall, we find that regardless of sample restrictions, ownership concentration is highest in nonlisted firms, decreases with firm size, and is mostly higher when the largest owner is a person or a foreigner. Still, ownership concentration is very high in large nonlisted firms. Regulation matters for ownership concentration, as equity fractions that are legally critical for control are more common than other fractions.

7.1.2 Owner types

As already seen from table 7.1.1.1, we separate owners into institutions (financial owners), industrial (non-institutional; non-financial), persons (individuals), state, and foreign (international). Since we miss family data based on kinship and marriage, we cannot tell whether a firm's owners, directors, and officers belong to the same family. We use personal ownership to proxy for family ownership, treating each person as one family. Thus, we will underestimate the true volume of family ownership.

⁵¹ The results are identical when we instead measure concentration by the direct holding of the largest owner or by the Herfindahl index of ultimate holdings.

According to direct holdings as reported in table 7.S1, persons as a group own on average 76% of the equity. Domestic non-financial firms, who hold 5% in the aggregate, is the second largest type.⁵² Half the firms have personal owners, only. This distribution is rather stable over time (table 7.S2), whereas persons hold much less in the energy sector (28%) than elsewhere, and much more in construction (91%) (table 7.S3). Thus, by any criterion, individuals are the dominating owner type in limited liability firms as a whole.

Table 7.S1 shows that personal owners are much less common in large nonlisted firms, but still hold the largest aggregate stake of 29% on average, compared to 25% for foreigners and 13% for industrials. In listed firms, however, industrials are the largest owner type (38%), followed by foreigners (25%), and persons (18%). Thus, the person is the dominating owner type in nonlisted firms except in the largest, and the industrial owner is the most common type in listed firms. Regardless of listing status, the firm is more often owned through intermediaries the larger it is.⁵³

Overall, this analysis shows that for firms as a whole, persons are by far the dominating owner type. In large firms, however, and particularly the listed ones, most of the equity is held indirectly through intermediaries.⁵⁴

7.1.3 Inside ownership

Since we have insufficient inside ownership data for listed firms, and since we miss ultimate insider holdings for nonlisted firms, we focus on direct inside ownership in nonlisted firms. The summary tables report equity holdings by insider types, such as all insiders as a group, by ranked insider holdings, such as the largest insider, and by the ranked holding per insider type, such as the frequency by which the largest insider is the chairman.

According to panel B of table 7.S1, officers and directors (i.e., all insiders as a group) own on average 87% of a nonlisted firm's equity. The CEO has simple majority through 54%, which means directors excluding the CEO own 33%. The largest insider holds on average 67% (i.e., just the supermajority). This pattern is stable over time, energy firms have lower insider holdings than other firms, and insider holdings decrease with firm size.

In order to analyze insider holdings more formally and also to allow for multivariate relationships, the regression model in table 7.1.3.1 relates insider ownership in private firms to the largest owner's type, firm size, and firm age. Panel A presents the relationship between insider concentration, size, and age, whereas panel B adds the type of the largest owner as an independent variable. Both panels include unreported industry and year fixed effects as control variables. To ensure that the data is not cut into very small subcategories, which is a problem when we want to control for industry and time effects, we merge institutional owners with the unspecified type, since institutions are very seldom the largest owner in nonlisted firms anyway. The four alternative samples of nonlisted firms are all firms and

⁵² Since this is a corporate governance setting, we consider each ownership structure equally important by equally-weighting across all sample firms to get the mean values. Thus, these average fractions do not reflect the owner types' share of the overall equity wealth in the economy, which would be represented by a value-weighted average.

⁵³ As expected, first-layer aggregate ownership decreases for persons and increases for corporations if we include subsidiaries. In such a sample, persons in large nonlisted (listed) firms hold on average just 13% (16%) of the stock, compared to 48% (40%) for industrial owners.

⁵⁴ Notice that the concept of ultimate owners is rather useless in an owner type setting, as the ultimate owner approach reallocates ownership from intermediary owners to underlying owners, who in principle are persons, only. Thus, in a perfect reallocation from direct (first-layer) to ultimate owners, all firms would be owned 100% by persons. In practice, holdings by the state are never reallocated to the citizens, and we cannot reallocate direct ownership by foreigners in our sample, since we mostly do not know their identity due to the nominee account system.

large firms, which we both analyze with no owner restrictions (i.e., both single and multiple owner firms allowed) and with a multiple owner restriction. The estimates show that insider holdings are consistently higher the smaller the firm, the younger the firm, and when the largest insider is a person.⁵⁵ The R^2 rises from about 2-5% in panel A to 30-45% in panel B, reflecting that whereas the firm's size and age are weak predictors of insider holdings, the type of the largest shareholder has considerable explanatory power.

[Table 7.1.3.1]

Overall, this analysis documents that most of the large owners in nonlisted firms are also on the board or the management team (i.e., insiders), and more so when the largest owner is a person, when the firm is small, and when it is young. The largest inside owner mostly controls the stockholder meeting, and the CEO is often the largest stockholder. Thus, the separation between ownership and control is normally non-existent in nonlisted firms, regardless of firm size. Therefore, the first agency problem (conflicts between owners and managers) is negligible, whereas the second (conflicts between large and small owners) is potentially large. This is the opposite situation of what Bøhren and Ødegaard (2006) found for the population of Norwegian listed firms, where insiders hold on average 8% of the equity in their sample, and the largest average insider holds 6%. Thus, listing status makes a big difference for whether or not powerful owners are on the board or on the management team.

7.2 Board composition

We analyze the structure of the board in terms of board size, board turnover (which reflects owner activity), CEO turnover (board activity), CEO-chairman duality (monitoring quality), and director characteristics based on age, gender, and employment (heterogeneity).

Panel A of table 7.S1 shows that the average board in nonlisted firms has 2.3 directors. About one third of the boards have just one director, 5% have at least five, and the largest board has 16 members. In terms of dynamics, 2% of the directors are replaced in a given year on average, and 1% of the firms replace at least half their directors.⁵⁶ Around 5% of the firms get a new chairman or a new CEO or both., and the chairman and the CEO are the same person in 54% of the firms.

The average director age is 50 years old, and females are a couple of years younger than males. Two thirds of the boards have only male directors, and the average fraction of female directors is 17%. Board size tends to increase with firm size, the mean rising from 1.92 to 3.43 directors as we move from the lowest to the highest firm size decile. These characteristics are stable, both across industries and over time.

Large nonlisted firms have larger boards than nonlisted firms as a whole (3.9 vs. 2.3 directors), they change their CEO slightly more often (turnover is 0.06 vs. 0.05), and the age difference between men and women is larger (4 years vs. 2 years). Finally, the boards of listed firms differ considerably from those of comparable nonlisted firms. The average board is almost twice as large (6.5 vs. 3.9 directors), CEO turnover is considerably higher (0.17 vs.

⁵⁵ Measuring insider holdings by CEO ownership or by non-CEO director ownership produces the same results.

⁵⁶ We define board turnover is 1 minus the ratio of the number of unchanged board members from the last period to the average number of directors during the current period.

0.06), the female directors are two years younger (45.4 vs. 47.6), and the age difference between men and women is three years larger (7 vs. 4 years).⁵⁷

Research has repeatedly shown that board size correlates inversely with performance. In order to better understand the determinants of board size, table 7.2.1 reports the results of estimating a model that regresses board size on listing status, firm size, firm age, ownership concentration, board turnover, director age, the fraction of employee directors, the fraction of female directors, and industry sector. The results are practically identical in all four samples, and the models explain 30-40% of board size variation. The table shows that the board has more directors the larger and older the firm, the lower the ownership concentration, the higher the board turnover, the younger the directors, and the higher the fraction of female directors and employee directors. Being listed per se increases board size.

[Table 7.2.1]

Summarizing, most boards are very small, stable over time, homogenous in terms of gender and stakeholder mix (few women and few employee directors), and heterogeneous in terms of age (men are older than women). Larger boards are mostly found in large, old, and listed firms with low ownership concentration. These larger boards tend to have more stockholder-elected directors who are young and female and more employee directors.

7.3 Governance and performance

Section 6.6 shows that nonlisted firms have higher median book return on assets (ROA) than listed firms. This section explores whether this can be explained by the governance mechanisms analyzed in this chapter and by differences in non-governance characteristics like size and age. Table 7.3.1 starts out by documenting distributional properties of the ROA in 2005 for nonlisted firms, listed firms, and large nonlisted firms, respectively. Panel A shows parameters of the unconditional distributions, whereas panels B-E show the median ROA per decile of the largest owner's equity holding, the Herfindahl index of all holdings, the insider ownership, and board size, respectively. Finally, panel F shows median ROA per type of the largest owner.⁵⁸

According to panel A, the median (mean) ROA is 7% (8%) in nonlisted firms as a whole, 8% (11%) in large nonlisted firms, and 5% (5%) in listed firms. Thus, as already documented in section 6.4, nonlisted firms tend to be more profitable than listed firms, particularly when we compare firms of similar size.

[Table 7.3.1]

Panels B and C show the median ROA within each of ten ownership concentration deciles (0-9). The column called “.” represents observations with missing data for that variable, the “-1” columns contains the observations with 100% ownership concentration (single-owner firm), and columns 0-9 are the deciles (from lowest to highest concentration) for multiple-owner firms. Empty cells represent deciles that cannot be meaningfully separated from the decile to the right because the ownership characteristic in question has the same

⁵⁷ Norwegian listed firms have very small boards compared to almost any other country. Wymeersch (1998) reports an average board size of 10 in the UK, 12 in France, 10 in Belgium, 12 in Italy, and 7 in the Netherlands. The average size of the German supervisory board is 13 (Hopt, 1998). Carter and Lorsch (2004) find that the average US board has about 12 directors, which is down from 16 in the 1980s.

⁵⁸ To reduce the effect of extreme outliers reflected in panel A, panels B-F use ROA observations which are winsorized at the 5%/95% tails.

value in both deciles (such as deciles 4 and 5 for the largest owner of nonlisted firms in panel B). Both panels show that the ROA tends to be convex in ownership concentration for nonlisted firms as a whole, as the ROA peaks around the 9th decile. It is difficult to spot similar patterns in large nonlisted firms and in listed firms.

In panel F, the column headings 0-5 represent unidentified, institutional, personal, state, foreign, and industrial owners, respectively. The figures reflect that the median ROA in nonlisted firms as a whole is highest when the largest owner is a person (7.3%). This is also true for the subsample of large nonlisted firms (8.4%). State owners play this role in listed firms (11.1%), driven by a very small number of recently semi-privatized firms in petroleum and telecom. Insider ownership in panel D, where we must drop listed firms because of weak data, supports the impression from panels B and C that high concentration correlates positively with ROA up to rather high concentration levels (around decile 7), and also that the relationship is diffuse in large nonlisted firms. Finally, panel E documents that for nonlisted firms, the median ROA is highest in the lowest board size decile. The pattern is less clear for listed firms.

Overall, table 7.3.1 suggests that the typical nonlisted firm is more profitable than the typical listed firm, that nonlisted firms with high ownership concentration and high inside ownership are particularly profitable unless concentration becomes excessive and the firm is particularly large, and also that the identity of the largest owner matters for all firm types. Small boards are associated with the highest performance in nonlisted firms.⁵⁹

Table 7.3.2 provides a formal, multivariate test by regressing the firm's ROA on its corporate governance mechanisms, listing status, and controls. The mechanisms we consider are ownership structure (ownership concentration, owner type, and insider ownership), board composition (board size, CEO directorship, female directors, and employee directors), financial policy (leverage and dividends), and listing status. Our governance-independent control variables are firm size, firm age, and industry. Ownership concentration is measured by the holding of the largest owner.⁶⁰ To reduce the possibility of reverse causation, we lag the governance variables by one year. We estimate the models separately for all firms, large firms, and small firms. In all three cases, we investigate the potential effect of extreme ownership structures by also estimating the models in the subsample of firms that have at least two owners (multiple-owner firms). The base case model in panel A includes the type of the largest owner, but must ignore insider holdings and listing status, since we have too few listed firms to validly account for all three dimensions in one model. For the same reason, the model in panel B includes insider holdings and listing status, but not the type of the largest owner.

[Table 7.3.2]

Seven relationships stand out. First, and most importantly, after having controlled for differences in ownership structure, board composition, financial policy, firm size, firm age, and industry, nonlisted firms are more profitable than listed firms. The coefficients for the listing status dummies in panel B reflects that the expected ROA is 0.7-0.8 percentage points higher for a nonlisted firm than a comparable listed firm. This is true for the sample of all

⁵⁹ As the sample size per decile for listed firms is very small, the patterns in tables B, C, E, and F should be interpreted with considerable caution for this subsample.

⁶⁰ No results change when we alternatively measure ownership concentration by the Herfindahl index or if we use ultimate owners rather than first-layer owners.

nonlisted firms and for large nonlisted firms, and regardless of whether we include or exclude single-owner firms.⁶¹ Thus, listing status per se matters for performance.

The second finding worth noticing is that ROA relates positively to ownership concentration and insider holdings, suggesting that everything else equal, large owners are beneficial. However, there is also a negative coefficient for the quadratic term in both cases, meaning that ROA first increases and then decreases as concentration or insider holdings grows. This result is in line with most of the existing research for listed firms (Gugler, 2001; Becht et al, 2003). However, consistent with the univariate pattern from table 7.3.1, these relationships are mostly not statistically significant for large firms. Thus, the positive, quadratic link between performance and ownership concentration or insider holdings primarily occurs in nonlisted firms that are smaller than most listed firms. The subsample of small nonlisted firms confirms this impression.

Third, panel A shows that having a person (an industrial firm) as the largest owner correlates positively (negatively) with performance in all samples and significantly in all but the sample of large firms with multiple owners (large firms as a whole). This is consistent with the notion that direct monitoring produces lower agency costs than delegated monitoring. It also fits well with recent findings on the excess operating performance of family control in listed firms (Villalonga and Amit, 2006; Maury, 2006).

Fourth, ROA drops as board size grows, although the relationship is less convincing in large firms when we also account for insider ownership (panel B). This suggests that although more directors may increase the board's information pool, the board becomes a less efficient decision-maker. Earlier studies of listed companies in several countries report the same result when measuring performance by market value, which only captures the security benefits (Bøhren and Strøm, 2008). It is still noticeable that the inverse relationship between ROA and board size turns up in our nonlisted firms as well, where the boards are so small. Fifth, ROA is negatively related to our proxies for board diversity (female directors and employee directors), but the relationship is not consistently significant across all samples.

Sixth, the ROA is higher when the CEO is on the board in a large firm. This suggests that the positive skills effect of CEO participation is not offset by weaker monitoring quality from the other directors. The finding is in line with the existing evidence from listed firms of zero or inverse correlation between board independence and market value (Bhagat and Black, 2002). Finally, ROA increases with dividend payout, which is consistent with the agency rationale for distributing a high fraction of the earnings. Findings based on the market value of listed firms are similar (Bøhren and Ødegaard, 2006). The evidence on leverage is diffuse.

Overall, table 7.3.2 documents that key governance mechanisms (ownership structure, board composition, and financial strategy) correlate systematically with performance. There is a quadratic relationship between performance and both ownership concentration and insider holdings except in large firms, where the relationship disappears. Having a person rather than a corporation as the largest owner is associated with higher performance except in large firms. As for board composition, board size relates inversely to performance, board diversity has no clear-cut relationship to performance, and large firms do better when their CEO is also a director. Dividends associate positively with performance in every sample.

The bulk of these findings are in line with earlier studies that mostly measure performance by market value and that only analyze listed firms. Thus, although listing status makes a big difference for the governance structure of nonlisted vs. listed firms (as we showed in sections 7.1 and 7.2), it seems less important for defining what good governance

⁶¹ Since the sample of small listed firm is so small, we cannot estimate the listing status dummies for small firms in panel B.

amounts to in terms of value-enhancing ownership structures, boards, and financial policies (this section). This is the first new result on the relationship between listing status, governance, and performance.

The second novel result is that after having accounted for how firms differ both in terms of governance mechanisms, industry, size, and age, we find that nonlisted firms have higher performance than listed firms. The excess return is about 0.8 percentage points of ROA. This suggests that listing status per se matters for performance. Is this just due to measurement errors or is there an economic explanation in terms of higher efficiency in nonlisted firms? We do not know yet, but we doubt that measurement error is a major part of the explanation. There are good reasons to believe that the quality of the data set is unusually high. Moreover, the sample size is undoubtedly large, and the models we have used control for a series of potential performance determinants that are firm-specific (governance, age, and size) and industry-specific (industry dummy). Still, we may have ignored performance determinants that correlate with listing status, but not with the explanatory variables in the model.

An alternative explanation is that nonlisted firms have higher ROA simply because they are more capital constrained. That is, the limited access to outside financing prevents the firm from investing in projects that would be profitable under the lower cost of capital faced by a similar listed firm, which is less constrained. This makes the ROA of the marginal investment project higher in nonlisted firms than in listed. Therefore, the nonlisted firm's overall ROA (i.e., the aggregate ROA across all its investment projects) will also be higher.

The other possibility is that nonlisted firms are more efficient. We can think of two reasons why. First, if the first agency problem is generally more costly than the second, net agency costs are higher in listed firms, since this is the firm type where the first agency problem dominates. As the ROA reflects returns after agency costs are paid, listed firms will underperform. Second, it has been argued that unless management is given sufficient time to innovate, develop, and commercialize new ideas, firm value may be destroyed (Stein (1988, 1989), Jacobs (1991), Porter (1992), Bebchuk and Stole (1993)). Fuller and Jensen (2002) argue that capital market participants are partly responsible for this problem, as financial analysts push managers towards meeting unreasonable earnings forecasts by overinvesting in projects with short payback. Since nonlisted firms do not report quarterly earnings, are not priced in the market every day, and have very illiquid ownership rights, they may be less exposed than listed firms to the pressure towards value-destroying short-termism.

Nevertheless, our result is puzzling, since the decision to stay private or go public is endogenous, at least for firms above a certain size, such as the large firm sample in our study. Why do the owners voluntarily take their nonlisted firm public, and why do not the owners of listed firms take it private? Or maybe the fact that very few firms that can go public never do so is evidence that the public form is often inefficient? We think these are interesting questions for future research.

7.4 Summary

This chapter has analyzed the characteristics of the firm's ownership structure and board composition and how these governance mechanisms interact with economic performance. Regardless of what sample we use and what other determinants we control for, ownership concentration is significantly higher when the firm is nonlisted. It is also higher when the largest owner is a person or a foreigner, but decreases with firm size, although even large nonlisted firms which are not subsidiaries have very high ownership concentration. We find that regulation matters for concentration, as the largest owner tends to often hold equity

fractions that are just above rather than just below the legally critical lower bound for control (1/3, 1/2, 2/3). Persons are the dominating owner type by far, although most of the equity in listed firms and large nonlisted firms is held indirectly through other firms. Controlling firms through pyramids of other firms is still rare, at least when we ignore subsidiaries.

Large owners in nonlisted firms are very often on the board or the management team (i.e., insiders), and more so when a small and young firm has a person as the largest owner. Because the largest insider tends to be both the CEO and the majority owner, separation between ownership and control is a non-existent phenomenon. This makes the first agency problem negligible in nonlisted firms, whereas the second is potentially large. The situation is the opposite in listed firms, where the first agency problem dominates because most large owners are relatively small and neither the firm's directors nor officers.

The overwhelming majority of boards are very small, stable over time, and homogenous in terms of gender and stakeholder mix. Larger boards are overrepresented in large, old, and listed firms with low ownership concentration. Such boards tend to have more owner-elected directors who are young and female and more directors chosen by the employees.

We find that except in large firms, operating performance as measured by ROA is higher when some owner has a large stake, and that having a person rather than a corporation as the largest owner is associated with higher performance. Firms with small boards are more profitable except in large firms, board diversity has no clear-cut relationship to performance, and large firms tend to have higher performance when their CEO is also a director. Dividend payout is positively associated with performance in every sample.

These relationships between performance and governance mechanisms grossly correspond to those found earlier for how these governance mechanisms correlate with market value or operating performance in listed firms. Thus, the first remarkable result is that although listing status makes a big difference for how the governance structure looks, it matters much less for how the governance structure interacts with performance. The second finding to notice is that after having controlled for differences in governance, size, age, and industry, we do find that listing status matters for performance. In particular, nonlisted firms outperform otherwise comparable public firms in terms of ROA. We can only speculate what the underlying reasons may be. One possibility is that this happens because nonlisted firms are more capital constrained. A second is that if the first agency problem is more costly than the second, conflicts of interest are more costly in public firms. Another is that since nonlisted firms do not report quarterly earnings, are not continuously priced, and have very illiquid stock, their managers feel less pressure towards value-destroying short-termism. Regardless of explanation, however, the excess performance of nonlisted firms is puzzling, since thousands of firms can voluntarily choose whether to be public or private.

8. Summary and conclusions

Motivation. Existing research on corporate finance and governance has almost exclusively studied firms that are listed on a stock exchange (public firms). This is probably due to the difficulty of collecting data for nonlisted (private) firms about their market value, accounting figures, ownership structure, and board composition. The resulting lack of insight into the economics of nonlisted firms is problematic for two reasons. First, we show that nonlisted firms constitute a much larger share of the overall economy than listed firms, and that this is probably true in most countries. Second, existing evidence from listed firms may not apply to the nonlisted, which are less transparent, cannot use public equity markets, offer less minority stockholder protection, and have very illiquid stock. Also, the lack of a benchmark from nonlisted firms makes it difficult to determine the uniqueness of being listed, and particularly why certain firms choose to go public whereas the vast majority prefer to stay private.

Focus. Our study tries to improve on this situation by building a comprehensive, detailed, and reliable database on the corporate finance and governance characteristics for the population of listed and nonlisted firms with limited liability. This is the CCGR database, which we use to analyze a wide range of corporate finance and governance characteristics and to explore how they relate to operating performance. We cover a wide range of topics in a relatively rough way, using the insight obtained from this first look at the data as a point of departure for studying much more focused questions in the future.

Database. The CCGR database includes every firm with limited liability registered in Norway. It has twelve consecutive years of accounting data and six consecutive years of governance data, involving about 240 items per firm per year. The governance data specifies every equity holding above 5%, the composition of the board, and the identity of the owners, the CEO, and the directors. The firm's credit rating, founding year, and industry are available as well. The regulatory environment is characterized by high investor protection, stronger minority protection in listed firms than nonlisted, and by accounting regulations that mandate comprehensive, audited accounting statements regardless of the firm's listing status and size.

Sample. We study about 77,000 firms per year. The sample only includes active firms and ignores financials and subsidiaries. Service and trade firms jointly account for almost 70% of all firms in the sample. Energy firms represent less than 0.5%, but is still the largest industry by assets and sales. Nonlisted firms comprise 99.8% of the sample.

Relative importance. Nonlisted firms as a whole are much more significant in the economy than listed firms. They earn in the aggregate four times higher revenues, employ four times more people, and hold twice as much assets. Indirect evidence suggests that this is also the typical case internationally. This makes it even more remarkable that so little is known about the economics of nonlisted firms.

Firm size. Regardless of whether we measure size by sales, assets, or employees, the distribution of firm size in the economy is close to lognormal. This is consistent with Gibrat's law, which shows that independence between growth and size at the firm level implies a lognormal distribution of size in a large set of firms. Although more than two thirds of the listed firms have at least 100 employees and the vast majority of nonlisted firms have much less, there are still about ten times more nonlisted firms with at least 100 employees. For every listed firm, there are typically 30 nonlisted firms of similar size.

Asset structure. Nonlisted firms have more liquid assets. The average nonlisted firm invests to just offset depreciation, whereas listed firms invest considerably more. Nevertheless, sales growth and earnings growth are quite independent of listing status,

suggesting that the marginal value of real investments is higher in nonlisted firms. Possibly, nonlisted firms may be underinvesting because they cannot access public equity markets and may also have to pay more for their debt.

Financial strategy. Both financial leverage and the debt structure vary with listing status. Nonlisted firms finance their assets with considerably more debt, which may be partially due to the unavailability of public equity. They also use debt with shorter duration, which may be driven by asset-liability matching or larger information asymmetry between borrowers and lenders. Regardless of listing status, firms use more debt when they are small, grow quickly, and have low profitability. A nonlisted firm distributes a much higher fraction of its earnings than a listed firm. This may reflect that nonlisted firms have owners with stronger dividend preferences or that nonlisted firms pay higher dividends to reduce the conflict of interest between majority and minority owners (i.e., the second agency problem). Regardless of listing status, less earnings is retained by small, old, unprofitable, and slow-growing firms.

Ownership structure. Ownership concentration is much higher in nonlisted firms, and highest when the largest owner is a person or a foreigner. Concentration decreases with firm size, but even large nonlisted firms have very concentrated ownership. Persons hold by far most of the equity except in listed firms, where corporate owners dominate. Ownership control through pyramids is uncommon, but equity fractions that are legally critical for control (i.e., 1/3, 1/2, and 2/3) are more often observed than other holdings.

Board composition. Large owners of nonlisted firms are very often their officers or directors or both (i. e., insiders), particularly when small, young firms have a person as the largest owner. Because the largest insider is often both the CEO and the majority owner, ownership seldom separates from control in nonlisted firms. This makes the first agency problem negligible (i.e., the conflict of interest between owners and managers), but the second potentially large (conflicts between large and small owners). The situation is just the opposite in listed firm, where the first agency problem dominates because most large owners are neither officers nor directors. The overwhelming majority of boards are very small, stable over time, and homogenous in terms of gender mix and stakeholder types. Larger boards are typically found in large, old, listed firms with low ownership concentration. Such boards have more directors who are young and female and also more employee-elected directors.

Economic performance. After having accounted for a series of governance mechanisms and control variables, we find that nonlisted firms tend to have higher operating performance as measured by accounting return on assets (ROA) than listed firms. The ROA is also higher when personal ownership is high, the board is small, the CEO is a voting member, and when firms pay high dividends relative to earnings. This evidence suggests that personal ownership reduces agency costs more than ownership through intermediaries, that good boards are small, and that paying the free cash flow out of the firm reduces agency costs and improves the liquidity of the owners' wealth. More importantly, these findings also suggest that listing status matters not only for behavior in terms of corporate governance and finance, but also for the ability to create economic value. At this stage, we can only speculate why this happens. One possibility is that nonlisted firms have higher ROA because they are more capital constrained. Another is that the agency conflict between owners and managers is more costly than the conflict between large and small owners. Also, since nonlisted firms do not report quarterly earnings, are not continuously priced, and have very illiquid stock, they may feel less pressure towards value-destroying short-termism. Still, the excess performance of nonlisted firms is puzzling, since thousands of our sample firms can voluntarily choose whether to be public or private. We think this is an exciting challenge for future research on the corporate finance and governance of nonlisted firms.

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Table 4.1. Sample construction from the population of all firms with limited liability*A. Filters for all firms*

| Nr. Filtering | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | Mean |
|--------------------|--------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| No filter | 99,379 | 105,659 | 111,380 | 119,100 | 127,082 | 131,041 | 145,656 | 149,468 | 153,912 | 155,996 | 158,259 | 182,689 | 136,635 |
| 1 Orgtype | 99,224 | 105,363 | 111,077 | 118,810 | 126,831 | 130,817 | 136,140 | 138,745 | 141,146 | 141,991 | 144,426 | 157,710 | 129,357 |
| 2 1+S>0 | 91,989 | 97,888 | 103,424 | 109,866 | 118,519 | 122,452 | 127,626 | 130,385 | 132,443 | 132,254 | 133,365 | 141,133 | 120,112 |
| 3 2+A>0 | 91,468 | 97,358 | 102,864 | 109,296 | 117,956 | 121,805 | 127,011 | 129,856 | 131,903 | 131,752 | 132,943 | 140,719 | 119,578 |
| 4 3+BAL≥0 | 89,514 | 95,465 | 100,889 | 107,220 | 115,875 | 119,727 | 124,869 | 127,608 | 129,630 | 129,468 | 130,731 | 138,101 | 117,425 |
| 5 4+CE≤CA | 89,490 | 95,425 | 100,834 | 107,114 | 115,703 | 119,612 | 124,736 | 127,389 | 129,412 | 129,217 | 130,494 | 137,853 | 117,273 |
| 6 5+WC≤A | 89,490 | 95,425 | 100,834 | 107,114 | 115,703 | 119,612 | 124,736 | 127,389 | 129,412 | 129,217 | 130,494 | 137,853 | 117,273 |
| 7 6+EmplAvg | 67,006 | 72,513 | 77,683 | 83,931 | 90,835 | 94,618 | 98,278 | 99,954 | 101,307 | 101,795 | 102,775 | 103,760 | 91,205 |
| 8 7+EmplYr | 67,006 | 72,513 | 75,373 | 83,906 | 90,831 | 84,707 | 87,284 | 88,042 | 89,348 | 89,571 | 90,731 | 103,760 | 85,256 |
| Sample candidates | 67,006 | 74,055 | 79,449 | 86,346 | 93,240 | 94,478 | 96,976 | 98,035 | 99,192 | 100,045 | 101,677 | 103,760 | 91,188 |
| Ex financial firms | 66,469 | 73,332 | 78,633 | 85,431 | 92,226 | 93,419 | 95,855 | 96,877 | 98,020 | 98,860 | 100,507 | 102,607 | 90,186 |
| Sample | 59,170 | 65,050 | 69,362 | 74,875 | 80,191 | 80,682 | 81,998 | 81,699 | 83,319 | 83,297 | 84,911 | 82,569 | 77,260 |

B. Filters for public firms

| Nr. Filtering | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | Mean |
|--------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| No filter | 116 | 142 | 148 | 187 | 207 | 190 | 188 | 181 | 176 | 157 | 165 | 186 | 170 |
| 1 Orgtype | 116 | 130 | 135 | 173 | 188 | 170 | 166 | 159 | 155 | 137 | 145 | 165 | 153 |
| 2 1+S>0 | 106 | 130 | 135 | 173 | 188 | 168 | 165 | 157 | 154 | 136 | 145 | 165 | 152 |
| 3 2+A>0 | 106 | 130 | 135 | 173 | 188 | 168 | 165 | 157 | 154 | 136 | 145 | 165 | 152 |
| 4 3+BAL≥0 | 105 | 130 | 134 | 173 | 186 | 165 | 165 | 157 | 152 | 132 | 143 | 163 | 150 |
| 5 4+CE≤CA | 105 | 130 | 134 | 173 | 186 | 165 | 165 | 157 | 152 | 132 | 143 | 163 | 150 |
| 6 5+WC≤A | 105 | 130 | 134 | 173 | 186 | 165 | 165 | 157 | 152 | 132 | 143 | 163 | 150 |
| 7 6+EmplAvg | 103 | 128 | 133 | 168 | 182 | 164 | 164 | 156 | 152 | 132 | 143 | 158 | 149 |
| 8 7+EmplYr | 103 | 128 | 133 | 168 | 182 | 164 | 164 | 156 | 152 | 132 | 143 | 158 | 149 |
| Sample candidates | 103 | 128 | 134 | 168 | 184 | 168 | 165 | 157 | 153 | 136 | 143 | 158 | 150 |
| Ex financial firms | 100 | 112 | 120 | 154 | 169 | 154 | 152 | 146 | 142 | 126 | 133 | 147 | 138 |
| Sample | 100 | 112 | 120 | 154 | 169 | 154 | 147 | 140 | 132 | 117 | 127 | 134 | 134 |

This table reports the filters used to construct the sample of Norwegian firms with limited liability over the period 1994-2005. The "Orgtype" line reports the number of all limited liability firms (*AS* and *ASA* firms) in the Norwegian economy. The "S" filter requires sales (operating income) >0, "A" requires total assets >0, "EMAvg" requires that employees in any year (even two years before or after the firm is in the sample) is positive, and "EMYr" requires that the employee figure is missing or positive for a nonlisted firm. "BAL" denotes a set of main balance sheet items, for which non-negativity is enforced. "CE" denotes cash equivalents, "CA" is current assets, and "WC" denotes working capital. We keep a company in the sample between the first and the last year it passes all filters (sample candidates). We exclude financial sector firms and also subsidiaries (the last line). A subsidiary is a firm where another firm holds more than 50% of its equity.

Table 4.2. Aggregate size per industry sector

| Sector | Sector label | Firms | Sales | Assets | Employees |
|--------|--|--------|-------|--------|-----------|
| 0 | Missing | 922 | 13 | 18 | 15 |
| 1 | Agriculture, forestry, fishing, mining | 1,671 | 29 | 46 | 16 |
| 2 | Manufacturing, chemical products | 6,822 | 605 | 648 | 264 |
| 3 | Energy | 337 | 681 | 808 | 50 |
| 4 | Construction | 8,740 | 128 | 65 | 98 |
| 5 | Service | 37,874 | 551 | 741 | 437 |
| 7 | Trade | 17,970 | 418 | 198 | 159 |
| 8 | Transport | 3,746 | 136 | 193 | 117 |
| 9 | Multisector | 4,487 | 63 | 54 | 47 |
| | | 82,569 | 2,624 | 2,770 | 1,203 |

This table shows measures of aggregate size across industry sectors for the sample of Norwegian limited liability firms in 2005 as specified in table 4.1. All firms are classified into industry sectors according to their NAIC industry codes as defined in Appendix 4.A2. Employees are in thousands, whereas sales and assets are in billions of NOK as of year-end 2005.

Table 5.1. The relative significance of firms with limited liability in the Norwegian economy

| Year | Sales/GNP | Assets/GNP | Employees | GNP |
|-----------------|-----------|------------|-----------|-------|
| 1994 | 48% | 43% | 1,060 | 2,881 |
| 1995 | 51% | 45% | 1,119 | 3,003 |
| 1996 | 51% | 45% | 1,152 | 3,306 |
| 1997 | 54% | 51% | 1,212 | 3,460 |
| 1998 | 57% | 61% | 1,272 | 3,364 |
| 1999 | 51% | 63% | 1,308 | 3,816 |
| 2000 | 52% | 61% | 1,339 | 4,267 |
| 2001 | 51% | 60% | 1,269 | 4,100 |
| 2002 | 53% | 64% | 1,255 | 4,114 |
| 2003 | 51% | 58% | 1,280 | 4,229 |
| 2004 | 53% | 56% | 1,296 | 4,665 |
| 2005 | 50% | 52% | 1,203 | 5,295 |
| Mean, all | 52% | 55% | 1,230 | 3,875 |
| Mean, nonlisted | 40% | 38% | 960 | |
| Mean, listed | 11% | 17% | 270 | |

This table presents aggregate size measures for Norwegian firms with limited liability over the sample period 1994-2005. "GNP" (Gross national product) is in billions of 2005 NOK, and "Employees" are in thousands. The "Employees" figures for firms with subsidiaries are from their consolidated accounting statements, provided their consolidated assets are never less than 85% of their nonconsolidated assets. Missing or zero values are filled in with the next available value, or with the previous available value if no later value is available. The sample selection procedure is explained in table 4.1.

Table 5.2. The relative significance of nonlisted firms in the Norwegian economy

| Year | Sales | Assets | Employees | Firms |
|------|-------|--------|-----------|-------|
| 1994 | 84% | 72% | 75% | 99.8% |
| 1995 | 84% | 72% | 75% | 99.8% |
| 1996 | 85% | 73% | 74% | 99.8% |
| 1997 | 85% | 74% | 73% | 99.8% |
| 1998 | 85% | 74% | 74% | 99.8% |
| 1999 | 85% | 76% | 78% | 99.8% |
| 2000 | 82% | 72% | 80% | 99.8% |
| 2001 | 70% | 63% | 81% | 99.8% |
| 2002 | 71% | 59% | 83% | 99.8% |
| 2003 | 71% | 67% | 82% | 99.9% |
| 2004 | 68% | 66% | 80% | 99.9% |
| 2005 | 66% | 64% | 81% | 99.8% |
| Mean | 78% | 69% | 78% | 99.8% |

This table presents the aggregate size of nonlisted firm as a percentage of all firms with limited liability in Norway from 1994 to 2005. The "Employees" figures for firms with subsidiaries are from their consolidated accounting statements, provided their consolidated assets are never less than 85% of their nonconsolidated assets. Missing or zero values are filled in with the next available value, or with the previous available value if no later value is available. The sample selection procedure is explained in table 4.1.

Table 5.3. Stock market capitalization of listed firms relative to GDP*A. European Union*

| | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | Mean |
|-----------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| Slovak Republic | 7 | 6 | 10 | 9 | 4 | 5 | 6 | 7 | 8 | 9 | 11 | 9 | 8 |
| Bulgaria | | 0 | 0 | 0 | 8 | 5 | 5 | 4 | 5 | 9 | 12 | 19 | 6 |
| Latvia | | 0 | 3 | 6 | 6 | 5 | 7 | 8 | 8 | 10 | 12 | 16 | 7 |
| Romania | 0 | 0 | 0 | 2 | 2 | 2 | 3 | 5 | 10 | 9 | 16 | 21 | 6 |
| Lithuania | | 2 | 11 | 17 | 10 | 11 | 14 | 10 | 10 | 19 | 29 | 32 | 15 |
| Poland | 3 | 3 | 5 | 8 | 12 | 18 | 18 | 14 | 15 | 17 | 28 | 31 | 14 |
| Slovenia | 4 | 2 | 3 | 8 | 12 | 10 | 13 | 14 | 21 | 25 | 30 | 23 | 14 |
| Czech Republic | 14 | 28 | 30 | 23 | 20 | 20 | 20 | 15 | 22 | 19 | 29 | 31 | 23 |
| Hungary | 4 | 5 | 12 | 33 | 30 | 34 | 26 | 20 | 20 | 20 | 29 | 30 | 22 |
| Estonia | | | | 22 | 9 | 32 | 34 | 25 | 35 | 41 | 55 | 27 | 31 |
| Portugal | 18 | 17 | 22 | 37 | 56 | 58 | 57 | 42 | 35 | 40 | 44 | 39 | 39 |
| Norway | 29 | 30 | 36 | 42 | 31 | 40 | 39 | 41 | 35 | 43 | 57 | 67 | 41 |
| Malta | 2 | 5 | 14 | 14 | 22 | 53 | 53 | 36 | 33 | 38 | 53 | 74 | 33 |
| Germany | 22 | 23 | 28 | 38 | 50 | 67 | 67 | 57 | 34 | 44 | 44 | 44 | 43 |
| Italy | 18 | 19 | 21 | 30 | 48 | 62 | 71 | 48 | 41 | 42 | 47 | 46 | 41 |
| Denmark | 36 | 31 | 39 | 55 | 57 | 61 | 68 | 56 | 45 | 58 | 63 | 70 | 53 |
| Ireland | | 39 | 48 | 62 | 77 | 72 | 86 | 73 | 50 | 56 | 63 | 58 | 62 |
| Greece | 15 | 15 | 19 | 28 | 66 | 170 | 99 | 74 | 52 | 62 | 61 | 68 | 61 |
| Spain | 30 | 33 | 39 | 50 | 66 | 69 | 87 | 77 | 68 | 82 | 90 | 85 | 65 |
| France | 33 | 33 | 38 | 47 | 67 | 101 | 109 | 88 | 66 | 76 | 91 | 81 | 69 |
| Belgium | 36 | 38 | 44 | 56 | 98 | 74 | 80 | 73 | 52 | 57 | 218 | 90 | 76 |
| Sweden | 61 | 72 | 91 | 110 | 112 | 149 | 137 | 108 | 74 | 96 | 109 | 114 | 103 |
| Netherlands | 81 | 86 | 92 | 124 | 153 | 174 | 173 | 119 | 96 | 95 | 107 | 122 | 119 |
| Finland | 38 | 34 | 49 | 60 | 119 | 273 | 245 | 157 | 105 | 105 | 99 | 108 | 116 |
| Luxembourg | 186 | 168 | 180 | 194 | 187 | 180 | 174 | 121 | 115 | 138 | 157 | 152 | 163 |
| United Kingdom | 116 | 124 | 146 | 151 | 167 | 201 | 179 | 151 | 119 | 137 | 133 | 139 | 147 |
| Mean | 38 | 34 | 40 | 48 | 59 | 76 | 73 | 56 | 46 | 52 | 65 | 61 | 54 |
| Median | 26 | 26 | 29 | 37 | 50 | 61 | 67 | 48 | 35 | 43 | 55 | 46 | 44 |

B. World

| | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | Mean |
|---------------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| High income | 63 | 68 | 76 | 90 | 107 | 135 | 118 | 103 | 82 | 99 | 109 | 113 | 97 |
| Middle income | 33 | 31 | 34 | 31 | 25 | 40 | 37 | 34 | 31 | 41 | 43 | 50 | 36 |
| Low income | 33 | 28 | 26 | 25 | 20 | 30 | 24 | 19 | 22 | 37 | 44 | 55 | 30 |
| Mean | 39 | 36 | 38 | 38 | 42 | 54 | 47 | 41 | 38 | 46 | 55 | 61 | 45 |
| Median | 25 | 21 | 22 | 23 | 22 | 33 | 26 | 23 | 24 | 28 | 31 | 37 | 26 |

This table shows market capitalization of listed companies as a percentage of the country's GDP. Market capitalization is calculated as the product of the share price and the number of shares outstanding in companies that are domestically incorporated and listed on the country's stock exchanges at the end of the year. We exclude investment companies, mutual funds, or other collective investment vehicles. The data source is the World Development Indicators database from the World Bank. The world mean and median values per year are calculated for those countries (out of a maximum of 102) which reported the data in a particular year.

Table 6.S2. Corporate finance: Descriptive statistics for 2005 by industry sector

| <i>Panel B. Nonlisted firms</i> | | Industry sector code | | | | | | | | | |
|---------------------------------|-----------------------|----------------------|-------|-------|-------|--------|-------|-------|-------|-------|------|
| | Percentile | 0 | 1 | 2 | 3 | 4 | 5 | 7 | 8 | 9 | |
| Size | Total Assets | P50 | 1.51 | 3.90 | 2.38 | 42.93 | 1.85 | 1.58 | 1.86 | 2.14 | 1.72 |
| | | P75 | 7.01 | 14.57 | 7.51 | 303.35 | 4.43 | 4.77 | 4.63 | 6.10 | 4.44 |
| | Employees | P50 | 2.00 | 4.00 | 4.00 | 8.00 | 4.00 | 2.00 | 4.00 | 3.00 | 3.00 |
| | | P75 | 6.00 | 7.00 | 11.00 | 31.00 | 9.00 | 6.00 | 7.00 | 8.00 | 7.00 |
| Growth | Sales | P50 | 0.40 | 3.39 | 4.08 | 17.26 | 4.00 | 1.79 | 4.35 | 3.65 | 3.07 |
| | | P75 | 1.38 | 10.37 | 12.04 | 106.49 | 9.34 | 4.79 | 11.74 | 10.09 | 8.02 |
| | Growth of Assets | P50 | 1.01 | 1.03 | 1.02 | 1.04 | 1.06 | 1.01 | 1.02 | 1.02 | 1.06 |
| | | P75 | 1.27 | 1.28 | 1.21 | 1.19 | 1.32 | 1.25 | 1.20 | 1.27 | 1.33 |
| Asset Structure | Growth of Sales | P50 | 1.03 | 1.12 | 1.05 | 1.07 | 1.09 | 1.04 | 1.03 | 1.07 | 1.08 |
| | | P75 | 1.74 | 1.42 | 1.21 | 1.36 | 1.34 | 1.26 | 1.17 | 1.26 | 1.37 |
| | Growth of NOI | P50 | 0.53 | 0.55 | 0.68 | 1.00 | 0.63 | 0.67 | 0.69 | 0.58 | 0.60 |
| | | P75 | 1.39 | 1.77 | 1.53 | 1.53 | 1.51 | 1.50 | 1.48 | 1.44 | 1.56 |
| Invest. | Current Assets (CA) | P50 | 0.65 | 1.32 | 1.49 | 16.93 | 1.30 | 0.74 | 1.47 | 1.06 | 0.99 |
| | | P75 | 2.48 | 5.03 | 4.60 | 92.76 | 3.22 | 2.05 | 3.64 | 2.95 | 2.63 |
| | Cash and Others | P50 | 0.19 | 0.27 | 0.30 | 3.39 | 0.31 | 0.26 | 0.26 | 0.34 | 0.21 |
| | | P75 | 0.70 | 1.12 | 1.05 | 20.13 | 0.86 | 0.79 | 0.84 | 1.11 | 0.67 |
| | Inventory | P50 | 0.00 | 0.00 | 0.20 | 0.00 | 0.02 | 0.00 | 0.52 | 0.00 | 0.07 |
| | | P75 | 0.06 | 0.35 | 0.94 | 0.83 | 0.26 | 0.03 | 1.42 | 0.00 | 0.52 |
| | Investment (I) | P50 | 0.00 | 0.08 | 0.05 | 1.80 | 0.03 | 0.00 | 0.00 | 0.04 | 0.04 |
| | | P75 | 1.52 | 0.71 | 0.34 | 14.53 | 0.24 | 0.15 | 0.10 | 0.54 | 0.28 |
| | Working Capital (WC) | P50 | 0.13 | 0.18 | 0.27 | 0.91 | 0.19 | 0.13 | 0.32 | 0.13 | 0.16 |
| | | P75 | 0.76 | 1.53 | 1.27 | 14.42 | 0.71 | 0.58 | 1.05 | 0.60 | 0.68 |
| | Assets to Empl. | P50 | 0.47 | 1.02 | 0.51 | 5.10 | 0.42 | 0.45 | 0.49 | 0.56 | 0.44 |
| | | P75 | 1.36 | 2.86 | 0.95 | 13.42 | 0.69 | 1.23 | 0.97 | 1.08 | 0.91 |
| | Sales to Empl. | P50 | 0.16 | 1.00 | 0.92 | 1.83 | 0.96 | 0.70 | 1.22 | 0.98 | 0.86 |
| | | P75 | 0.50 | 1.80 | 1.50 | 4.22 | 1.37 | 1.33 | 2.23 | 1.75 | 1.49 |
| | CA to Assets | P50 | 0.67 | 0.50 | 0.76 | 0.35 | 0.81 | 0.72 | 0.91 | 0.60 | 0.76 |
| | | P75 | 0.95 | 0.78 | 0.92 | 0.88 | 0.93 | 0.95 | 0.98 | 0.91 | 0.93 |
| WC to Assets | P50 | 0.18 | 0.08 | 0.17 | 0.10 | 0.14 | 0.12 | 0.22 | 0.08 | 0.13 | |
| | P75 | 0.45 | 0.29 | 0.36 | 0.28 | 0.30 | 0.36 | 0.41 | 0.26 | 0.32 | |
| Capital Structure | I to Dpr. Assets (DA) | P50 | 0.00 | 0.05 | 0.05 | 0.08 | 0.08 | 0.01 | 0.00 | 0.05 | 0.06 |
| | | P75 | 0.27 | 0.34 | 0.34 | 0.22 | 0.55 | 0.30 | 0.31 | 0.44 | 0.48 |
| | Depreciation to DA | P50 | 0.09 | 0.15 | 0.23 | 0.07 | 0.27 | 0.21 | 0.28 | 0.25 | 0.23 |
| | | P75 | 0.25 | 0.27 | 0.37 | 0.20 | 0.40 | 0.38 | 0.43 | 0.37 | 0.37 |
| Pay-out | IDA (A>10mill. NOK) | P50 | 0.05 | 0.08 | 0.12 | 0.10 | 0.22 | 0.04 | 0.13 | 0.15 | 0.13 |
| | | P75 | 0.36 | 0.35 | 0.35 | 0.23 | 0.61 | 0.35 | 0.53 | 0.50 | 0.50 |
| | Total Debt | P50 | 0.88 | 2.98 | 1.78 | 16.59 | 1.47 | 1.11 | 1.48 | 1.66 | 1.32 |
| | | P75 | 3.56 | 10.28 | 5.42 | 162.59 | 3.53 | 3.42 | 3.55 | 4.52 | 3.36 |
| Profitability | Current Debt | P50 | 0.46 | 1.11 | 1.11 | 8.80 | 1.06 | 0.58 | 1.03 | 0.91 | 0.79 |
| | | P75 | 1.44 | 3.52 | 3.23 | 67.00 | 2.49 | 1.54 | 2.57 | 2.51 | 1.91 |
| | CD to Debt | P50 | 0.99 | 0.52 | 0.81 | 0.71 | 0.90 | 0.94 | 0.92 | 0.77 | 0.83 |
| | | P75 | 1.00 | 0.91 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Firm Age | Debt to Assets | P50 | 0.70 | 0.80 | 0.76 | 0.58 | 0.78 | 0.74 | 0.80 | 0.80 | 0.79 |
| | | P75 | 0.88 | 0.97 | 0.90 | 0.80 | 0.90 | 0.90 | 0.91 | 0.92 | 0.93 |
| | Dividends | P50 | 0.67 | 0.80 | 0.57 | 6.59 | 0.46 | 0.44 | 0.55 | 0.60 | 0.30 |
| | | P75 | 2.00 | 2.00 | 1.84 | 53.61 | 1.00 | 1.18 | 1.74 | 2.00 | 0.92 |
| | Dividend Payout | P50 | 0.47 | 0.41 | 0.63 | 0.70 | 0.67 | 0.79 | 0.82 | 0.66 | 0.66 |
| | | P75 | 0.90 | 0.76 | 0.96 | 0.95 | 0.93 | 0.99 | 1.00 | 0.95 | 0.94 |
| | Net Oper. Inc. (NOE) | P50 | 0.04 | 0.10 | 0.10 | 1.34 | 0.14 | 0.09 | 0.08 | 0.10 | 0.07 |
| | | P75 | 0.34 | 0.76 | 0.53 | 12.90 | 0.48 | 0.42 | 0.39 | 0.43 | 0.35 |
| Equity | Equity | P50 | 0.28 | 0.57 | 0.47 | 17.73 | 0.35 | 0.34 | 0.34 | 0.38 | 0.28 |
| | | P75 | 1.91 | 2.85 | 1.87 | 147.48 | 0.92 | 1.14 | 1.04 | 1.23 | 0.95 |
| | Return on Assets | P50 | 0.04 | 0.05 | 0.07 | 0.05 | 0.09 | 0.07 | 0.06 | 0.06 | 0.06 |
| | | P75 | 0.14 | 0.14 | 0.16 | 0.10 | 0.19 | 0.20 | 0.15 | 0.16 | 0.15 |
| Return on Equity | P50 | 0.15 | 0.25 | 0.26 | 0.10 | 0.44 | 0.30 | 0.31 | 0.28 | 0.29 | |
| | P75 | 0.49 | 0.63 | 0.59 | 0.36 | 0.72 | 0.69 | 0.65 | 0.63 | 0.68 | |
| Firm Age | P50 | 1.00 | 8.00 | 12.00 | 8.00 | 9.00 | 9.00 | 11.00 | 10.00 | 7.00 | |
| | P75 | 9.00 | 15.00 | 19.00 | 13.00 | 16.00 | 17.00 | 18.00 | 17.00 | 15.00 | |

This table presents the median (P50) and the 75th (P75) percentile for corporate finance variables in 2005 by industry sector. The sample is nonlisted firms as defined in table 4.1, and the variables are defined in Appendix 6.A1. All variables, except for employees and ratios, are in millions of NOK as of 2005. The dividend figures only include the firms that pay dividends. The industry sector codes are 0: Missing; 1: Agriculture, forestry, fishing, mining; 2: Manufacturing, chemical products; 3: Energy; 4: Construction; 5: Service; 6 Financial (not in the sample); 7: Trade; 8: Transport; 9: Multisector.

Table 6.1.1. Aggregate activity levels by employment-based firm size groups*Panel A. All firms*

| Firm size group | Firms | | Employees | | Assets | | Sales | |
|-----------------|--------|-----|-----------|-----|--------|-----|-------|-----|
| Small | 76,340 | 92% | 313.8 | 26% | 654 | 24% | 594 | 23% |
| Medium | 5,258 | 6% | 196.8 | 16% | 287 | 10% | 326 | 12% |
| Large | 971 | 1% | 692.4 | 58% | 1,829 | 66% | 1,704 | 65% |
| All | 82,569 | | 1,203.1 | | 2,770 | | 2,624 | |

Panel B. Nonlisted firms

| Firm size group | Firms | | Employees | | Assets | | Sales | |
|-----------------|--------|-----|-----------|-----|--------|-----|-------|-----|
| Small | 76,324 | 93% | 313.7 | 32% | 633 | 36% | 591 | 34% |
| Medium | 5,233 | 6% | 195.5 | 20% | 273 | 15% | 323 | 19% |
| Large | 878 | 1% | 470.2 | 48% | 857 | 49% | 806 | 47% |
| All | 82,435 | | 979.4 | | 1,762 | | 1,719 | |

Panel C. Listed firms

| Firm size group | Firms | | Employees | | Assets | | Sales | |
|-----------------|-------|-----|-----------|-----|--------|-----|-------|-----|
| Small | 16 | 12% | 0.1 | 0% | 21 | 2% | 3 | 0% |
| Medium | 25 | 19% | 1.3 | 1% | 15 | 1% | 3 | 0% |
| Large | 93 | 69% | 222.2 | 99% | 972 | 96% | 899 | 99% |
| All | 134 | | 223.7 | | 1,008 | | 905 | |

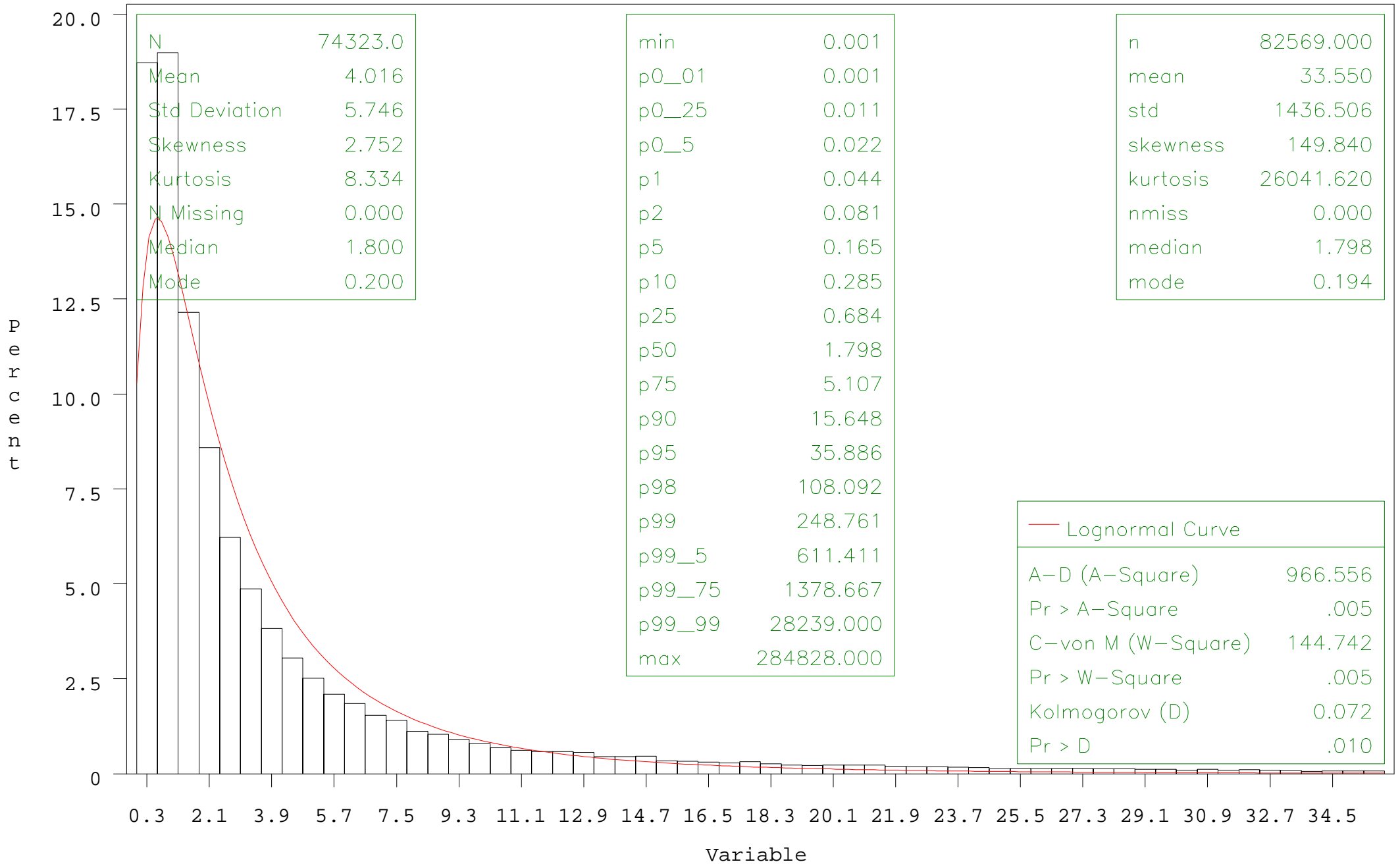
This table presents aggregate activity levels for firms in three size groups (small, medium, and large) according to their number of employees. The sample, which is based on the population of Norwegian firms with limited liability in 2005, is selected according to the criteria stated in table 4.1. Small firms have less than 20 employees, medium-sized firms have between 20 and 99, and large firms have at least 100. "Employees" are in thousands, "Sales" and "Assets" are in billions of NOK as of 2005, and "Firms" is the actual count.

Table 6.1.2. Aggregate activity levels by employment-based firm size groups: All firms by industry sector

| Industry sector | Firms | | | | Employees | | | | Assets | | | | Sales | | | |
|-----------------|--------|-------|--------|-------|-----------|-------|--------|-------|--------|-------|--------|-------|-------|-------|--------|-------|
| | All | Small | Medium | Large | All | Small | Medium | Large | All | Small | Medium | Large | All | Small | Medium | Large |
| 0 Missing | 922 | 88% | 10% | 2% | 15 | 18% | 25% | 57% | 18 | 43% | 28% | 29% | 13 | 21% | 39% | 40% |
| 1 Agriculture | 1,671 | 93% | 6% | 1% | 16 | 42% | 20% | 37% | 46 | 49% | 18% | 32% | 29 | 41% | 21% | 38% |
| 2 Manufacturing | 6,822 | 85% | 12% | 3% | 264 | 11% | 12% | 77% | 648 | 8% | 5% | 87% | 605 | 7% | 8% | 85% |
| 3 Energy | 337 | 63% | 25% | 12% | 50 | 2% | 7% | 91% | 808 | 11% | 8% | 81% | 681 | 14% | 2% | 83% |
| 4 Construction | 8,740 | 92% | 7% | 0% | 98 | 42% | 23% | 35% | 65 | 40% | 21% | 39% | 128 | 37% | 23% | 40% |
| 5 Service | 37,874 | 94% | 5% | 1% | 437 | 28% | 18% | 54% | 741 | 43% | 14% | 44% | 551 | 30% | 18% | 52% |
| 7 Trade | 17,970 | 94% | 5% | 1% | 159 | 49% | 19% | 32% | 198 | 40% | 20% | 39% | 418 | 41% | 20% | 38% |
| 8 Transport | 3,746 | 90% | 7% | 2% | 117 | 13% | 9% | 78% | 193 | 18% | 8% | 73% | 136 | 25% | 14% | 61% |
| 9 Multisector | 4,487 | 92% | 7% | 1% | 47 | 38% | 26% | 36% | 54 | 50% | 13% | 38% | 63 | 36% | 22% | 41% |

This table presents aggregate activity levels across industry sectors for firms in three size groups (small, medium, and large) according to their number of employees. The sample, which is based on the population of all Norwegian firms with limited liability in 2005, is selected according to the criteria stated in table 4.1. Small firms have less than 20 employees, medium-sized firms have between 20 and 99, and large firms have at least 100. "Employees" are in thousands, "Sales" and "Assets" are in billions of NOK as of 2005, and "Firms" is the actual count. The industry sectors are defined in Appendix 4.A2.

Figure 6.1.1. The histogram of firm size
yr=2005



This figure shows the histogram of firm size as measured by sales. The sample, which is based on the population of all Norwegian firms with limited liability in 2005, is selected according to the criteria in table 4.1. The histogram is produced from a truncated distribution at 5% and 95%. The right inset presents moments of the complete (nontruncated) distribution, the left shows moments of the truncated distribution, whereas the middle inset shows percentiles of the cumulative density function of the complete distribution. The lower right inset performs tests for log-normality of the nontruncated distribution, using the Anderson-Darling (A-D), Cramér-von Mises (C-vonM), and Kolmogorov-Smirnov test, respectively. The null hypothesis is that the distribution is log-normal. We report goodness-of-fit statistics and p-values.

Table 6.2.1. Investment in depreciable assets by industry sector

| Industry sector | Percentile | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | Mean |
|-----------------|------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Missing | P50 | 0.01 | 0.03 | 0.03 | 0.05 | 0.06 | 0.02 | 0.04 | 0.01 | 0.00 | 0.00 | 0.00 | 0.02 |
| | P75 | 0.47 | 0.54 | 0.34 | 0.58 | 0.41 | 0.36 | 0.36 | 0.25 | 0.09 | 0.12 | 0.27 | 0.34 |
| Agriculture | P50 | 0.29 | 0.22 | 0.25 | 0.31 | 0.32 | 0.06 | 0.05 | 0.05 | 0.03 | 0.03 | 0.05 | 0.15 |
| | P75 | 0.88 | 0.87 | 0.94 | 1.25 | 2.63 | 0.37 | 0.33 | 0.32 | 0.24 | 0.25 | 0.34 | 0.76 |
| Manufacturing | P50 | 0.11 | 0.12 | 0.11 | 0.13 | 0.09 | 0.07 | 0.06 | 0.04 | 0.03 | 0.05 | 0.05 | 0.08 |
| | P75 | 0.50 | 0.53 | 0.50 | 0.55 | 0.40 | 0.35 | 0.34 | 0.28 | 0.24 | 0.31 | 0.34 | 0.40 |
| Energy | P50 | 0.08 | 0.09 | 0.07 | 0.08 | 0.09 | 0.06 | 0.06 | 0.06 | 0.07 | 0.08 | 0.08 | 0.08 |
| | P75 | 0.20 | 0.28 | 0.23 | 0.54 | 0.38 | 0.21 | 0.22 | 0.20 | 0.20 | 0.22 | 0.25 | 0.27 |
| Construction | P50 | 0.15 | 0.13 | 0.17 | 0.15 | 0.11 | 0.12 | 0.09 | 0.07 | 0.05 | 0.06 | 0.08 | 0.11 |
| | P75 | 0.81 | 0.71 | 0.76 | 0.73 | 0.60 | 0.58 | 0.53 | 0.46 | 0.43 | 0.48 | 0.55 | 0.60 |
| Service | P50 | 0.02 | 0.02 | 0.03 | 0.04 | 0.02 | 0.01 | 0.01 | 0.01 | 0.00 | 0.01 | 0.01 | 0.02 |
| | P75 | 0.40 | 0.41 | 0.45 | 0.54 | 0.40 | 0.34 | 0.31 | 0.25 | 0.22 | 0.28 | 0.30 | 0.35 |
| Trade | P50 | 0.03 | 0.02 | 0.03 | 0.04 | 0.04 | 0.02 | 0.02 | 0.01 | 0.01 | 0.01 | 0.00 | 0.02 |
| | P75 | 0.54 | 0.48 | 0.51 | 0.54 | 0.46 | 0.40 | 0.35 | 0.31 | 0.31 | 0.32 | 0.32 | 0.41 |
| Transport | P50 | 0.22 | 0.19 | 0.18 | 0.18 | 0.15 | 0.07 | 0.06 | 0.04 | 0.03 | 0.04 | 0.05 | 0.11 |
| | P75 | 0.89 | 0.78 | 0.77 | 0.73 | 0.69 | 0.45 | 0.42 | 0.37 | 0.37 | 0.44 | 0.44 | 0.58 |
| Multisector | P50 | 0.11 | 0.08 | 0.09 | 0.10 | 0.10 | 0.09 | 0.07 | 0.05 | 0.04 | 0.05 | 0.06 | 0.08 |
| | P75 | 0.62 | 0.59 | 0.67 | 0.54 | 0.54 | 0.48 | 0.41 | 0.36 | 0.35 | 0.39 | 0.47 | 0.49 |

This table shows the median (P50) and the 75th (P75) percentile for the ratio of investment to depreciable assets for the sample of all limited liability firms in Norway as defined in table 4.1. The industry sectors are specified in Appendix 4.A2.

Table 6.3.1. Determinants of leverage

| Determinant | Model | | | |
|---------------------|------------|------------|------------|------------|
| | (1) | (2) | (3) | (4) |
| Intercept | 7.597 *** | 8.374 *** | 8.867 *** | 1.119 *** |
| Nonlisted | 0.196 *** | 0.224 *** | | 0.105 *** |
| Listed | -0.196 *** | -0.224 *** | | -0.105 *** |
| Size | -0.906 *** | -1.008 *** | -1.056 *** | -0.127 *** |
| Size ² | 0.028 *** | 0.031 *** | 0.033 *** | 0.012 *** |
| Age | 0.221 *** | 0.207 *** | 0.225 *** | -0.063 *** |
| Age ² | -0.050 *** | -0.046 *** | -0.050 *** | 0.001 |
| Tangibility | 0.161 *** | 0.189 *** | 0.188 *** | 0.021 *** |
| Growth | 0.008 *** | 0.011 *** | 0.008 *** | 0.001 |
| ROA | -0.731 *** | -0.825 *** | -0.688 *** | -0.396 *** |
| NDTS | 0.002 ** | 0.004 | 0.000 | 0.001 |
| NE | 0.002 | -0.001 | 0.006 * | 0.001 |
| Ind0 | -0.048 *** | -0.080 *** | -0.078 *** | -0.002 |
| Ind1 | 0.043 *** | 0.083 *** | 0.065 *** | 0.005 |
| Ind2 | 0.030 *** | 0.024 *** | 0.048 *** | -0.009 *** |
| Ind3 | -0.230 *** | -0.220 *** | -0.308 *** | -0.173 *** |
| Ind4 | 0.054 *** | 0.047 *** | 0.064 *** | 0.069 *** |
| Ind5 | 0.000 | -0.012 * | -0.004 | 0.027 *** |
| Ind7 | 0.085 *** | 0.088 *** | 0.097 *** | 0.046 *** |
| Ind8 | 0.039 *** | 0.034 *** | 0.053 *** | 0.062 *** |
| Ind9 | 0.026 *** | 0.034 *** | 0.063 *** | -0.024 *** |
| Adj. R ² | 0.250 | 0.260 | 0.261 | 0.142 |
| n | 763,186 | 73,593 | 64,494 | 41,768 |

The models in this table regress the ratio of debt to total assets on potential determinants. "Size" is the log of assets in million NOK, "Age" is the log of firm age, "Tangibility" is the ratio of tangible assets to total assets, "Growth" is the relative change in sales, "ROA" is return on assets, "NDTS" is non-debt tax shields, and "NE" is a dummy variable which is 1 if the firm has negative earnings and zero otherwise. "Indi"; $i = 0, 1, \dots, 9$ is a dummy variable which equals 1 if the firm belongs to industry sector i as defined in Appendix 4.A2 and zero otherwise. The sum of the two listing status coefficients and the sum of the ten industry sector coefficients are both restricted to be zero. The "***", "**", and "*" indicate that the coefficient estimate is significantly different from zero at the 1%, 5%, and 10% level, respectively. Model (1) uses the sample of all firms pooled over the sample years 1994-2005, (2) uses all firms from 2005, (3) uses all nonlisted firms from 1997, and (4) pools large nonlisted firms (i.e., the top 5% by sales) and the 90% largest listed firms by sales over the years.

The firms in model (4) are ranked every year. Additional filters applied to all four samples are defined in table 4.1.

Table 6.6.1. Descriptive statistics for firms that pay dividends

Panel A. All

| | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | Mean 1994-2004 |
|----------|------|------|------|------|------|------|------|------|------|------|------|------|-------------------|
| DIVTE | 0.51 | 0.52 | 0.51 | 0.51 | 0.80 | 0.85 | 0.70 | 0.92 | 1.00 | 1.00 | 1.01 | 0.75 | 0.76 |
| | 0.82 | 0.76 | 0.61 | 0.61 | 0.92 | 1.04 | 0.70 | 1.03 | 1.64 | 1.54 | 1.67 | 1.24 | 1.03 |
| % payers | 20% | 34% | 35% | 38% | 36% | 36% | 29% | 35% | 39% | 39% | 47% | 7% | 35% |

Panel B. Nonlisted

| | | | | | | | | | | | | | |
|----------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| DIVTE | 0.51 | 0.52 | 0.51 | 0.51 | 0.80 | 0.85 | 0.70 | 0.92 | 1.00 | 1.00 | 1.01 | 0.75 | 0.76 |
| | 0.82 | 0.76 | 0.61 | 0.61 | 0.92 | 1.04 | 0.70 | 1.03 | 1.64 | 1.54 | 1.67 | 1.24 | 1.03 |
| % payers | 20% | 34% | 35% | 38% | 36% | 36% | 29% | 35% | 39% | 39% | 47% | 7% | 35% |

Panel C. Large nonlisted

| | | | | | | | | | | | | | |
|----------|------|------|------|------|------|------|------|------|------|------|-------|------|------|
| DIVTE | 0.44 | 0.40 | 0.42 | 0.46 | 0.50 | 0.58 | 0.50 | 0.67 | 0.92 | 0.92 | 1.00 | 0.65 | 0.62 |
| | 1.36 | 0.67 | 0.41 | 0.76 | 0.56 | 0.76 | 0.48 | 0.79 | 1.86 | 1.19 | -0.13 | 0.71 | 0.79 |
| % payers | 22% | 45% | 46% | 49% | 47% | 48% | 40% | 48% | 49% | 51% | 56% | 24% | 46% |

Panel D. Listed

| | | | | | | | | | | | | | |
|----------|------|------|------|------|------|------|------|------|------|------|-------|------|------|
| DIVTE | 0.28 | 0.34 | 0.30 | 0.32 | 0.35 | 0.34 | 0.53 | 0.44 | 0.44 | 0.45 | 0.52 | 0.54 | 0.39 |
| | 0.75 | 0.47 | 0.91 | 0.82 | 0.38 | 0.39 | 0.70 | 1.83 | 1.41 | 0.39 | -3.08 | 0.65 | 0.45 |
| % payers | 14% | 53% | 45% | 44% | 41% | 34% | 29% | 29% | 32% | 39% | 45% | 14% | 37% |

This table shows the percentage of firms paying dividends (% payers) and the fraction of earnings paid out as dividends by these payers (DIVTE) over the period 1994-2005. The payout ratio is reported as the median and the mean (underneath) across the sample firms, which are specified in table 4.1. Appendix 6.A1 defines the variables.

Table 6.6.2. Determinants of dividend policy

| Determinant | Payout propensity | | Payout ratio | |
|---------------------|-------------------|-------------|--------------|-------------|
| | All firms | Large firms | All firms | Large firms |
| Intercept | -2.808 *** | 0.0996 | 2.116 *** | 1.262 *** |
| Nonlisted | | | 0.084 ** | 0.034 |
| Listed | -1.381 *** | 0.2302 *** | -0.084 ** | -0.034 |
| Size | 0.272 *** | -0.1068 *** | -0.115 *** | -0.029 *** |
| Age | 0.106 *** | 0.3468 *** | 0.260 *** | 0.061 *** |
| Growth | -0.081 *** | -0.0774 *** | -0.029 *** | -0.012 |
| ROA | 2.138 *** | 4.6408 *** | -3.691 *** | -2.169 *** |
| IndDm0 | -0.065 * | 0.6413 *** | 0.558 *** | 0.131 ** |
| IndDm1 | -0.385 *** | -0.1976 ** | 0.029 | -0.133 ** |
| IndDm2 | 0.119 *** | -0.1888 *** | -0.172 *** | -0.111 *** |
| IndDm3 | -0.241 *** | 0.8428 *** | -0.054 | -0.013 |
| IndDm4 | 0.523 *** | 0.2406 *** | -0.195 *** | -0.084 ** |
| IndDm5 | 0.170 *** | -0.0585 ** | 0.091 *** | 0.086 *** |
| IndDm7 | 0.249 *** | -0.1044 *** | -0.152 *** | 0.097 *** |
| IndDm8 | -0.055 *** | -0.4024 *** | -0.091 *** | -0.033 |
| IndDm9 | | | -0.015 | 0.060 |
| Adj. R ² | | | 0.068 | 0.027 |
| n | 532,301 | 33,972 | 267,809 | 18,963 |

The two models in this table estimate the determinants of the propensity to pay dividends (payout propensity) and the fraction of earnings paid out by the payers (payout ratio), respectively. "Size" is the natural logarithm of assets, "Age" is the natural logarithm of the number of years since the firm was founded, "Growth" is the relative change in sales, and "ROA" is returns on assets. Dividends, sales, and assets are measured in thousands of NOK. The ROA and the payout ratio are winsorized at 1%. The sum of the two listing status coefficients and the sum of the ten industry sector coefficients are both restricted to be zero in OLS regressions. The "****", "***", and "*" indicates that the coefficient estimate is significantly different from zero at the 1%, 5%, and 10% level, respectively. The sample of all firms is defined in table 4.A, from which we exclude firms that do not report positive earnings. Large listed (nonlisted) firms are the 90% (5%) largest firms by sales among the listed (nonlisted) firms in a given year.

Table 7.S2. Corporate governance: Descriptive statistics time series for all firms

| | | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 |
|-----------------|------|--------|--------|--------|--------|--------|--------|
| HOLDLARGE1_D | P50 | 65.00 | 65.00 | 65.00 | 65.00 | 65.00 | 66.00 |
| | P75 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| | Mean | 68.11 | 68.07 | 68.02 | 68.33 | 68.63 | 70.14 |
| HOLDLARGE2_D | P50 | 20.00 | 20.00 | 20.00 | 20.00 | 20.00 | 17.33 |
| | P75 | 35.00 | 35.00 | 35.00 | 34.70 | 34.30 | 34.00 |
| | Mean | 20.69 | 20.57 | 20.52 | 20.39 | 20.26 | 19.36 |
| HOLDLARGE3_D | P50 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | P75 | 10.00 | 10.00 | 10.00 | 10.00 | 10.00 | 10.00 |
| | Mean | 5.97 | 5.94 | 6.00 | 5.95 | 5.91 | 5.59 |
| HOLDLARGE4_D | P50 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | P75 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Mean | 2.13 | 2.14 | 2.15 | 2.16 | 2.14 | 2.02 |
| HOLDLARGE5_D | P50 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | P75 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Mean | 0.81 | 0.81 | 0.81 | 0.80 | 0.79 | 0.74 |
| HOLDLARGESUM2_D | P50 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| | P75 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| | Mean | 88.80 | 88.64 | 88.54 | 88.72 | 88.88 | 89.50 |
| HOLDLARGESUM3_D | P50 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| | P75 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| | Mean | 94.77 | 94.58 | 94.54 | 94.68 | 94.79 | 95.09 |
| HOLDLARGESUM4_D | P50 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| | P75 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| | Mean | 96.90 | 96.72 | 96.70 | 96.83 | 96.93 | 97.11 |
| HOLDLARGESUM5_D | P50 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| | P75 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| | Mean | 97.71 | 97.54 | 97.50 | 97.63 | 97.71 | 97.85 |
| HOLDLARGEOUTS_D | P50 | 34.00 | 34.00 | 34.00 | 34.00 | 34.00 | 39.04 |
| | P75 | 51.00 | 50.00 | 50.00 | 50.00 | 50.00 | 84.00 |
| | Mean | 43.55 | 41.52 | 41.28 | 40.38 | 41.61 | 49.21 |
| HOLDSMALLOUTS_D | P50 | 30.00 | 25.80 | 25.00 | 25.00 | 25.00 | 33.20 |
| | P75 | 50.00 | 49.00 | 49.00 | 46.25 | 49.90 | 70.00 |
| | Mean | 36.93 | 35.58 | 35.58 | 34.93 | 35.77 | 42.55 |
| HERFINDAHL_D | P50 | 0.52 | 0.52 | 0.52 | 0.53 | 0.54 | 0.55 |
| | P75 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| | Mean | 0.64 | 0.64 | 0.64 | 0.64 | 0.64 | 0.66 |
| NOWNERS_D | P50 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| | P75 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 |
| | Mean | 10.31 | 11.13 | 10.45 | 9.81 | 10.41 | 9.79 |
| NOWNERSINS | P50 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 1.00 |
| | P75 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| | Mean | 1.76 | 1.75 | 1.77 | 1.78 | 1.74 | 1.71 |

Table 7.S2. Corporate governance: Descriptive statistics time series for all firms

| | | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 |
|--------------|------|--------|--------|--------|--------|--------|--------|
| HOLDMEAN_D | P50 | 50.00 | 50.00 | 50.00 | 50.00 | 50.00 | 50.00 |
| | P75 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| | Mean | 59.30 | 59.49 | 59.55 | 59.88 | 60.34 | 62.72 |
| HOLDMEDIAN_D | P50 | 50.00 | 50.00 | 50.00 | 50.00 | 50.00 | 50.00 |
| | P75 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| | Mean | 58.26 | 58.51 | 58.58 | 58.89 | 59.37 | 61.85 |
| HOLDUNSP_D | P50 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | P75 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Mean | 9.08 | 6.00 | 5.38 | 5.25 | 5.39 | 12.57 |
| HOLDINST_D | P50 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | P75 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Mean | 0.26 | 0.28 | 0.33 | 0.35 | 0.36 | 0.48 |
| HOLDPERS_D | P50 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| | P75 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| | Mean | 81.39 | 84.14 | 84.13 | 84.38 | 84.35 | 76.46 |
| HOLDSTAT_D | P50 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | P75 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Mean | 0.94 | 0.98 | 1.01 | 1.00 | 1.01 | 1.01 |
| HOLDINTL_D | P50 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | P75 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Mean | 2.90 | 3.35 | 3.32 | 3.30 | 3.20 | 3.32 |
| HOLDINDU_D | P50 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | P75 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Mean | 4.20 | 3.75 | 4.23 | 4.21 | 4.25 | 4.84 |
| SUMHOLD_D | P50 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| | P75 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| | Mean | 98.80 | 98.55 | 98.45 | 98.53 | 98.60 | 98.73 |
| BLOCK5NR_D | P50 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| | P75 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 |
| | Mean | 2.21 | 2.21 | 2.22 | 2.21 | 2.21 | 2.14 |
| BLOCK10NR_D | P50 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| | P75 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| | Mean | 1.96 | 1.96 | 1.96 | 1.96 | 1.95 | 1.90 |
| BLOCK5SH_D | P50 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| | P75 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| | Mean | 97.87 | 97.77 | 97.76 | 97.90 | 98.01 | 98.15 |
| BLOCK10SH_D | P50 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| | P75 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| | Mean | 95.90 | 95.72 | 95.70 | 95.84 | 95.94 | 96.20 |
| TYPELARGE1_D | P50 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| | P75 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| | Mean | 2.04 | 2.09 | 2.13 | 2.13 | 2.12 | 1.98 |

Table 7.S2. Corporate governance: Descriptive statistics time series for all firms

| | | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 |
|-----------------|------|--------|--------|--------|--------|--------|--------|
| HOLDLARGE1_U | P50 | 65.22 | 65.00 | 65.00 | 65.00 | 66.00 | 66.00 |
| | P75 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| | Mean | 69.29 | 68.62 | 68.52 | 68.80 | 69.10 | 70.65 |
| HOLDLARGE2_U | P50 | 17.00 | 17.35 | 16.67 | 17.00 | 16.45 | 13.33 |
| | P75 | 34.00 | 34.00 | 34.00 | 34.00 | 34.00 | 34.00 |
| | Mean | 18.90 | 19.17 | 18.76 | 19.11 | 18.64 | 17.93 |
| HOLDLARGE3_U | P50 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | P75 | 8.33 | 9.70 | 9.03 | 9.83 | 9.00 | 7.71 |
| | Mean | 5.26 | 5.44 | 5.37 | 5.45 | 5.33 | 5.09 |
| HOLDLARGE4_U | P50 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | P75 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Mean | 1.82 | 1.94 | 1.92 | 1.97 | 1.92 | 1.85 |
| HOLDLARGE5_U | P50 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | P75 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Mean | 0.67 | 0.73 | 0.71 | 0.73 | 0.71 | 0.69 |
| HOLDLARGESUM2_U | P50 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| | P75 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| | Mean | 89.44 | 88.77 | 88.66 | 88.82 | 88.96 | 89.56 |
| HOLDLARGESUM3_U | P50 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| | P75 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| | Mean | 95.05 | 94.49 | 94.42 | 94.52 | 94.64 | 94.92 |
| HOLDLARGESUM4_U | P50 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| | P75 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| | Mean | 96.99 | 96.53 | 96.48 | 96.59 | 96.68 | 96.87 |
| HOLDLARGESUM5_U | P50 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| | P75 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| | Mean | 97.70 | 97.30 | 97.25 | 97.35 | 97.44 | 97.60 |
| HOLDLARGEOUTS_U | P50 | 35.00 | 34.00 | 34.00 | 34.00 | 34.00 | 40.00 |
| | P75 | 66.66 | 54.00 | 52.00 | 51.00 | 53.40 | 96.27 |
| | Mean | 46.26 | 43.00 | 42.33 | 41.28 | 42.62 | 50.11 |
| HERFINDAHL_U | P50 | 0.54 | 0.54 | 0.53 | 0.54 | 0.54 | 0.55 |
| | P75 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| | Mean | 0.65 | 0.64 | 0.64 | 0.64 | 0.65 | 0.66 |
| NOWNERS_U | P50 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| | P75 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 |
| | Mean | 2.56 | 2.54 | 2.43 | 2.42 | 2.37 | 2.31 |
| HOLDMEAN_U | P50 | 50.00 | 50.00 | 50.00 | 50.00 | 50.00 | 50.00 |
| | P75 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| | Mean | 59.97 | 59.52 | 59.59 | 59.93 | 60.36 | 62.68 |
| HOLDMEDIAN_U | P50 | 50.00 | 50.00 | 50.00 | 50.00 | 50.00 | 50.00 |
| | P75 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| | Mean | 58.83 | 58.41 | 58.49 | 58.82 | 59.26 | 61.67 |

Table 7.S2. Corporate governance: Descriptive statistics time series for all firms

| | | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 |
|-----------------|------|--------|--------|--------|--------|--------|--------|
| HOLDUNSP_U | P50 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | P75 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Mean | 9.53 | 5.83 | 5.42 | 5.48 | 5.60 | 12.69 |
| HOLDINST_U | P50 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | P75 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Mean | 0.17 | 0.18 | 0.20 | 0.20 | 0.19 | 0.22 |
| HOLDPERS_U | P50 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| | P75 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| | Mean | 78.06 | 82.05 | 80.26 | 82.52 | 81.12 | 75.25 |
| HOLDSTAT_U | P50 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | P75 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Mean | 0.96 | 1.02 | 1.06 | 1.05 | 1.05 | 1.05 |
| HOLDINTL_U | P50 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | P75 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Mean | 2.64 | 3.18 | 3.09 | 3.18 | 3.03 | 3.15 |
| HOLDINDU_U | P50 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | P75 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Mean | 1.51 | 1.32 | 1.62 | 1.47 | 1.50 | 1.53 |
| SUMHOLD_U | P50 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| | P75 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| | Mean | 98.42 | 98.07 | 97.99 | 98.08 | 98.17 | 98.32 |
| BLOCK5NR_U | P50 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| | P75 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 |
| | Mean | 2.01 | 2.07 | 2.03 | 2.08 | 2.04 | 2.01 |
| BLOCK10NR_U | P50 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| | P75 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| | Mean | 1.81 | 1.84 | 1.81 | 1.84 | 1.81 | 1.78 |
| BLOCK5SH_U | P50 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| | P75 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| | Mean | 91.63 | 92.62 | 90.68 | 93.05 | 91.58 | 92.72 |
| BLOCK10SH_U | P50 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| | P75 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| | Mean | 89.98 | 90.81 | 88.87 | 91.18 | 89.72 | 90.92 |
| INSHOLD_CEO | P50 | 50.00 | 50.00 | 50.00 | 50.00 | 50.00 | 50.00 |
| | P75 | 98.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| | Mean | 50.30 | 51.24 | 51.60 | 51.22 | 53.22 | 53.52 |
| INSHOLD_BDEXCEO | P50 | 33.33 | 33.00 | 33.33 | 34.00 | 32.00 | 31.00 |
| | P75 | 55.70 | 54.66 | 55.00 | 60.00 | 50.17 | 50.40 |
| | Mean | 35.33 | 34.79 | 35.02 | 36.35 | 33.70 | 33.98 |
| INSHOLD_BD | P50 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| | P75 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| | Mean | 84.59 | 84.61 | 85.62 | 86.67 | 85.81 | 86.53 |
| INSHOLD_ALL | P50 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| | P75 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| | Mean | 85.63 | 86.03 | 86.62 | 87.57 | 86.91 | 87.50 |

Table 7.S2. Corporate governance: Descriptive statistics time series for all firms

| | | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 |
|----------------|------|--------|--------|--------|--------|--------|--------|
| INSHOLD_LARGE1 | P50 | 60.00 | 60.00 | 60.00 | 62.50 | 64.00 | 65.00 |
| | P75 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| | Mean | 65.20 | 65.73 | 65.80 | 66.24 | 66.52 | 67.45 |
| INSHOLD_LARGE2 | P50 | 5.00 | 4.76 | 6.25 | 8.34 | 5.00 | 0.00 |
| | P75 | 33.33 | 33.33 | 33.33 | 33.33 | 33.33 | 33.33 |
| | Mean | 16.30 | 16.21 | 16.55 | 16.91 | 16.29 | 16.10 |
| INSHOLD_LARGE3 | P50 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | P75 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Mean | 3.23 | 3.19 | 3.33 | 3.43 | 3.21 | 3.06 |
| INSHOLD_LARGE4 | P50 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | P75 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Mean | 0.71 | 0.70 | 0.75 | 0.78 | 0.70 | 0.70 |
| INSHOLD_LARGE5 | P50 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | P75 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Mean | 0.15 | 0.14 | 0.15 | 0.16 | 0.14 | 0.14 |
| INSHOLD_TYPE1 | P50 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | P75 | 0.00 | 0.00 | 0.00 | 2.74 | 10.00 | 0.00 |
| | Mean | 10.58 | 10.81 | 11.19 | 11.46 | 11.77 | 11.36 |
| INSHOLD_TYPE2 | P50 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | P75 | 35.00 | 35.00 | 35.00 | 35.00 | 34.00 | 34.00 |
| | Mean | 18.88 | 18.44 | 18.57 | 18.71 | 17.55 | 17.33 |
| INSHOLD_TYPE3 | P50 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | P75 | 30.00 | 28.00 | 30.00 | 33.00 | 28.34 | 30.00 |
| | Mean | 16.45 | 16.35 | 16.45 | 17.64 | 16.14 | 16.65 |
| INSHOLD_TYPE4 | P50 | 25.00 | 26.00 | 30.00 | 21.40 | 32.00 | 32.00 |
| | P75 | 80.00 | 84.04 | 90.00 | 90.00 | 99.00 | 100.00 |
| | Mean | 38.68 | 39.01 | 39.42 | 38.86 | 40.35 | 41.19 |
| INSRANK_TYPE1 | P50 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | P75 | 0.00 | 0.00 | 0.00 | 1.00 | 1.00 | 0.00 |
| | Mean | 0.36 | 0.37 | 0.38 | 0.39 | 0.39 | 0.37 |
| INSRANK_TYPE2 | P50 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | P75 | 2.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| | Mean | 0.75 | 0.73 | 0.74 | 0.73 | 0.70 | 0.68 |
| INSRANK_TYPE3 | P50 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | P75 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| | Mean | 0.48 | 0.48 | 0.49 | 0.51 | 0.48 | 0.48 |
| INSRANK_TYPE4 | P50 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| | P75 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| | Mean | 0.59 | 0.59 | 0.60 | 0.58 | 0.59 | 0.59 |
| BD_TURN | P50 | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | P75 | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Mean | | 0.06 | 0.03 | 0.00 | 0.09 | 0.02 |
| DISCHSAME | P50 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| | P75 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| | Mean | | 0.97 | 0.99 | 1.00 | 0.95 | 1.00 |
| DISCEOSAME | P50 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| | P75 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| | Mean | 0.94 | 0.95 | 0.94 | 0.93 | 0.96 | 0.95 |
| BD_SIZE | P50 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| | P75 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 |
| | Mean | 2.29 | 2.25 | 2.27 | 2.27 | 2.24 | 2.26 |

Table 7.S2. Corporate governance: Descriptive statistics time series for all firms

| | | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 |
|-----------------|------|-------|-------|-------|-------|-------|-------|
| BD_AVG_AGE | P50 | 48.00 | 48.00 | 48.50 | 49.00 | 49.00 | 50.00 |
| | P75 | 54.00 | 54.33 | 55.00 | 55.50 | 55.20 | 56.00 |
| | Mean | 48.07 | 48.26 | 48.64 | 49.31 | 49.11 | 49.85 |
| BD_AVG_AGE_M | P50 | 48.00 | 48.50 | 49.00 | 50.00 | 49.50 | 50.29 |
| | P75 | 54.50 | 55.00 | 55.00 | 56.00 | 56.00 | 57.00 |
| | Mean | 48.41 | 48.64 | 49.05 | 49.75 | 49.60 | 50.38 |
| BD_AVG_AGE_F | P50 | 46.67 | 46.67 | 47.00 | 47.00 | 47.00 | 48.00 |
| | P75 | 54.50 | 55.00 | 55.00 | 56.00 | 55.00 | 56.00 |
| | Mean | 47.00 | 47.02 | 47.33 | 47.93 | 47.45 | 48.25 |
| BD_SD_AGE | P50 | 6.88 | 6.95 | 6.95 | 6.95 | 7.07 | 7.05 |
| | P75 | 12.73 | 12.74 | 12.73 | 12.73 | 12.79 | 12.73 |
| | Mean | 8.20 | 8.22 | 8.22 | 8.19 | 8.28 | 8.23 |
| DBD_NR_FEM_EMPL | P50 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | P75 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Mean | 0.00 | 0.00 | 0.00 | 0.00 | 0.01 | 0.00 |
| DCEOCHBD | P50 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| | P75 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| | Mean | 0.68 | 0.68 | 0.67 | 0.67 | 0.67 | 0.67 |
| DCEODIRECTOR | P50 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | P75 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| | Mean | 0.32 | 0.32 | 0.33 | 0.33 | 0.33 | 0.33 |
| HOLDTYPERANK1 | P50 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| | P75 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| | Mean | 2.03 | 2.09 | 2.12 | 2.12 | 2.11 | 1.97 |
| DBIGSB1S0 | P50 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | P75 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Mean | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 |
| BD_NR_EMPL_PERC | P50 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | P75 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Mean | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

This table presents univariate descriptive statistics of the time series of corporate governance characteristics for the sample of all Norwegian firms with limited liability as defined in table 4.1. The sample includes non-financial firms that pass basic accounting consistency tests, activity level tests, and that are not subsidiaries. We report cross section median (P50), the 75th percentile (P75), and the mean of the variables, which are defined in appendix 7.A1. The subscript "D" denotes direct (first level) ownership, while the subscript "U" denotes ultimate (all levels) ownership, i.e. the sum of direct ownership and indirect ownership through pyramids.

Table 7.S3. Corporate governance: Descriptive statistics for all firms by industry sector

| | | Industry sector | | | | | | | | |
|-----------------|------|-----------------|--------|--------|--------|--------|--------|--------|--------|--------|
| | | 0 | 1 | 2 | 3 | 4 | 5 | 7 | 8 | 9 |
| HOLDLARGE1_D | P50 | 66.00 | 51.00 | 60.00 | 60.00 | 65.00 | 65.00 | 66.00 | 65.80 | 66.00 |
| | P75 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| | Mean | 69.45 | 62.94 | 65.14 | 64.84 | 68.67 | 67.58 | 72.05 | 68.58 | 69.69 |
| HOLDLARGE2_D | P50 | 18.00 | 25.00 | 20.00 | 13.15 | 23.60 | 20.00 | 17.86 | 17.46 | 20.00 |
| | P75 | 34.00 | 40.00 | 34.00 | 30.00 | 36.00 | 34.00 | 35.00 | 34.00 | 35.00 |
| | Mean | 19.28 | 23.12 | 20.65 | 16.11 | 21.72 | 20.29 | 19.53 | 19.38 | 20.38 |
| HOLDLARGE3_D | P50 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | P75 | 10.88 | 14.28 | 13.10 | 12.50 | 10.00 | 10.94 | 5.60 | 10.00 | 10.00 |
| | Mean | 6.19 | 7.11 | 6.89 | 6.42 | 6.01 | 6.16 | 4.94 | 5.48 | 5.62 |
| HOLDLARGE4_D | P50 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | P75 | 0.00 | 0.00 | 0.00 | 4.58 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Mean | 2.17 | 2.85 | 2.64 | 3.06 | 1.93 | 2.33 | 1.59 | 1.98 | 1.92 |
| HOLDLARGE5_D | P50 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | P75 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Mean | 0.93 | 1.10 | 1.05 | 1.67 | 0.61 | 0.91 | 0.52 | 0.82 | 0.65 |
| HOLDLARGESUM2_D | P50 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| | P75 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| | Mean | 88.73 | 86.06 | 85.79 | 80.95 | 90.39 | 87.87 | 91.58 | 87.96 | 90.06 |
| HOLDLARGESUM3_D | P50 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| | P75 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| | Mean | 94.91 | 93.17 | 92.67 | 87.37 | 96.40 | 94.03 | 96.52 | 93.44 | 95.69 |
| HOLDLARGESUM4_D | P50 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| | P75 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| | Mean | 97.08 | 96.02 | 95.31 | 90.44 | 98.33 | 96.37 | 98.11 | 95.43 | 97.61 |
| HOLDLARGESUM5_D | P50 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| | P75 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| | Mean | 98.01 | 97.13 | 96.36 | 92.10 | 98.94 | 97.28 | 98.63 | 96.25 | 98.26 |
| HOLDLARGEOUTS_D | P50 | 34.00 | 34.00 | 33.33 | 50.00 | 33.33 | 34.00 | 35.02 | 34.00 | 40.00 |
| | P75 | 50.00 | 50.00 | 50.00 | 100.00 | 48.00 | 50.00 | 90.00 | 52.40 | 82.60 |
| | Mean | 44.19 | 38.97 | 40.82 | 61.24 | 36.86 | 41.39 | 48.06 | 43.63 | 49.86 |
| HOLDSMALLOUTS_D | P50 | 30.00 | 22.00 | 20.00 | 33.30 | 25.00 | 25.00 | 34.00 | 25.00 | 33.00 |
| | P75 | 50.00 | 48.84 | 45.00 | 100.00 | 40.00 | 48.00 | 80.00 | 50.00 | 66.00 |
| | Mean | 39.26 | 31.34 | 33.44 | 48.45 | 32.82 | 34.97 | 43.52 | 36.81 | 41.74 |
| HERFINDAHL_D | P50 | 0.55 | 0.50 | 0.50 | 0.50 | 0.52 | 0.52 | 0.55 | 0.55 | 0.55 |
| | P75 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| | Mean | 0.66 | 0.58 | 0.60 | 0.59 | 0.65 | 0.63 | 0.68 | 0.64 | 0.65 |
| NOWNERS_D | P50 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| | P75 | 3.00 | 3.00 | 3.00 | 4.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 |
| | Mean | 13.70 | 8.37 | 30.23 | 371.03 | 2.75 | 8.14 | 4.08 | 16.44 | 3.32 |
| NOWNERSINS | P50 | 1.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 1.00 | 1.00 | 2.00 |
| | P75 | 2.00 | 2.00 | 2.00 | 3.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| | Mean | 1.70 | 1.90 | 1.84 | 2.00 | 1.79 | 1.76 | 1.68 | 1.73 | 1.76 |

Table 7.S3. Corporate governance: Descriptive statistics for all firms by industry sector

| | | Industry sector | | | | | | | | |
|--------------|------|-----------------|--------|--------|--------|--------|--------|--------|--------|--------|
| | | 0 | 1 | 2 | 3 | 4 | 5 | 7 | 8 | 9 |
| HOLDMEAN_D | P50 | 50.00 | 50.00 | 50.00 | 50.00 | 50.00 | 50.00 | 50.00 | 50.00 | 50.00 |
| | P75 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| | Mean | 62.59 | 54.74 | 55.55 | 55.05 | 60.88 | 59.17 | 64.03 | 60.17 | 61.54 |
| HOLDMEDIAN_D | P50 | 50.00 | 50.00 | 50.00 | 50.00 | 50.00 | 50.00 | 50.00 | 50.00 | 50.00 |
| | P75 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| | Mean | 61.79 | 53.92 | 54.39 | 54.09 | 59.98 | 58.19 | 63.11 | 59.19 | 60.55 |
| HOLDUNSP_D | P50 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | P75 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Mean | 9.10 | 6.78 | 7.77 | 8.92 | 5.66 | 7.77 | 6.87 | 7.24 | 6.88 |
| HOLDINST_D | P50 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | P75 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Mean | 0.49 | 0.47 | 0.43 | 1.32 | 0.03 | 0.52 | 0.11 | 0.30 | 0.19 |
| HOLDPERS_D | P50 | 100.00 | 100.00 | 100.00 | 0.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| | P75 | 100.00 | 100.00 | 100.00 | 66.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| | Mean | 82.94 | 80.83 | 78.83 | 27.90 | 91.33 | 81.87 | 83.31 | 78.90 | 78.26 |
| HOLDSTAT_D | P50 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | P75 | 0.00 | 0.00 | 0.00 | 51.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Mean | 0.13 | 0.40 | 0.38 | 25.33 | 0.12 | 1.03 | 0.04 | 1.58 | 8.82 |
| HOLDINTL_D | P50 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | P75 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Mean | 2.70 | 1.13 | 4.24 | 15.17 | 0.81 | 2.25 | 5.93 | 3.97 | 1.65 |
| HOLDINDU_D | P50 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | P75 | 0.00 | 0.00 | 0.00 | 20.20 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Mean | 3.72 | 8.56 | 6.11 | 17.37 | 1.46 | 4.94 | 2.82 | 5.52 | 3.05 |
| SUMHOLD_D | P50 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| | P75 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| | Mean | 99.09 | 98.19 | 97.80 | 96.05 | 99.43 | 98.42 | 99.13 | 97.58 | 98.89 |
| BLOCK5NR_D | P50 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| | P75 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 |
| | Mean | 2.17 | 2.44 | 2.40 | 2.47 | 2.14 | 2.26 | 2.01 | 2.20 | 2.13 |
| BLOCK10NR_D | P50 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| | P75 | 3.00 | 3.00 | 3.00 | 3.00 | 2.00 | 3.00 | 2.00 | 2.00 | 2.00 |
| | Mean | 1.96 | 2.13 | 2.05 | 2.01 | 1.96 | 1.98 | 1.84 | 1.90 | 1.92 |
| BLOCK5SH_D | P50 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| | P75 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| | Mean | 98.39 | 97.55 | 96.67 | 92.56 | 99.12 | 97.65 | 98.62 | 96.65 | 98.38 |
| BLOCK10SH_D | P50 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| | P75 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| | Mean | 96.72 | 95.00 | 93.87 | 89.01 | 97.60 | 95.40 | 97.18 | 94.27 | 96.61 |
| TYPELARGE1_D | P50 | 2.00 | 2.00 | 2.00 | 3.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| | P75 | 2.00 | 2.00 | 2.00 | 4.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| | Mean | 2.02 | 2.14 | 2.15 | 2.97 | 1.98 | 2.08 | 2.08 | 2.14 | 2.09 |

Table 7.S3. Corporate governance: Descriptive statistics for all firms by industry sector

| | | Industry sector | | | | | | | | |
|-----------------|------|-----------------|--------|--------|--------|--------|--------|--------|--------|--------|
| | | 0 | 1 | 2 | 3 | 4 | 5 | 7 | 8 | 9 |
| HOLDLARGE1_U | P50 | 66.66 | 51.00 | 60.00 | 64.00 | 65.00 | 65.00 | 67.00 | 66.00 | 66.00 |
| | P75 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| | Mean | 70.56 | 63.09 | 65.70 | 65.51 | 69.04 | 68.31 | 72.58 | 69.30 | 70.21 |
| HOLDLARGE2_U | P50 | 0.00 | 20.00 | 17.00 | 5.30 | 20.00 | 16.79 | 12.00 | 12.06 | 18.00 |
| | P75 | 31.00 | 34.00 | 33.40 | 23.25 | 35.00 | 34.00 | 34.00 | 34.00 | 34.00 |
| | Mean | 14.66 | 20.60 | 18.92 | 12.56 | 20.76 | 18.72 | 18.11 | 17.67 | 19.24 |
| HOLDLARGE3_U | P50 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | P75 | 0.00 | 11.75 | 11.00 | 10.00 | 10.00 | 10.00 | 1.00 | 6.90 | 8.04 |
| | Mean | 4.49 | 6.48 | 6.19 | 5.37 | 5.67 | 5.53 | 4.48 | 4.88 | 5.20 |
| HOLDLARGE4_U | P50 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | P75 | 0.00 | 0.70 | 0.00 | 2.31 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Mean | 1.56 | 2.70 | 2.38 | 2.62 | 1.78 | 2.08 | 1.42 | 1.73 | 1.75 |
| HOLDLARGE5_U | P50 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | P75 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Mean | 0.69 | 1.13 | 0.95 | 1.53 | 0.57 | 0.81 | 0.45 | 0.73 | 0.57 |
| HOLDLARGESUM2_U | P50 | 100.00 | 100.00 | 100.00 | 99.99 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| | P75 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| | Mean | 89.38 | 84.97 | 85.72 | 79.19 | 90.60 | 88.14 | 91.82 | 88.10 | 90.30 |
| HOLDLARGESUM3_U | P50 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| | P75 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| | Mean | 95.15 | 91.85 | 92.26 | 85.03 | 96.49 | 94.00 | 96.58 | 93.28 | 95.73 |
| HOLDLARGESUM4_U | P50 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| | P75 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| | Mean | 97.15 | 94.72 | 94.78 | 87.88 | 98.34 | 96.21 | 98.09 | 95.13 | 97.56 |
| HOLDLARGESUM5_U | P50 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| | P75 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| | Mean | 98.04 | 95.92 | 95.78 | 89.54 | 98.93 | 97.06 | 98.57 | 95.90 | 98.16 |
| HOLDLARGEOUTS_U | P50 | 38.48 | 30.47 | 33.33 | 51.02 | 34.00 | 34.00 | 36.41 | 35.00 | 40.00 |
| | P75 | 83.05 | 50.00 | 54.88 | 100.00 | 50.00 | 55.00 | 100.00 | 65.00 | 93.90 |
| | Mean | 48.77 | 37.60 | 41.60 | 61.39 | 38.62 | 42.85 | 49.42 | 45.25 | 50.98 |
| HERFINDAHL_U | P50 | 0.55 | 0.50 | 0.50 | 0.50 | 0.53 | 0.54 | 0.55 | 0.55 | 0.55 |
| | P75 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| | Mean | 0.67 | 0.58 | 0.60 | 0.59 | 0.65 | 0.64 | 0.68 | 0.64 | 0.66 |
| NOWNERS_U | P50 | 1.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| | P75 | 2.00 | 4.00 | 3.00 | 4.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 |
| | Mean | 2.09 | 3.19 | 2.84 | 3.84 | 2.18 | 2.53 | 2.11 | 2.73 | 2.29 |
| HOLDMEAN_U | P50 | 50.00 | 50.00 | 50.00 | 50.00 | 50.00 | 50.00 | 50.00 | 50.00 | 50.00 |
| | P75 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| | Mean | 63.15 | 53.17 | 55.58 | 55.07 | 61.10 | 59.33 | 64.28 | 60.15 | 61.60 |
| HOLDMEDIAN_U | P50 | 50.00 | 50.00 | 50.00 | 50.00 | 50.00 | 50.00 | 50.00 | 50.00 | 50.00 |
| | P75 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| | Mean | 62.27 | 51.88 | 54.23 | 53.63 | 60.19 | 58.20 | 63.29 | 59.00 | 60.56 |

Table 7.S3. Corporate governance: Descriptive statistics for all firms by industry sector

| | | Industry sector | | | | | | | | |
|-----------------|------|-----------------|--------|--------|--------|--------|--------|--------|--------|--------|
| | | 0 | 1 | 2 | 3 | 4 | 5 | 7 | 8 | 9 |
| HOLDUNSP_U | P50 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | P75 | 0.00 | 0.00 | 0.00 | 4.40 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Mean | 9.13 | 7.04 | 8.01 | 10.18 | 5.62 | 7.96 | 6.93 | 7.61 | 6.94 |
| HOLDINST_U | P50 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | P75 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Mean | 0.16 | 0.25 | 0.20 | 0.15 | 0.02 | 0.32 | 0.04 | 0.14 | 0.12 |
| HOLDPERS_U | P50 | 100.00 | 100.00 | 100.00 | 0.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| | P75 | 100.00 | 100.00 | 100.00 | 65.60 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| | Mean | 66.70 | 80.28 | 77.29 | 27.04 | 88.95 | 79.59 | 79.95 | 76.47 | 76.50 |
| HOLDSTAT_U | P50 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | P75 | 0.00 | 0.00 | 0.00 | 61.10 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Mean | 0.13 | 0.61 | 0.47 | 26.88 | 0.14 | 1.07 | 0.06 | 1.66 | 8.56 |
| HOLDINTL_U | P50 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | P75 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Mean | 2.02 | 1.24 | 3.98 | 13.98 | 0.79 | 2.09 | 5.62 | 3.76 | 1.58 |
| HOLDINDU_U | P50 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | P75 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Mean | 0.73 | 2.68 | 2.03 | 6.94 | 0.38 | 1.83 | 0.94 | 1.94 | 1.08 |
| SUMHOLD_U | P50 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| | P75 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| | Mean | 98.68 | 97.36 | 96.86 | 91.82 | 99.38 | 97.93 | 98.93 | 96.90 | 98.68 |
| BLOCK5NR_U | P50 | 1.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| | P75 | 2.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 2.00 | 3.00 | 3.00 |
| | Mean | 1.63 | 2.31 | 2.22 | 2.21 | 2.05 | 2.09 | 1.87 | 2.02 | 2.01 |
| BLOCK10NR_U | P50 | 1.00 | 2.00 | 2.00 | 1.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| | P75 | 2.00 | 3.00 | 3.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| | Mean | 1.50 | 1.96 | 1.90 | 1.75 | 1.88 | 1.84 | 1.71 | 1.75 | 1.82 |
| BLOCK5SH_U | P50 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| | P75 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| | Mean | 76.44 | 90.42 | 90.60 | 82.42 | 95.40 | 91.76 | 92.73 | 90.29 | 94.00 |
| BLOCK10SH_U | P50 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| | P75 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| | Mean | 75.33 | 87.69 | 88.07 | 78.98 | 93.98 | 89.80 | 91.45 | 88.21 | 92.43 |
| INSHOLD_CEO | P50 | 50.00 | 50.00 | 50.00 | 33.00 | 50.00 | 50.00 | 50.00 | 50.00 | 50.00 |
| | P75 | 100.00 | 83.67 | 86.00 | 65.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| | Mean | 46.38 | 47.90 | 48.87 | 39.99 | 56.06 | 50.04 | 54.89 | 50.83 | 53.64 |
| INSHOLD_BDEXCEO | P50 | 40.00 | 37.30 | 33.00 | 32.25 | 33.81 | 33.50 | 30.00 | 33.30 | 33.33 |
| | P75 | 66.67 | 55.00 | 51.00 | 53.60 | 50.00 | 60.00 | 50.00 | 60.00 | 51.32 |
| | Mean | 40.41 | 36.81 | 34.46 | 34.48 | 33.96 | 35.84 | 33.17 | 35.54 | 34.50 |
| INSHOLD_BD | P50 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| | P75 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| | Mean | 84.21 | 83.48 | 82.04 | 72.52 | 89.09 | 84.86 | 86.94 | 85.38 | 87.23 |
| | Mean | 86.78 | 84.71 | 83.34 | 74.47 | 90.01 | 85.88 | 88.07 | 86.37 | 88.13 |

Table 7.S3. Corporate governance: Descriptive statistics for all firms by industry sector

| | | Industry sector | | | | | | | | |
|----------------|------|-----------------|--------|--------|-------|--------|--------|--------|--------|--------|
| | | 0 | 1 | 2 | 3 | 4 | 5 | 7 | 8 | 9 |
| INSHOLD_LARGE1 | P50 | 64.00 | 51.00 | 53.60 | 50.00 | 62.80 | 62.91 | 65.00 | 65.00 | 60.26 |
| | P75 | 100.00 | 100.00 | 100.00 | 75.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| | Mean | 67.56 | 60.82 | 61.87 | 52.59 | 67.22 | 65.59 | 68.60 | 66.98 | 66.58 |
| INSHOLD_LARGE2 | P50 | 0.00 | 13.00 | 10.00 | 9.88 | 10.00 | 3.16 | 0.00 | 0.00 | 9.00 |
| | P75 | 32.40 | 33.33 | 33.00 | 30.00 | 34.00 | 33.00 | 33.33 | 33.10 | 34.00 |
| | Mean | 15.06 | 18.29 | 16.76 | 15.25 | 18.11 | 15.94 | 16.19 | 15.61 | 17.33 |
| INSHOLD_LARGE3 | P50 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | P75 | 0.00 | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Mean | 3.19 | 4.29 | 3.68 | 4.59 | 3.72 | 3.31 | 2.68 | 2.93 | 3.28 |
| INSHOLD_LARGE4 | P50 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | P75 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Mean | 0.73 | 1.10 | 0.80 | 1.32 | 0.76 | 0.81 | 0.50 | 0.62 | 0.76 |
| INSHOLD_LARGE5 | P50 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | P75 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Mean | 0.21 | 0.18 | 0.17 | 0.53 | 0.15 | 0.17 | 0.07 | 0.16 | 0.13 |
| INSHOLD_TYPE1 | P50 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | P75 | 0.00 | 17.48 | 21.00 | 0.00 | 9.00 | 0.00 | 0.00 | 0.00 | 17.61 |
| | Mean | 11.73 | 12.42 | 13.02 | 8.39 | 11.49 | 10.48 | 11.63 | 10.22 | 12.57 |
| INSHOLD_TYPE2 | P50 | 0.00 | 10.00 | 1.63 | 10.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | P75 | 34.00 | 48.00 | 36.00 | 35.00 | 36.00 | 34.90 | 34.00 | 35.00 | 35.00 |
| | Mean | 18.39 | 21.97 | 19.41 | 20.45 | 18.90 | 18.28 | 17.06 | 18.26 | 18.37 |
| INSHOLD_TYPE3 | P50 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | P75 | 43.02 | 25.00 | 25.00 | 17.00 | 26.00 | 32.54 | 28.57 | 30.00 | 30.00 |
| | Mean | 22.01 | 14.84 | 15.05 | 14.03 | 15.06 | 17.56 | 16.12 | 17.27 | 16.13 |
| INSHOLD_TYPE4 | P50 | 0.00 | 0.00 | 0.00 | 0.00 | 50.00 | 20.00 | 39.00 | 25.00 | 32.86 |
| | P75 | 66.67 | 66.00 | 67.00 | 65.00 | 100.00 | 84.00 | 100.00 | 96.00 | 98.00 |
| | Mean | 32.07 | 34.25 | 34.56 | 29.65 | 43.65 | 38.54 | 42.14 | 39.62 | 40.16 |
| INSRANK_TYPE1 | P50 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | P75 | 0.00 | 1.00 | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 | 0.00 | 1.00 |
| | Mean | 0.37 | 0.42 | 0.46 | 0.38 | 0.40 | 0.36 | 0.37 | 0.34 | 0.40 |
| INSRANK_TYPE2 | P50 | 0.00 | 1.00 | 1.00 | 1.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | P75 | 1.00 | 1.00 | 2.00 | 1.00 | 2.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| | Mean | 0.64 | 0.81 | 0.79 | 0.83 | 0.75 | 0.71 | 0.69 | 0.71 | 0.73 |
| INSRANK_TYPE3 | P50 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | P75 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| | Mean | 0.55 | 0.53 | 0.51 | 0.55 | 0.48 | 0.50 | 0.45 | 0.47 | 0.48 |
| INSRANK_TYPE4 | P50 | 0.00 | 0.00 | 0.00 | 0.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| | P75 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| | Mean | 0.48 | 0.57 | 0.53 | 0.50 | 0.65 | 0.58 | 0.61 | 0.59 | 0.60 |
| BD_TURN | P50 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | P75 | 0.00 | 0.00 | 0.00 | 0.20 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Mean | 0.04 | 0.05 | 0.05 | 0.12 | 0.03 | 0.04 | 0.03 | 0.04 | 0.05 |
| DISCHSAME | P50 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| | P75 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| | Mean | 0.93 | 0.93 | 0.92 | 0.83 | 0.95 | 0.93 | 0.92 | 0.93 | 0.93 |
| DISCEOSAME | P50 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| | P75 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| | Mean | 0.95 | 0.95 | 0.94 | 0.89 | 0.96 | 0.94 | 0.95 | 0.94 | 0.95 |
| BD_SIZE | P50 | 2.00 | 2.00 | 2.00 | 5.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| | P75 | 3.00 | 3.00 | 3.00 | 7.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 |
| | Mean | 2.21 | 2.55 | 2.63 | 4.71 | 2.04 | 2.27 | 2.09 | 2.38 | 2.45 |

Table 7.S3. Corporate governance: Descriptive statistics for all firms by industry sector

| | | Industry sector | | | | | | | | |
|-----------------------|------|-----------------|-------|-------|-------|-------|-------|-------|-------|-------|
| | | 0 | 1 | 2 | 3 | 4 | 5 | 7 | 8 | 9 |
| BD_AVG_AGE | P50 | 45.67 | 48.00 | 50.33 | 50.83 | 47.00 | 48.75 | 49.00 | 50.00 | 47.67 |
| | P75 | 52.67 | 54.00 | 56.00 | 54.20 | 53.33 | 55.00 | 56.00 | 56.00 | 54.00 |
| | Mean | 46.06 | 48.04 | 50.37 | 50.42 | 47.43 | 48.84 | 49.20 | 49.92 | 47.54 |
| BD_AVG_AGE_M | P50 | 46.67 | 48.00 | 51.00 | 51.50 | 47.00 | 49.00 | 49.50 | 50.00 | 48.00 |
| | P75 | 53.50 | 54.00 | 56.50 | 55.11 | 53.50 | 56.00 | 56.00 | 56.00 | 54.50 |
| | Mean | 46.94 | 48.22 | 50.73 | 51.04 | 47.50 | 49.40 | 49.67 | 50.15 | 48.01 |
| BD_AVG_AGE_F | P50 | 41.50 | 47.00 | 48.00 | 46.42 | 48.00 | 46.00 | 48.00 | 49.00 | 47.00 |
| | P75 | 50.00 | 55.00 | 56.00 | 52.00 | 55.50 | 54.00 | 56.00 | 56.00 | 54.50 |
| | Mean | 43.08 | 47.75 | 48.52 | 46.86 | 47.74 | 46.90 | 48.21 | 48.92 | 47.36 |
| BD_SD_AGE | P50 | 7.07 | 8.59 | 7.94 | 7.72 | 6.51 | 6.43 | 6.93 | 8.17 | 7.18 |
| | P75 | 12.74 | 14.15 | 13.20 | 10.01 | 12.97 | 12.02 | 13.44 | 13.80 | 12.37 |
| | Mean | 8.30 | 9.36 | 8.84 | 8.10 | 8.13 | 7.85 | 8.39 | 9.09 | 8.22 |
| DBD_NR_FEM_EMPL | P50 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | P75 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Mean | 0.00 | 0.00 | 0.01 | 0.03 | 0.00 | 0.00 | 0.00 | 0.00 | 0.01 |
| DCEOCHBD | P50 | 1.00 | 1.00 | 0.00 | 0.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| | P75 | 1.00 | 1.00 | 1.00 | 0.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| | Mean | 0.51 | 0.51 | 0.47 | 0.17 | 0.64 | 0.56 | 0.58 | 0.53 | 0.51 |
| DCEODIRECTOR | P50 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | P75 | 1.00 | 1.00 | 1.00 | 0.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| | Mean | 0.31 | 0.32 | 0.32 | 0.21 | 0.27 | 0.26 | 0.27 | 0.25 | 0.26 |
| BD_NR_EMPL_PERC | P50 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | P75 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Mean | 0.00 | 0.00 | 0.01 | 0.03 | 0.00 | 0.00 | 0.00 | 0.00 | 0.01 |
| BD_NR_FEM_EMPL_PERC | P50 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | P75 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Mean | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| BD_NR_FEM_STOCKH_PERC | P50 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | P75 | 0.00 | 0.00 | 0.17 | 0.17 | 0.00 | 0.33 | 0.33 | 0.00 | 0.33 |
| | Mean | 0.14 | 0.10 | 0.12 | 0.10 | 0.07 | 0.17 | 0.21 | 0.11 | 0.16 |
| BD_NR_FEM_PERC | P50 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | P75 | 0.11 | 0.00 | 0.17 | 0.17 | 0.00 | 0.33 | 0.33 | 0.13 | 0.33 |
| | Mean | 0.14 | 0.10 | 0.12 | 0.10 | 0.07 | 0.17 | 0.21 | 0.12 | 0.16 |

This table presents the median (P50), the 75th percentile (P75), and the mean for governance variables by industry sector for the sample of all Norwegian firms with limited liability as defined in table 4.1. The sample period is 2000-2005, and the sample includes non-financial firms that pass basic accounting consistency tests, activity level tests, and that are not subsidiaries. The variables are defined in appendix 7.A1. The subscript "D" denotes direct (first level) ownership, while the subscript "U" denotes ultimate (all levels) ownership, i.e. the sum of direct ownership and indirect ownership through pyramids. The industry sector codes are 0: Missing; 1: Agriculture, forestry, fishing, mining; 2: Manufacturing, chemical products; 3: Energy; 4: Construction; 5: Service; 6 Financial (not in the sample); 7: Trade; 8: Transport; 9: Multisector.

Table 7.S4. Corporate governance: Descriptive statistics for all firms by firm size

| | | Decile | | | | | | | | | |
|-----------------|------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| | | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| HOLDLARGE1_D | P50 | 75.00 | 66.00 | 66.00 | 66.00 | 65.00 | 62.50 | 60.00 | 60.00 | 59.60 | 66.00 |
| | P75 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| | Mean | 72.96 | 71.21 | 71.31 | 69.91 | 68.83 | 67.48 | 66.38 | 65.20 | 64.80 | 67.93 |
| HOLDLARGE2_D | P50 | 11.00 | 17.00 | 18.64 | 20.00 | 20.30 | 23.70 | 23.98 | 23.50 | 20.93 | 13.93 |
| | P75 | 34.00 | 34.00 | 35.00 | 35.00 | 35.00 | 36.00 | 35.98 | 35.00 | 34.00 | 32.00 |
| | Mean | 17.49 | 19.19 | 19.77 | 21.08 | 21.23 | 21.91 | 22.02 | 21.92 | 21.11 | 16.92 |
| HOLDLARGE3_D | P50 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | P75 | 5.26 | 6.66 | 4.73 | 6.66 | 10.00 | 10.00 | 12.00 | 14.28 | 14.49 | 11.74 |
| | Mean | 4.86 | 5.09 | 4.83 | 5.17 | 5.68 | 6.12 | 6.52 | 7.01 | 7.21 | 6.33 |
| HOLDLARGE4_D | P50 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | P75 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.34 |
| | Mean | 1.77 | 1.78 | 1.67 | 1.63 | 1.88 | 2.08 | 2.33 | 2.60 | 2.74 | 2.72 |
| HOLDLARGE5_D | P50 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | P75 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Mean | 0.67 | 0.65 | 0.58 | 0.55 | 0.61 | 0.67 | 0.81 | 0.98 | 1.15 | 1.24 |
| HOLDLARGESUM2_D | P50 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| | P75 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| | Mean | 90.44 | 90.40 | 91.08 | 90.99 | 90.06 | 89.38 | 88.41 | 87.12 | 85.92 | 84.85 |
| HOLDLARGESUM3_D | P50 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| | P75 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| | Mean | 95.31 | 95.49 | 95.91 | 96.16 | 95.74 | 95.50 | 94.93 | 94.14 | 93.12 | 91.18 |
| HOLDLARGESUM4_D | P50 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| | P75 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| | Mean | 97.07 | 97.27 | 97.58 | 97.79 | 97.62 | 97.58 | 97.25 | 96.74 | 95.86 | 93.90 |
| HOLDLARGESUM5_D | P50 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| | P75 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| | Mean | 97.74 | 97.92 | 98.16 | 98.35 | 98.23 | 98.25 | 98.06 | 97.72 | 97.01 | 95.13 |
| HOLDLARGEOUTS_D | P50 | 34.00 | 34.00 | 34.00 | 34.00 | 34.00 | 34.00 | 34.00 | 34.00 | 34.00 | 47.18 |
| | P75 | 51.00 | 50.00 | 50.00 | 50.00 | 50.00 | 50.00 | 50.00 | 50.00 | 57.00 | 100.00 |
| | Mean | 43.92 | 38.84 | 38.69 | 38.99 | 39.42 | 39.62 | 40.37 | 40.89 | 43.60 | 55.37 |
| HOLDSMALLOUTS_D | P50 | 30.00 | 25.00 | 30.00 | 32.00 | 29.00 | 25.00 | 25.00 | 25.00 | 25.00 | 33.30 |
| | P75 | 50.00 | 40.00 | 40.00 | 40.00 | 42.50 | 45.00 | 48.00 | 47.00 | 50.00 | 100.00 |
| | Mean | 38.16 | 33.53 | 33.77 | 34.12 | 34.31 | 34.30 | 34.67 | 34.52 | 36.76 | 47.27 |
| HERFINDAHL_D | P50 | 0.61 | 0.55 | 0.55 | 0.55 | 0.54 | 0.52 | 0.50 | 0.50 | 0.50 | 0.53 |
| | P75 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| | Mean | 0.69 | 0.67 | 0.67 | 0.66 | 0.65 | 0.63 | 0.62 | 0.61 | 0.60 | 0.63 |
| NOWNERS_D | P50 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| | P75 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 4.00 |
| | Mean | 3.21 | 3.02 | 2.77 | 3.04 | 2.95 | 2.71 | 3.25 | 3.92 | 5.82 | 72.46 |
| NOWNERSINS | P50 | 1.00 | 1.00 | 1.00 | 1.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| | P75 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| | Mean | 1.59 | 1.64 | 1.63 | 1.67 | 1.72 | 1.77 | 1.84 | 1.88 | 1.92 | 1.91 |

Table 7.S4. Corporate governance: Descriptive statistics for all firms by firm size

| | | Decile | | | | | | | | | |
|--------------|------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| | | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| HOLDMEAN_D | P50 | 50.00 | 50.00 | 50.00 | 50.00 | 50.00 | 50.00 | 50.00 | 50.00 | 50.00 | 50.00 |
| | P75 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| | Mean | 65.55 | 63.46 | 63.56 | 62.21 | 61.09 | 59.42 | 57.81 | 56.13 | 55.40 | 58.06 |
| HOLDMEDIAN_D | P50 | 50.00 | 50.00 | 50.00 | 50.00 | 50.00 | 50.00 | 50.00 | 50.00 | 50.00 | 50.00 |
| | P75 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| | Mean | 64.61 | 62.53 | 62.64 | 61.33 | 60.15 | 58.52 | 56.80 | 55.09 | 54.33 | 56.98 |
| HOLDUNSP_D | P50 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | P75 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Mean | 7.04 | 6.59 | 6.10 | 6.03 | 6.08 | 6.41 | 6.54 | 7.66 | 9.13 | 11.14 |
| HOLDINST_D | P50 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | P75 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Mean | 0.29 | 0.24 | 0.20 | 0.25 | 0.23 | 0.28 | 0.33 | 0.31 | 0.37 | 0.94 |
| HOLDPERS_D | P50 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 79.18 |
| | P75 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| | Mean | 84.77 | 87.30 | 88.20 | 88.11 | 87.39 | 86.71 | 85.05 | 82.47 | 77.34 | 57.52 |
| HOLDSTAT_D | P50 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | P75 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Mean | 0.43 | 0.48 | 0.58 | 0.64 | 0.68 | 0.88 | 1.24 | 1.23 | 1.16 | 2.56 |
| HOLDINTL_D | P50 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | P75 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Mean | 1.87 | 0.96 | 0.89 | 0.91 | 1.23 | 1.35 | 1.85 | 2.67 | 4.65 | 15.94 |
| HOLDINDU_D | P50 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | P75 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Mean | 4.15 | 3.09 | 2.81 | 3.00 | 3.20 | 3.19 | 3.77 | 4.34 | 5.62 | 9.33 |
| SUMHOLD_D | P50 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| | P75 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| | Mean | 98.60 | 98.70 | 98.82 | 98.96 | 98.84 | 98.86 | 98.81 | 98.71 | 98.33 | 97.47 |
| BLOCK5NR_D | P50 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| | P75 | 3.00 | 3.00 | 2.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 |
| | Mean | 2.03 | 2.07 | 2.04 | 2.07 | 2.13 | 2.18 | 2.27 | 2.37 | 2.44 | 2.38 |
| BLOCK10NR_D | P50 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| | P75 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 3.00 | 3.00 | 3.00 | 3.00 |
| | Mean | 1.80 | 1.86 | 1.85 | 1.89 | 1.93 | 1.98 | 2.03 | 2.08 | 2.09 | 1.96 |
| BLOCK5SH_D | P50 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| | P75 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| | Mean | 97.99 | 98.16 | 98.33 | 98.51 | 98.41 | 98.36 | 98.27 | 98.05 | 97.48 | 95.55 |
| BLOCK10SH_D | P50 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| | P75 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| | Mean | 96.15 | 96.44 | 96.78 | 97.00 | 96.79 | 96.70 | 96.34 | 95.72 | 94.64 | 92.29 |
| TYPELARGE1_D | P50 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| | P75 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 4.00 |
| | Mean | 2.05 | 2.00 | 2.01 | 2.02 | 2.03 | 2.03 | 2.06 | 2.07 | 2.12 | 2.44 |

Table 7.S4. Corporate governance: Descriptive statistics for all firms by firm size

| | | Decile | | | | | | | | | |
|-----------------|------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| | | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| HOLDLARGE1_U | P50 | 78.15 | 66.00 | 66.00 | 66.00 | 65.00 | 64.00 | 60.00 | 60.00 | 60.00 | 66.66 |
| | P75 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| | Mean | 73.72 | 71.97 | 71.88 | 70.44 | 69.32 | 67.97 | 66.84 | 65.77 | 65.41 | 68.81 |
| HOLDLARGE2_U | P50 | 0.00 | 10.00 | 14.00 | 18.00 | 20.00 | 20.00 | 20.00 | 20.00 | 20.00 | 9.50 |
| | P75 | 33.30 | 34.00 | 34.00 | 35.00 | 35.00 | 35.00 | 35.00 | 34.00 | 34.00 | 28.00 |
| | Mean | 15.35 | 17.37 | 18.32 | 19.64 | 19.97 | 20.64 | 20.85 | 20.61 | 19.70 | 14.98 |
| HOLDLARGE3_U | P50 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | P75 | 0.00 | 0.00 | 0.00 | 2.00 | 7.23 | 10.00 | 10.00 | 12.00 | 12.50 | 10.00 |
| | Mean | 4.10 | 4.44 | 4.34 | 4.68 | 5.20 | 5.61 | 6.09 | 6.51 | 6.64 | 5.61 |
| HOLDLARGE4_U | P50 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | P75 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Mean | 1.48 | 1.52 | 1.48 | 1.45 | 1.70 | 1.89 | 2.15 | 2.41 | 2.55 | 2.41 |
| HOLDLARGE5_U | P50 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | P75 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Mean | 0.55 | 0.55 | 0.51 | 0.51 | 0.56 | 0.62 | 0.75 | 0.89 | 1.05 | 1.08 |
| HOLDLARGESUM2_U | P50 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| | P75 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| | Mean | 90.80 | 90.80 | 91.38 | 91.21 | 90.27 | 89.58 | 88.52 | 87.26 | 85.97 | 84.71 |
| HOLDLARGESUM3_U | P50 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| | P75 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| | Mean | 95.36 | 95.62 | 96.00 | 96.15 | 95.73 | 95.46 | 94.85 | 94.04 | 92.90 | 90.67 |
| HOLDLARGESUM4_U | P50 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| | P75 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| | Mean | 97.00 | 97.26 | 97.57 | 97.69 | 97.50 | 97.43 | 97.09 | 96.56 | 95.57 | 93.23 |
| HOLDLARGESUM5_U | P50 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| | P75 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| | Mean | 97.62 | 97.86 | 98.11 | 98.23 | 98.09 | 98.08 | 97.87 | 97.49 | 96.67 | 94.38 |
| HOLDLARGEOUTS_U | P50 | 35.00 | 34.00 | 34.00 | 34.00 | 34.00 | 34.00 | 34.00 | 34.00 | 34.00 | 50.00 |
| | P75 | 65.00 | 50.00 | 50.00 | 50.00 | 50.00 | 50.00 | 50.01 | 52.64 | 66.66 | 100.00 |
| | Mean | 45.49 | 41.31 | 40.58 | 40.58 | 41.00 | 41.08 | 41.49 | 42.05 | 44.39 | 56.23 |
| HERFINDAHL_U | P50 | 0.65 | 0.55 | 0.55 | 0.55 | 0.54 | 0.52 | 0.51 | 0.50 | 0.50 | 0.55 |
| | P75 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| | Mean | 0.70 | 0.68 | 0.68 | 0.66 | 0.65 | 0.64 | 0.62 | 0.61 | 0.60 | 0.63 |
| NOWNERS_U | P50 | 1.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| | P75 | 2.00 | 2.00 | 2.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 |
| | Mean | 2.15 | 2.21 | 2.18 | 2.23 | 2.30 | 2.37 | 2.50 | 2.65 | 2.81 | 2.97 |
| HOLDMEAN_U | P50 | 50.00 | 50.00 | 50.00 | 50.00 | 50.00 | 50.00 | 50.00 | 50.00 | 50.00 | 50.00 |
| | P75 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| | Mean | 65.76 | 63.74 | 63.73 | 62.34 | 61.18 | 59.51 | 57.83 | 56.14 | 55.33 | 58.54 |
| HOLDMEDIAN_U | P50 | 50.00 | 50.00 | 50.00 | 50.00 | 50.00 | 50.00 | 50.00 | 50.00 | 50.00 | 50.00 |
| | P75 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| | Mean | 64.69 | 62.71 | 62.73 | 61.36 | 60.16 | 58.53 | 56.72 | 54.99 | 54.09 | 57.19 |

Table 7.S4. Corporate governance: Descriptive statistics for all firms by firm size

| | | Decile | | | | | | | | | |
|-----------------|------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| | | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| HOLDUNSP_U | P50 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | P75 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 5.01 |
| | Mean | 7.21 | 6.68 | 6.18 | 6.13 | 6.18 | 6.49 | 6.69 | 7.76 | 9.23 | 11.63 |
| HOLDINST_U | P50 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | P75 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Mean | 0.14 | 0.12 | 0.12 | 0.16 | 0.14 | 0.18 | 0.22 | 0.20 | 0.21 | 0.42 |
| HOLDPERS_U | P50 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 82.25 |
| | P75 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| | Mean | 78.07 | 82.10 | 84.31 | 84.84 | 84.90 | 84.53 | 83.70 | 81.41 | 77.08 | 57.74 |
| HOLDSTAT_U | P50 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | P75 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Mean | 0.47 | 0.50 | 0.61 | 0.68 | 0.71 | 0.92 | 1.28 | 1.28 | 1.24 | 2.62 |
| HOLDINTL_U | P50 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | P75 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Mean | 1.61 | 0.85 | 0.84 | 0.85 | 1.17 | 1.28 | 1.79 | 2.59 | 4.48 | 15.04 |
| HOLDINDU_U | P50 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | P75 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Mean | 1.56 | 1.03 | 1.00 | 1.03 | 1.19 | 1.11 | 1.31 | 1.44 | 1.86 | 3.41 |
| SUMHOLD_U | P50 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| | P75 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| | Mean | 98.23 | 98.44 | 98.63 | 98.74 | 98.64 | 98.64 | 98.52 | 98.36 | 97.81 | 95.71 |
| BLOCK5NR_U | P50 | 1.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| | P75 | 2.00 | 2.00 | 2.00 | 2.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 |
| | Mean | 1.78 | 1.86 | 1.88 | 1.93 | 2.01 | 2.06 | 2.15 | 2.24 | 2.30 | 2.17 |
| BLOCK10NR_U | P50 | 1.00 | 1.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 1.00 |
| | P75 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 3.00 | 3.00 | 2.00 |
| | Mean | 1.59 | 1.69 | 1.72 | 1.76 | 1.82 | 1.87 | 1.93 | 1.97 | 1.98 | 1.80 |
| BLOCK5SH_U | P50 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| | P75 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| | Mean | 87.83 | 90.27 | 92.25 | 92.91 | 93.56 | 93.73 | 94.18 | 93.69 | 92.87 | 89.08 |
| BLOCK10SH_U | P50 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| | P75 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| | Mean | 86.34 | 88.85 | 90.91 | 91.54 | 92.07 | 92.19 | 92.43 | 91.55 | 90.26 | 86.21 |
| INSHOLD_CEO | P50 | 50.00 | 51.00 | 56.00 | 51.00 | 50.00 | 50.00 | 50.00 | 50.00 | 50.00 | 40.00 |
| | P75 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 90.00 | 80.00 | 75.21 | 77.45 |
| | Mean | 52.35 | 54.10 | 55.65 | 55.22 | 53.94 | 52.68 | 50.92 | 49.38 | 47.24 | 44.48 |
| INSHOLD_BDEXCEO | P50 | 26.00 | 28.59 | 28.48 | 33.00 | 33.33 | 34.00 | 34.00 | 34.00 | 34.35 | 31.25 |
| | P75 | 63.33 | 54.25 | 50.00 | 50.00 | 50.00 | 51.00 | 55.30 | 57.50 | 60.00 | 56.00 |
| | Mean | 35.24 | 34.01 | 32.95 | 33.48 | 34.33 | 35.20 | 36.26 | 36.13 | 36.47 | 34.80 |
| INSHOLD_BD | P50 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 99.99 |
| | P75 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| | Mean | 86.47 | 87.05 | 87.79 | 87.87 | 87.31 | 86.88 | 86.16 | 84.32 | 82.41 | 77.67 |
| INSHOLD_ALL | P50 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| | P75 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| | Mean | 87.59 | 88.10 | 88.60 | 88.70 | 88.26 | 87.88 | 87.18 | 85.50 | 83.71 | 79.28 |

Table 7.S4. Corporate governance: Descriptive statistics for all firms by firm size

| | | Decile | | | | | | | | | |
|----------------|------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| | | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| INSHOLD_LARGE1 | P50 | 67.65 | 66.00 | 66.00 | 65.00 | 64.00 | 60.00 | 59.20 | 53.00 | 51.00 | 51.00 |
| | P75 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| | Mean | 71.46 | 70.22 | 70.42 | 68.80 | 67.35 | 65.64 | 63.98 | 62.17 | 60.47 | 58.95 |
| INSHOLD_LARGE2 | P50 | 0.00 | 0.00 | 0.00 | 0.00 | 5.00 | 10.00 | 14.00 | 13.57 | 13.20 | 9.00 |
| | P75 | 27.77 | 33.00 | 33.33 | 34.00 | 33.50 | 34.00 | 34.00 | 33.33 | 33.30 | 29.00 |
| | Mean | 13.11 | 14.62 | 15.08 | 16.51 | 17.06 | 17.92 | 18.30 | 18.04 | 17.65 | 15.13 |
| INSHOLD_LARGE3 | P50 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | P75 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Mean | 2.32 | 2.55 | 2.43 | 2.74 | 3.10 | 3.42 | 3.82 | 4.09 | 4.27 | 3.89 |
| INSHOLD_LARGE4 | P50 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | P75 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Mean | 0.55 | 0.57 | 0.53 | 0.54 | 0.62 | 0.73 | 0.85 | 0.96 | 1.01 | 0.98 |
| INSHOLD_LARGE5 | P50 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | P75 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Mean | 0.11 | 0.11 | 0.10 | 0.08 | 0.10 | 0.13 | 0.18 | 0.20 | 0.22 | 0.24 |
| INSHOLD_TYPE1 | P50 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | P75 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 13.85 | 20.00 | 22.00 | 25.00 | 25.00 |
| | Mean | 7.96 | 8.47 | 9.00 | 10.17 | 11.03 | 11.95 | 12.45 | 12.98 | 14.10 | 14.86 |
| INSHOLD_TYPE2 | P50 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 4.00 | 8.00 | 5.65 |
| | P75 | 33.33 | 34.00 | 34.00 | 34.00 | 34.00 | 35.00 | 38.00 | 40.00 | 40.00 | 36.80 |
| | Mean | 15.75 | 16.68 | 16.54 | 17.09 | 17.53 | 18.60 | 19.61 | 20.35 | 20.74 | 20.19 |
| INSHOLD_TYPE3 | P50 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | P75 | 33.33 | 30.00 | 25.00 | 30.00 | 32.50 | 33.00 | 33.00 | 28.57 | 27.37 | 20.83 |
| | Mean | 19.50 | 17.32 | 16.41 | 16.39 | 16.80 | 16.61 | 16.65 | 15.78 | 15.73 | 14.61 |
| INSHOLD_TYPE4 | P50 | 37.50 | 50.00 | 50.00 | 50.00 | 40.00 | 33.00 | 20.00 | 0.00 | 0.00 | 0.00 |
| | P75 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 90.00 | 75.00 | 66.00 | 65.07 | 60.00 |
| | Mean | 43.27 | 44.58 | 45.84 | 44.22 | 41.95 | 39.72 | 37.45 | 35.21 | 31.83 | 28.01 |
| INSRANK_TYPE1 | P50 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | P75 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| | Mean | 0.26 | 0.27 | 0.28 | 0.33 | 0.36 | 0.40 | 0.44 | 0.46 | 0.50 | 0.51 |
| INSRANK_TYPE2 | P50 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.00 | 1.00 | 1.00 |
| | P75 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 2.00 | 2.00 | 2.00 | 2.00 | 1.00 |
| | Mean | 0.60 | 0.66 | 0.65 | 0.68 | 0.70 | 0.74 | 0.78 | 0.81 | 0.83 | 0.80 |
| INSRANK_TYPE3 | P50 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | P75 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| | Mean | 0.46 | 0.44 | 0.43 | 0.45 | 0.48 | 0.51 | 0.53 | 0.53 | 0.54 | 0.51 |
| INSRANK_TYPE4 | P50 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.00 | 0.00 | 0.00 |
| | P75 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| | Mean | 0.60 | 0.64 | 0.65 | 0.64 | 0.62 | 0.60 | 0.59 | 0.56 | 0.51 | 0.42 |
| BD_TURN | P50 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | P75 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Mean | 0.04 | 0.03 | 0.03 | 0.03 | 0.03 | 0.04 | 0.04 | 0.04 | 0.05 | 0.07 |
| DISCHSAME | P50 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| | P75 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| | Mean | 0.93 | 0.94 | 0.95 | 0.95 | 0.94 | 0.94 | 0.93 | 0.93 | 0.91 | 0.86 |
| DISCEOSAME | P50 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| | P75 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| | Mean | 0.94 | 0.96 | 0.96 | 0.96 | 0.95 | 0.95 | 0.95 | 0.94 | 0.93 | 0.91 |
| BD_SIZE | P50 | 1.00 | 1.00 | 1.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 3.00 | 3.00 |
| | P75 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 4.00 |
| | Mean | 1.92 | 1.92 | 1.91 | 1.96 | 2.03 | 2.14 | 2.26 | 2.40 | 2.64 | 3.43 |

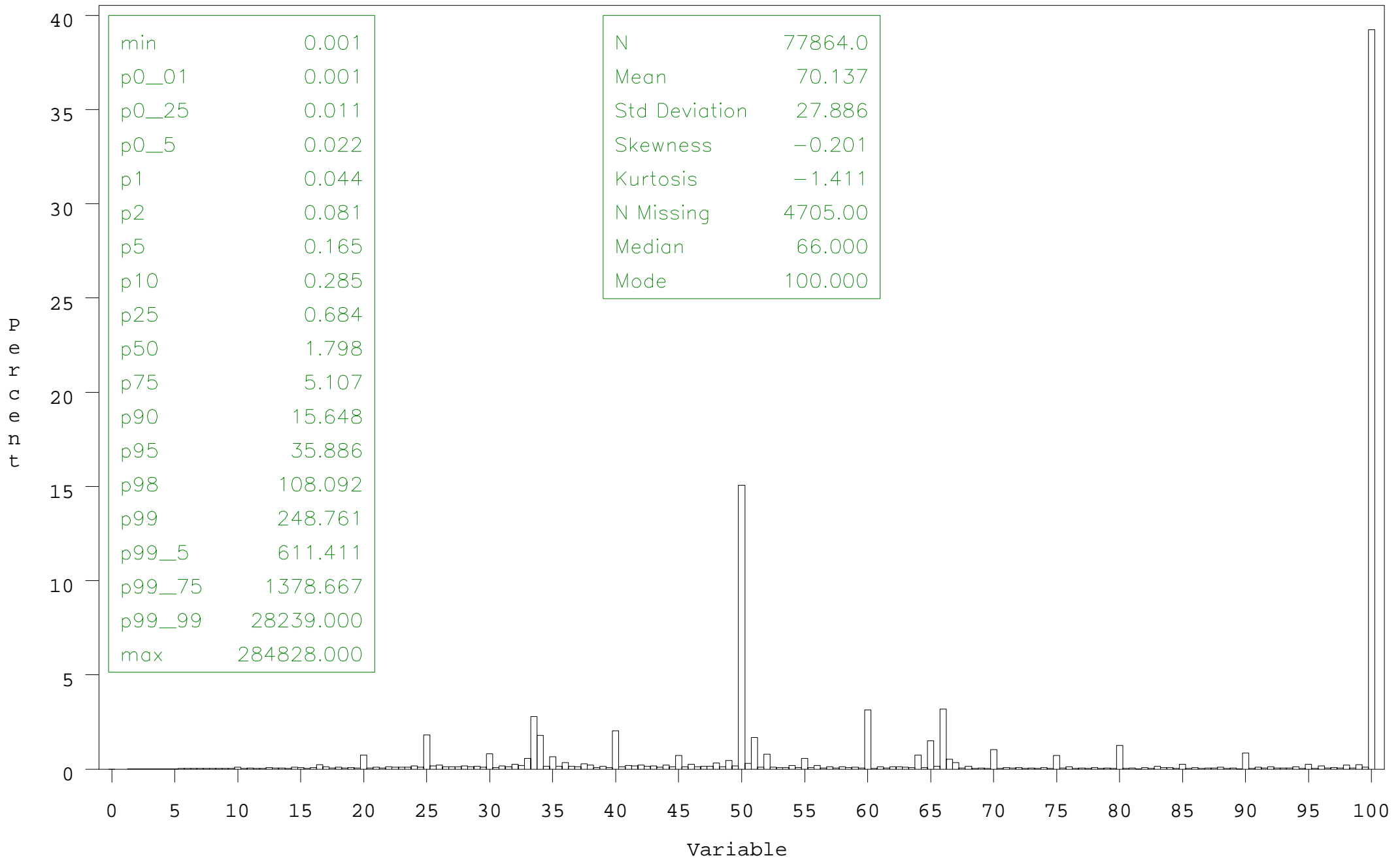
Table 7.S4. Corporate governance: Descriptive statistics for all firms by firm size

| | | Decile | | | | | | | | | |
|-----------------------|------|--------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| | | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| BD_AVG_AGE | P50 | 50.00 | 49.67 | 49.00 | 48.00 | 48.00 | 48.00 | 48.00 | 48.50 | 49.00 | 49.67 |
| | P75 | 57.00 | 57.00 | 56.00 | 55.00 | 54.67 | 54.50 | 54.33 | 54.33 | 54.25 | 54.50 |
| | Mean | 49.98 | 49.78 | 49.02 | 48.41 | 48.17 | 48.17 | 48.34 | 48.63 | 48.91 | 49.47 |
| BD_AVG_AGE_M | P50 | 50.00 | 50.00 | 49.75 | 49.00 | 48.50 | 48.50 | 48.50 | 49.00 | 49.00 | 50.00 |
| | P75 | 57.00 | 57.50 | 57.00 | 56.00 | 55.00 | 55.00 | 55.00 | 55.00 | 55.00 | 55.00 |
| | Mean | 50.39 | 50.28 | 49.61 | 48.95 | 48.63 | 48.57 | 48.72 | 48.87 | 49.24 | 49.93 |
| BD_AVG_AGE_F | P50 | 48.00 | 48.00 | 47.00 | 46.00 | 46.00 | 46.50 | 47.00 | 48.00 | 48.00 | 47.00 |
| | P75 | 56.50 | 56.00 | 55.00 | 54.00 | 54.00 | 54.00 | 55.00 | 55.00 | 55.00 | 54.00 |
| | Mean | 48.25 | 48.26 | 47.43 | 46.93 | 46.80 | 47.00 | 47.35 | 48.05 | 47.97 | 47.35 |
| BD_SD_AGE | P50 | 6.36 | 6.36 | 6.18 | 6.18 | 6.36 | 6.43 | 6.86 | 7.07 | 7.37 | 8.04 |
| | P75 | 13.00 | 13.18 | 13.00 | 12.66 | 12.81 | 12.73 | 13.00 | 12.79 | 12.73 | 12.19 |
| | Mean | 8.07 | 8.14 | 7.99 | 7.86 | 8.05 | 8.02 | 8.29 | 8.36 | 8.43 | 8.67 |
| DBD_NR_FEM_EMPL | P50 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | P75 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Mean | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.02 |
| DCEOCHBD | P50 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.00 | 0.00 |
| | P75 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| | Mean | 0.65 | 0.67 | 0.67 | 0.64 | 0.61 | 0.57 | 0.54 | 0.51 | 0.44 | 0.29 |
| DCEODIRECTOR | P50 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | P75 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| | Mean | 0.20 | 0.20 | 0.20 | 0.22 | 0.25 | 0.27 | 0.29 | 0.31 | 0.35 | 0.37 |
| BD_NR_EMPL_PERC | P50 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | P75 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Mean | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.02 |
| BD_NR_FEM_EMPL_PERC | P50 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | P75 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Mean | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| BD_NR_FEM_STOCKH_PERC | P50 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | P75 | 0.25 | 0.33 | 0.33 | 0.33 | 0.33 | 0.33 | 0.33 | 0.25 | 0.20 | 0.17 |
| | Mean | 0.16 | 0.18 | 0.19 | 0.19 | 0.19 | 0.18 | 0.16 | 0.14 | 0.12 | 0.10 |
| BD_NR_FEM_PERC | P50 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | P75 | 0.25 | 0.33 | 0.33 | 0.33 | 0.33 | 0.33 | 0.33 | 0.25 | 0.20 | 0.17 |
| | Mean | 0.16 | 0.18 | 0.19 | 0.19 | 0.19 | 0.18 | 0.16 | 0.14 | 0.12 | 0.10 |

This table presents the pooled median (P50), 75th percentile (P75), and the mean for governance variables by firm size as measured by sales. The sample is all Norwegian firms with limited liability over the period 2000-2005 as defined in table 4.1, and includes non-financial firms that pass basic accounting consistency tests, activity level tests, and that are not subsidiaries. The variables are defined in appendix 7.A1. The subscript "D" denotes direct (first level) ownership, while the subscript "U" denotes ultimate (all levels) ownership, i.e. the sum of direct ownership and indirect ownership through pyramids.

Figure 7.1.1.1. The holding of the largest owner of a Norwegian firm with limited liability

yr=2005



This figure shows the histogram for the largest ownership fraction in 2005. The sample consists of all listed and nonlisted limited liability nonfinancial firms that are not subsidiaries and that pass basic accounting consistency and activity filters. Table 4.1 specifies these filters one by one. The two insets present moments and percentiles of the frequency distribution, and the bin size is 0.5%.

Table 7.1.1.1. Determinants of ownership concentration

| Variable | All firms | | Large firms | |
|--------------------------------|----------------------|----------------|----------------------|----------------|
| | No owner restriction | Multiple owner | No owner restriction | Multiple owner |
| Intercept | 0.518 (0.000) | 0.308 (0.000) | 0.487 (0.000) | 0.300 (0.000) |
| Listed | -0.197 (0.000) | -0.108 (0.000) | -0.222 (0.000) | -0.117 (0.000) |
| Nonlisted | 0.197 (0.000) | 0.108 (0.000) | 0.222 (0.000) | 0.117 (0.000) |
| Size | -0.017 (0.000) | -0.007 (0.000) | | |
| Size in millions | | | -0.016 (0.000) | -0.009 (0.003) |
| Age | 0.011 (0.000) | 0.010 (0.000) | -0.022 (0.000) | -0.003 (0.148) |
| Largest owner is unspecified | -0.027 (0.000) | 0.010 (0.000) | 0.005 (0.377) | 0.028 (0.000) |
| Largest owner is institutional | -0.162 (0.000) | -0.107 (0.000) | -0.164 (0.000) | -0.139 (0.000) |
| Largest owner is a person | 0.037 (0.000) | 0.073 (0.000) | -0.034 (0.000) | 0.040 (0.000) |
| Largest owner is state | 0.012 (0.001) | -0.011 (0.000) | -0.009 (0.354) | -0.017 (0.037) |
| Largest owner is foreign | 0.296 (0.000) | 0.106 (0.000) | 0.312 (0.000) | 0.149 (0.000) |
| Largest owner is industrial | -0.155 (0.000) | -0.071 (0.000) | -0.111 (0.000) | -0.060 (0.000) |
| R ² | 0.068 | 0.078 | 0.291 | 0.149 |
| n | 464,250 | 296,982 | 23,629 | 13,741 |

This table examines how firm and owner characteristics relate to ownership concentration. The sample in the "All firms" panel includes all non-financial firms that pass basic accounting consistency tests, activity level tests, and that are not subsidiaries of another firm. Table 4.1 provides details of the data filtering process. The sample in the "Large firms" panel are chosen according to the same filters. Large nonlisted firms rank in the top 5% of sales among the nonlisted firms for that year, while large listed firms rank in the top 90% of sales for that year among all listed firms. The "Multiple owner" sample excludes all single owner firms, which are firms with one owner or where the largest owner holds at least 99% of the shares. The "No ownership restriction" sample includes both multiple owner and single owner firms.

The dependent variable is the Herfindahl index of all owners, including the owners reported by VPS, which is the alternative data source for the owners of shares in ASA firms. "Size" is the natural logarithm of inflation adjusted sales in thousands. For large firms the logarithm is taken from the sales in millions of NOK. "Age" is the natural logarithm of the age to date for the firm (zero for very young firms). If age is missing, the founding year is the year the firm entered the sample. If a firm starts at the beginning of our database (1994) but has not indicated the founding year, we use 1983 as the founding year, which is the average founding year for firms in 2000 (the first year of our ownership structure data).

The largest owner type is either unspecified, institutional, a person, state, foreign, or industrial. We control for industry membership as specified in Appendix 4.A2. All variables are contemporaneous, and the sales variable is winsorized at the 1% tails. We run OLS regressions and control for fixed industry effects (unreported) and fixed time effects (unreported). The sum of the two listing status coefficients, the five owner type coefficients, the ten industry coefficients, and the six year coefficients are all restricted to be zero. The sample period is 2000-2005. P-values are in parentheses.

Table 7.1.3.1. Determinants of insider ownership in nonlisted firms*Panel A. Size and age*

| Variable | All firms | | Large firms | |
|------------------|----------------------|----------------|----------------------|----------------|
| | No owner restriction | Multiple owner | No owner restriction | Multiple owner |
| Intercept | 95.47 (0.000) | 87.60 (0.000) | 105.85 (0.000) | 93.23 (0.000) |
| Size | -1.12 (0.000) | -0.75 (0.000) | | |
| Size in millions | | | -7.31 (0.000) | -6.44 (0.000) |
| Age | -0.70 (0.000) | -1.44 (0.000) | -0.34 (0.251) | 0.68 (0.050) |
| R ² | 0.02 | 0.02 | 0.05 | 0.04 |
| n | 406,287 | 266,538 | 12,377 | 9,207 |

Panel B. Size, age, and the identity of the largest owner

| Variable | All firms | | Large firms | |
|------------------------------|----------------------|----------------|----------------------|----------------|
| | No owner restriction | Multiple owner | No owner restriction | Multiple owner |
| Intercept | 48.65 (0.000) | 46.14 (0.000) | 55.12 (0.000) | 51.05 (0.000) |
| Size | -0.62 (0.000) | -0.22 (0.000) | | |
| Size in millions | | | -3.73 (0.000) | -3.19 (0.000) |
| Age | -1.05 (0.000) | -1.86 (0.000) | -1.38 (0.000) | -0.92 (0.001) |
| Largest owner is unspecified | -5.69 (0.000) | -4.65 (0.000) | -7.34 (0.000) | -5.93 (0.000) |
| Largest owner is a person | 47.43 (0.000) | 43.08 (0.000) | 47.58 (0.000) | 42.76 (0.000) |
| Largest owner is state | -22.24 (0.000) | -20.46 (0.000) | -19.51 (0.000) | -19.22 (0.000) |
| Largest owner is foreign | -12.30 (0.000) | -11.49 (0.000) | -13.87 (0.000) | -11.60 (0.000) |
| Largest owner is industrial | -7.21 (0.000) | -6.48 (0.000) | -6.86 (0.000) | -6.00 (0.000) |
| R ² | 0.314 | 0.303 | 0.451 | 0.422 |
| n | 406,287 | 266,538 | 12,377 | 9,207 |

This table examines firm and owner characteristics that relate to the insider concentration in nonlisted firms with limited liability. The sample includes all non-financial nonlisted firms that pass basic accounting consistency tests, activity level tests, and that are not subsidiaries of another firm. Table 4.1 provides details of the data filtering process. Large nonlisted firms rank in the top 5% of sales for that year. The "Multiple owner" sample excludes all single owner firms, where there is just one owner or the largest owner holds at least 99% of the shares.

The dependent variable is the aggregate equity holdings by the firm's insiders. "Size" is the natural logarithm of inflation adjusted sales. For large firms the logarithm is taken from the sales in millions of NOK. "Age" is the natural logarithm of the age to date for the firm (zero for very young firms). If age is missing, the founding year is the year the firm entered the sample. If a firm starts at the beginning of our database (1994) but has not indicated the founding year, we use 1983 as the founding year (the average founding year for firms in 2000), which is the first year for our ownership structure data. The sales variable is winsorized at the 1% tails.

The largest owner type is either unspecified (this includes institutional owners, which is a very small group in nonlisted firms), a person, state, foreign, or industrial. We group all firms into ten industry sectors based on the firm's NAIC code for that year as specified in Appendix 4.A2.

All variables are contemporaneous. We run OLS regressions and control for fixed industry effects and fixed time effects (unreported). Panel B adds dummies for the largest owner type. The sums of the coefficients for the owner type dummies, for the industry sector dummies, and for the year dummies are all restricted to be zero. The sample is for the years 2000-2005. P-values are in parentheses.

Table 7.2.1: Determinants of board size

| Variable | All firms | | | | Large firms | | | |
|-------------------------|-----------|---------|----------------|---------|-------------|---------|----------------|---------|
| | All | | Multiple owner | | All | | Multiple owner | |
| Intercept | 2.99 | (0.000) | 3.78 | (0.000) | 0.54 | (0.000) | 2.89 | (0.000) |
| Firm size | 0.17 | (0.000) | 0.17 | (0.000) | | | | |
| Size in millions | | | | | 0.90 | (0.000) | 0.62 | (0.000) |
| Ownership concentration | -1.90 | (0.000) | -3.62 | (0.000) | -1.35 | (0.000) | -2.89 | (0.000) |
| Firm age | 0.09 | (0.000) | 0.07 | (0.000) | 0.10 | (0.000) | 0.09 | (0.000) |
| Board turnover | 1.62 | (0.000) | 1.12 | (0.000) | 1.96 | (0.000) | 1.41 | (0.000) |
| Director average age | -0.01 | (0.000) | -0.01 | (0.000) | -0.00 | (0.536) | -0.01 | (0.000) |
| Employee directors | 8.56 | (0.000) | 7.52 | (0.000) | 5.01 | (0.000) | 5.29 | (0.000) |
| Female directors | 0.35 | (0.000) | 0.33 | (0.000) | 1.04 | (0.000) | 1.03 | (0.000) |
| Nonlisted | -0.65 | (0.000) | -0.53 | (0.000) | -0.30 | (0.000) | -0.25 | (0.000) |
| Listed | 0.65 | (0.000) | 0.53 | (0.000) | 0.30 | (0.000) | 0.25 | (0.000) |
| R ² | 0.35 | (0.000) | 0.33 | (0.000) | 0.41 | (0.000) | 0.40 | (0.000) |
| n | 343,388 | (0.000) | 218,066 | (0.000) | 17,188 | (0.000) | 10,473 | (0.000) |

This table examines factors that relate to the board size in firms with limited liability firms that pass our sample selection process described in table 4.1. The sample consists of all non-financial firms that pass basic accounting consistency tests, activity tests, and that are not subsidiaries of another firm. Large nonlisted firms are firms that rank in the top 5% of sales for that year, and large listed firms are those above the 10% decile. The "Multiple owner" sample excludes single owner firms, which are firms with one owner or where the largest owner holds at least 99% of the shares. The "No owner restriction" sample includes both multiple owner and single owner firms.

Board size (the dependent variable) is the number of directors. "Size in millions" is the natural logarithm of inflation adjusted sales, winsorized at 1% tails. For large firms the logarithm is taken from the sales in millions of NOK. "Firm age" is the natural logarithm of the age to date for the firm (zero for very young firms). If the age is missing, the founding year is the year the firm entered our sample. If a firm starts at the beginning of our database (1994) but has not indicated the founding year, we use 1983, which is the average founding year for firms in 2000 (first year of governance data).

"Board turnover" accounts for the director turnover in that year excluding employee directors. "Board age" is the mean age for all directors. "Female directors" is the percentage of non-employee women directors on the board. "Employee directors" is the percentage of employee directors. "Nonlisted firm" and "Listed firm" are dummy variables indicating firm type. All variables are contemporaneous. We run OLS regressions and control for unreported fixed industry effects (see Appendix 4.A2 for definitions). The sum of the two listing status coefficients as well as the sum of the ten industry sector coefficients are restricted to be zero. The sample is pooled across the sample years 2000-2005. P-values are in parentheses.

Table 7.3.1. Return on assets by listing status and governance characteristics

| <i>A. Return on assets (ROA)</i> | | | | | | | | | | | | |
|----------------------------------|--------|------|-------|--------|--------|---------|-------|------|------|------|------|-------|
| | n | mean | std | skew. | kurt. | p0 | p5 | p25 | p50 | p75 | p95 | p100 |
| Nonlisted | 82,435 | 0.08 | 14.94 | 246.33 | 67,914 | -847.44 | -0.40 | | 0.07 | 0.18 | 0.43 | 4.085 |
| Listed | 134 | 0.05 | 0.17 | -3.99 | 33 | -1.35 | -0.16 | 0.01 | 0.05 | 0.12 | 0.23 | 0.65 |
| Large nonlisted | 4,122 | 0.11 | 0.32 | 36.97 | 1,783 | -1.99 | -0.05 | 0.04 | 0.08 | 0.14 | 0.31 | 16.76 |

| <i>B. Median ROA by Largest owner</i> | | | | | | | | | | | | | |
|---------------------------------------|--------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| | n | . | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | -1 |
| Nonlisted | 82,435 | 0.028 | 0.060 | 0.069 | 0.069 | 0.062 | | | 0.071 | 0.083 | 0.091 | 0.070 | 0.071 |
| Listed | 134 | | 0.041 | 0.097 | 0.026 | 0.034 | 0.031 | 0.060 | 0.049 | 0.098 | 0.066 | 0.079 | |
| Large nonlisted | 4,122 | 0.080 | 0.080 | 0.090 | 0.091 | 0.082 | 0.080 | 0.081 | 0.093 | 0.069 | 0.084 | 0.078 | 0.074 |

| <i>C. Median ROA by Herfindahl index</i> | | | | | | | | | | | | | |
|--|--------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| | n | . | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | -1 |
| Nonlisted | 82,435 | 0.030 | 0.054 | 0.070 | 0.073 | 0.067 | 0.080 | | | 0.072 | 0.096 | 0.072 | 0.071 |
| Listed | 134 | | 0.032 | 0.041 | 0.100 | 0.013 | 0.017 | 0.075 | 0.097 | 0.057 | 0.074 | 0.071 | |
| Large nonlisted | 4,122 | 0.080 | 0.078 | 0.090 | 0.074 | 0.092 | 0.093 | 0.077 | 0.084 | 0.091 | 0.081 | 0.078 | 0.074 |

| <i>D. Median ROA by Inside owners</i> | | | | | | | | | | | | | |
|---------------------------------------|--------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| | n | . | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | -1 |
| Nonlisted | 82,435 | 0.060 | 0.062 | 0.070 | 0.062 | 0.065 | 0.073 | 0.087 | 0.088 | 0.065 | 0.068 | 0.067 | 0.073 |
| Large nonlisted | 4,122 | 0.076 | 0.077 | 0.083 | 0.084 | 0.093 | 0.067 | 0.087 | 0.089 | 0.096 | 0.070 | 0.081 | 0.092 |

| <i>E. Median ROA by Board size</i> | | | | | | | | | | | | | |
|------------------------------------|--------|-------|-------|---|-------|-------|---|-------|-------|-------|-------|-------|-------|
| | n | . | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | -1 |
| Nonlisted | 82,435 | 0.038 | | | | | | 0.065 | | | 0.052 | 0.044 | 0.073 |
| Listed | 134 | | 0.013 | | | 0.076 | | 0.040 | 0.036 | | 0.052 | 0.078 | 0.061 |
| Large nonlisted | 4,122 | | | | 0.080 | | | 0.075 | 0.058 | 0.054 | 0.052 | 0.093 | |

| <i>F. Median ROA by Type of largest owner</i> | | | | | | | | | | | | | |
|---|--------|-------|-------|-------|-------|-------|-------|-------|---|---|---|---|----|
| | n | . | type0 | type1 | type2 | type3 | type4 | type5 | 6 | 7 | 8 | 9 | -1 |
| Nonlisted | 82,435 | 0.019 | 0.087 | 0.039 | 0.073 | 0.040 | 0.060 | 0.044 | | | | | |
| Listed | 134 | | | 0.041 | 0.025 | 0.111 | 0.041 | 0.055 | | | | | |
| Large nonlisted | 4,122 | 0.068 | 0.095 | 0.080 | 0.084 | 0.046 | 0.071 | 0.071 | | | | | |

This table shows the return on assets (ROA) by governance characteristics and listing status. Panel A presents the univariate statistics for the ROA. Panels B-E split the sample based on firm rank according to a specific governance variable into deciles and reports the median ROA in each decile. For "Largest owner", "Herfindahl index", "Inside owners", and "Board size" the lowest (highest) values belong to the decile 0 (9). We assign the firms with one owner or firms with all shares held by insiders to the category -1. Companies with missing information for that variable are in the "." category. "Large nonlisted" firms rank among the top 5% of nonlisted by sales. For the "Largest owner" and the "Herfindahl index", firms with one owner or the largest owner holding at least 99% of shares belong to the column "-1". For "Board size", all firms with one, two, or three directors are assigned to the column "-1". Empty cells represent deciles which cannot be meaningfully separated from the decile to the right because the ownership characteristic in question has the same value in both deciles. "Herfindahl index" is the sum of squared equity fractions in the firm.

Panel F reports median ROA for various largest owner types. The column headings 0 - 5 represent unidentified, institutional, personal, state, foreign, and industrial owners, respectively. Our sample consists of non-financial firms in 2005 that pass basic accounting consistency tests, activity level tests, and that are not subsidiaries of another firm (see table 4.1). The ROA is winsorized at the 5%/95% tails except in panel A, which represents the full ROA distribution.

Table 7.3.2: Performance, governance, and listing status

Panel A. With largest owner type

| Variable | All firms | | Large firms | | Small firms | |
|---------------------------------|----------------|----------------|----------------|----------------|----------------|----------------|
| | Unrestricted | Multiple owner | Unrestricted | Multiple owner | Unrestricted | Multiple owner |
| Intercept | -0.057 (0.000) | -0.045 (0.000) | 0.074 (0.000) | 0.090 (0.000) | -0.063 (0.000) | -0.052 (0.000) |
| Ownership concentration | 0.001 (0.000) | 0.000 (0.000) | 0.000 (0.013) | 0.001 (0.003) | 0.001 (0.000) | 0.000 (0.000) |
| Ownership concentration squared | -0.000 (0.000) | -0.000 (0.000) | -0.000 (0.002) | -0.000 (0.000) | -0.000 (0.000) | -0.000 (0.000) |
| Largest owner is unspecified | -0.003 (0.008) | -0.003 (0.084) | -0.001 (0.811) | -0.007 (0.022) | -0.003 (0.023) | -0.002 (0.226) |
| Largest owner is a person | 0.012 (0.000) | 0.011 (0.000) | 0.007 (0.000) | 0.002 (0.369) | 0.013 (0.000) | 0.012 (0.000) |
| Largest owner is state | 0.007 (0.002) | 0.004 (0.234) | -0.002 (0.534) | 0.005 (0.263) | 0.010 (0.000) | 0.004 (0.246) |
| Largest owner is foreign | -0.009 (0.000) | -0.003 (0.244) | -0.003 (0.189) | 0.005 (0.158) | -0.013 (0.000) | -0.005 (0.090) |
| Largest owner is industrial | -0.007 (0.000) | -0.009 (0.000) | -0.002 (0.504) | -0.006 (0.031) | -0.007 (0.000) | -0.009 (0.000) |
| Board size | -0.005 (0.000) | -0.007 (0.000) | -0.003 (0.000) | -0.004 (0.000) | -0.005 (0.000) | -0.007 (0.000) |
| CEO is director | 0.002 (0.008) | 0.003 (0.000) | 0.011 (0.000) | 0.013 (0.000) | 0.002 (0.061) | 0.003 (0.003) |
| Female stockholder directors | -0.006 (0.000) | -0.006 (0.000) | -0.001 (0.773) | -0.001 (0.897) | -0.006 (0.000) | -0.006 (0.000) |
| Employee directors | -0.019 (0.115) | -0.028 (0.092) | -0.014 (0.143) | -0.029 (0.030) | -0.035 (0.127) | -0.028 (0.309) |
| Leverage | 0.002 (0.000) | 0.003 (0.000) | -0.006 (0.006) | -0.000 (0.960) | 0.003 (0.000) | 0.003 (0.000) |
| Dividend payout | 0.053 (0.000) | 0.052 (0.000) | 0.035 (0.000) | 0.031 (0.000) | 0.054 (0.000) | 0.054 (0.000) |
| Size | 0.008 (0.000) | 0.008 (0.000) | | | | |
| Size in millions | | | -0.003 (0.000) | -0.005 (0.000) | | |
| Age | 0.009 (0.000) | 0.007 (0.000) | -0.000 (0.686) | -0.001 (0.381) | 0.010 (0.000) | 0.007 (0.000) |
| R ² | 0.054 | 0.059 | 0.069 | 0.077 | 0.055 | 0.060 |
| n | 355,753 | 213,988 | 18,804 | 10,380 | 336,949 | 203,608 |

Panel B. With insider holdings and listing status

| Variable | All firms | | Large firms | | Small firms | |
|---------------------------------|----------------|----------------|----------------|----------------|----------------|----------------|
| | Unrestricted | Multiple owner | Unrestricted | Multiple owner | Unrestricted | Multiple owner |
| Intercept | -0.083 (0.000) | -0.076 (0.000) | 0.089 (0.000) | 0.095 (0.000) | -0.050 (0.000) | -0.044 (0.000) |
| Ownership concentration | 0.000 (0.000) | 0.000 (0.019) | 0.000 (0.945) | 0.000 (0.766) | 0.001 (0.000) | 0.000 (0.010) |
| Ownership concentration squared | -0.000 (0.000) | -0.000 (0.007) | -0.000 (0.466) | -0.000 (0.295) | -0.000 (0.000) | -0.000 (0.003) |
| Insider ownership | 0.000 (0.000) | 0.000 (0.000) | 0.000 (0.646) | 0.000 (0.761) | 0.000 (0.000) | 0.000 (0.000) |
| Insider ownership squared | -0.000 (0.000) | -0.000 (0.000) | -0.000 (0.926) | -0.000 (0.903) | -0.000 (0.000) | -0.000 (0.000) |
| Board size | -0.004 (0.000) | -0.005 (0.000) | -0.001 (0.251) | -0.002 (0.041) | -0.004 (0.000) | -0.006 (0.000) |
| CEO is director | -0.002 (0.075) | -0.000 (0.803) | 0.005 (0.016) | 0.008 (0.001) | -0.002 (0.052) | -0.001 (0.577) |
| Female stockholder directors | -0.006 (0.000) | -0.007 (0.000) | -0.006 (0.171) | -0.009 (0.115) | -0.006 (0.000) | -0.007 (0.000) |
| Employee directors | -0.048 (0.034) | -0.051 (0.036) | -0.065 (0.000) | -0.066 (0.001) | -0.033 (0.308) | -0.038 (0.278) |
| Leverage | 0.004 (0.000) | 0.003 (0.000) | -0.003 (0.248) | -0.001 (0.656) | 0.004 (0.000) | 0.004 (0.000) |
| Dividend payout | 0.050 (0.000) | 0.051 (0.000) | 0.026 (0.000) | 0.027 (0.000) | 0.050 (0.000) | 0.052 (0.000) |
| Nonlisted | 0.039 (0.000) | 0.039 (0.000) | 0.037 (0.000) | 0.036 (0.000) | | |
| Listed | -0.039 (0.000) | -0.039 (0.000) | -0.037 (0.000) | -0.036 (0.000) | | |
| Size | 0.008 (0.000) | 0.008 (0.000) | | | 0.008 (0.000) | 0.009 (0.000) |
| Size in millions | | | -0.007 (0.000) | -0.007 (0.000) | | |
| Age | 0.006 (0.000) | 0.006 (0.000) | -0.006 (0.000) | -0.007 (0.000) | 0.007 (0.000) | 0.006 (0.000) |
| R ² | 0.050 | 0.055 | 0.056 | 0.064 | 0.051 | 0.056 |
| n | 301,917 | 196,378 | 9,800 | 7,251 | 292,117 | 189,127 |

This table examines how the firm's performance depends on its listing status, controlling for a series of governance characteristics (ownership, board, and financial policy), firm size, firm age, and industry. Performance is measured by the return on assets (ROA). The sample is decomposed according to firm size and the number of owners.. "Large firms" are the 90% (5%) largest firms by sales that year among the listed (nonlisted) firms. The remaining firms are called small firms. The "Multiple owner" sample excludes all single owner firms, which are firms with one owner holding at least 99% of the shares. "Ownership concentration" is measured by the holdings of the largest owner. "Insider ownership" is the aggregate holdings of all directors in the firm. "Largest owner is unspecified" includes institutional owners, "Board size" is the number of directors, "CEO is director" is a dummy variable which is one if the CEO is on the board and zero otherwise. "Female directors" is the percentage of non-employee directors on the board, "Employee directors" is the percentage of employee directors. "Leverage" is total debt to total assets, "Dividends" is the percentage of earnings paid out as cash dividends, and "Size" is the log of sales in thousands of 2005 NOK.

The sample consists of non-financial firms in 2000-2005 that pass basic accounting consistency tests, activity tests, and that are not subsidiaries of another firm. Table 4.1 shows more details. We run OLS regressions and control for fixed industry effects (unreported) . The sum of the five owner type coefficients (panel A), the sum of the two listing status coefficients (panel B), and the sum of the ten industry dummies are all restricted to zero. The sample is pooled across the sample years. While panel A includes all firms, only firms where at least one director also owns shares enter panel B. The governance variables are lagged one year. The variables are winsorized as follows: ROA at 5%, dividend payout at 5%, leverage at 1%, and sales at 1%. P-values are in parentheses.

Appendix 4.A1. Items in the CCGR database

| Item no. | English description | Norwegian description | File name |
|---|--|---|--------------|
| <i>Accounting data: Nonconsolidated</i> | | | |
| 2 | CEO gender | Leder kjønn | Account_Data |
| 3 | CEO birth date | Leder fødselsdato | Account_Data |
| 4 | CEO birth year | Leder fødselsår | Account_Data |
| 5 | CEO Randomized SSN (Social security number) | Leder anonymiserte personnummer | Account_Data |
| 6 | Organization type | Foretaksform | Account_Data |
| 7 | Fiscal year start | Startdato | Account_Data |
| 8 | Fiscal year end | Avslutningsdato | Account_Data |
| 9 | Revenue | Salgsinntekt | Account_Data |
| 10 | Other operating income | Annen driftsinntekt | Account_Data |
| 11 | Sum operating income | Sum Driftsinntekter | Account_Data |
| 12 | New operating assets produced in-house | Endring i beholdning av egentilvirkede anleggsmidler | Account_Data |
| 13 | Raw materials and consumables used | Varekostnad | Account_Data |
| 14 | Payroll expense | Lønnskostnad | Account_Data |
| 15 | Depreciation of fixed assets and intangible assets | Avskrivninger på varige driftsmidler og immaterielle eiendeler | Account_Data |
| 16 | Write-down of fixed assets and intangible assets | Nedskrivning på varige driftsmidler og immaterielle eiendeler | Account_Data |
| 17 | Other operating expenses (2) | Annen driftskostnad (2) | Account_Data |
| 18 | Other operating expenses (1) | Annen driftskostnad (1) | Account_Data |
| 19 | Operating profits | Driftsresultat | Account_Data |
| 20 | Income from subsidiaries | Inntekt på investering i datterselskap | Account_Data |
| 21 | Income from other group entities | Inntekt på investering i annet foretak i samme konsern | Account_Data |
| 22 | Income from associated company | Inntekt på investering i tilknyttet selskap | Account_Data |
| 23 | Interest received from group companies | Renteinntekt fra foretak i samme konsern | Account_Data |
| 24 | Other interest received | Annen renteinntekt | Account_Data |
| 25 | Other financial income | Annen finansinntekt | Account_Data |
| 26 | Changes in market value of current financial assets | Verdiendring av markedsbaserte finansielle omløpsmidler | Account_Data |
| 27 | Write-down on other current financial assets | Nedskrivning av andre finansielle omløpsmidler | Account_Data |
| 28 | Write-down on fixed financial assets | Nedskrivning av finansielle anleggsmidler | Account_Data |
| 29 | Interests paid to other group companies | Rentekostnad til foretak i samme konsern | Account_Data |
| 30 | Other interest expenses | Annen rentekostnad | Account_Data |
| 31 | Other financial expenses | Annen finanskostnad | Account_Data |
| 32 | Net gain/loss on foreign expense | Agjo/disagio | Account_Data |
| 33 | Operating profit before tax | Ordinært resultat før skattekostnad | Account_Data |
| 34 | Tax on ordinary profits | Skattekostnad på ordinært resultat | Account_Data |
| 35 | Operating profits (after tax) | Ordinært resultat | Account_Data |
| 36 | Extraordinary income | Ekstraordinær inntekt | Account_Data |
| 37 | Extraordinary expenses | Ekstraordinær kostnad | Account_Data |
| 38 | Tax on extraordinary profits | Skattekostnad på ekstraordinært resultat | Account_Data |
| 39 | Net profits | årsresultat | Account_Data |
| 40 | Group contribution | Konsernbidrag | Account_Data |
| 41 | Dividends | Utbytte | Account_Data |
| 42 | Reserve for valuation variances | Fond for vurderingsforskjeller | Account_Data |
| 43 | Transferred to retained earnings | Annen EK resultatdel | Account_Data |
| 44 | Research and development | Forskning og utvikling;Konsesjoner, patenter, lisenser, varemerker og lignende rettigheter;Goodwill | Account_Data |
| 45 | Deferred tax asset | Utsatt skattefordel | Account_Data |
| 46 | Intangible assets | Immaterielle eiendeler | Account_Data |
| 47 | Land, buildings and other property | Tomter, bygninger og annen fast eiendom | Account_Data |
| 48 | Machinery and plant | Maskiner og anlegg | Account_Data |
| 49 | Ships, rigs, airplanes, etc. | Skip, rigger, fly og lignende | Account_Data |
| 50 | Fixture and fittings, tools, office machinery, etc. | Driftsløsøre, inventar, verktøy, kontormaskiner og lignende | Account_Data |
| 51 | Tangible fixed assets | Varige driftsmidler | Account_Data |
| 52 | Investments in subsidiaries | Investeringer i datterselskap | Account_Data |
| 53 | Investment in different company in same group | Investeringer i annet foretak i samme konsern | Account_Data |
| 54 | Loans to group companies | Lån til foretak i samme konsern | Account_Data |
| 55 | Investments in associated companies | Investeringer i tilknyttet selskap | Account_Data |
| 56 | Loans to associated companies and jointly controlled companies | Lån til tilknyttet selskap og felles kontrollert virksomhet | Account_Data |
| 57 | Investments in shares | Investeringer i aksjer og andeler | Account_Data |
| 58 | Bonds and other receivables | Obligasjoner og andre fordringer | Account_Data |
| 59 | Pension fund | Pensjonsmidler | Account_Data |
| 60 | Subordinated debt | Ansvarlig lånekapital | Account_Data |
| 61 | Financial fixed assets | Finansielle anleggsmidler | Account_Data |
| 62 | Other fixed assets | Andre anleggsmidler | Account_Data |
| 63 | Fixed assets | Anleggsmidler | Account_Data |
| 64 | Inventories | Varer | Account_Data |
| 65 | Accounts receivable | Kundefordringer | Account_Data |
| 66 | Other receivables (1) | Andre fordringer(2) | Account_Data |
| 67 | Other receivables (2) | Andre fordringer(1) | Account_Data |
| 68 | Subscribed capital called but not paid | Krav på innbetalinger av selskapskapital | Account_Data |
| 69 | Receivables | Fordringer | Account_Data |
| 70 | Shares in group companies | Aksjer og andeler i foretak i samme konsern | Account_Data |
| 71 | Listed stocks | Markedsbaserte aksjer | Account_Data |

Appendix 4.A1. Items in the CCGR database

| Item no. | English description | Norwegian description | File name |
|--------------------------------------|--|---|---------------------------|
| 72 | Listed bonds | Markedsbaserte obligasjoner | Account_Data |
| 73 | Other listed financial instruments | Andre markedsbaserte finansielle instrumenter | Account_Data |
| 74 | Other financial instruments | Andre finansielle instrumenter | Account_Data |
| 75 | Investments | Investeringer | Account_Data |
| 76 | Bank deposits, cash on hand, etc. | Bankinnskudd, kontanter og lignende | Account_Data |
| 77 | Other current assets | Andre omløpsmidler | Account_Data |
| 78 | Current assets | Omløpsmidler | Account_Data |
| 79 | Share capital | Selskapskapital | Account_Data |
| 80 | Own shares | Egen aksjer | Account_Data |
| 81 | Share premium reserve | Overkursfond | Account_Data |
| 82 | Paid-in capital | Innskutt egenkapital | Account_Data |
| 83 | Reserve for valuation variances | Fond for vurderingsforskjeller | Account_Data |
| 84 | Other equity (Reserves) | Annen egenkapital (Reservefond) | Account_Data |
| 85 | Other equity (2) | Annen egenkapital (2) | Account_Data |
| 86 | Retained earnings | Opptjent egenkapital | Account_Data |
| 87 | Equity | Egenkapital | Account_Data |
| 88 | Pension liabilities | Pensjonsforpliktelse | Account_Data |
| 89 | Deferred tax | Utsatt skatt | Account_Data |
| 90 | Other provisions | Andre avsetninger for forpliktelse | Account_Data |
| 91 | Provisions | Avsetning for forpliktelse | Account_Data |
| 92 | Convertible loans | Konvertible lån | Account_Data |
| 93 | Bonds | Obligasjonslån | Account_Data |
| 94 | Liabilities to credit institutions | Gjeld til kredittinstitusjoner | Account_Data |
| 95 | Other long-term liabilities (2) | øvrige langsiktig gjeld (2) | Account_Data |
| 96 | Other long-term liabilities (3) | øvrige langsiktig gjeld (3) | Account_Data |
| 97 | Other long-term liabilities (1) | øvrige langsiktig gjeld (1) | Account_Data |
| 98 | Other long-term liabilities | Annen langsiktig gjeld | Account_Data |
| 99 | Convertible debt | Konvertible lån | Account_Data |
| 100 | Certificate debt | Sertifikatlån | Account_Data |
| 101 | Liabilities to credit institutions | Gjeld til kredittinstitusjoner | Account_Data |
| 102 | Trade creditors | Leverandørgjeld | Account_Data |
| 103 | Tax payable | Betalbar skatt | Account_Data |
| 104 | Public duties payable | Skyldige offentlige avgifter | Account_Data |
| 105 | Dividends | Utbytte | Account_Data |
| 106 | Other short-term liabilities (2) | Annen kortsiktig gjeld (2) | Account_Data |
| 107 | Other short-term liabilities (3) | Annen kortsiktig gjeld (3) | Account_Data |
| 108 | Other short-term liabilities (1) | Annen kortsiktig gjeld (1) | Account_Data |
| 109 | Current liabilities | Kortsiktig gjeld | Account_Data |
| 110 | Minority interests | Minoritetsinteresse | Account_Data |
| 111 | Comment code 1 | Kommentar kode 1 | Account_Data |
| 112 | Comment code 2 | Kommentar kode 2 | Account_Data |
| 113 | Number of employees | Antall ansatte | Account_Data |
| 114 | CEO Salary | Lederlønn | Account_Data |
| 115 | Auditor's fee | Revisors honorar | Account_Data |
| 116 | Remuneration the board of directors | Styrehonorar | Account_Data |
| 117 | Small/large company | Lite/stort firma | Account_Data |
| 118 | Net profit ratio | Resultatgrad | Account_Data |
| 119 | Liquidity ratio 1 | Likviditetsgrad 1 | Account_Data |
| 120 | Liquidity ratio 2 | Likviditetsgrad 2 | Account_Data |
| 121 | Solvency ratio | Soliditet | Account_Data |
| 122 | Financial leverage ratio | Gjeldsgrad | Account_Data |
| 123 | Interest coverage ratio | Rentedeckningsgrad | Account_Data |
| 124 | Cash flow | Kontantstrøm | Account_Data |
| 125 | Inventory turnover | Lagerfinansiering | Account_Data |
| 126 | Return on equity | Egenkapitalrentabilitet | Account_Data |
| 127 | Return on assets | Totalkapitalrentabilitet | Account_Data |
| Accounting data: Consolidated | | | |
| 15002 | CEO gender | Leder kjønn | Consolidated_Account_Data |
| 15003 | CEO birth date | Leder fødselsdato | Consolidated_Account_Data |
| 15004 | CEO birth year | Leder fødselsår | Consolidated_Account_Data |
| 15005 | CEO Randomized SSN (Social security number) | Leder anonymiserte personnummer | Consolidated_Account_Data |
| 15006 | Organization type | Foretaksform | Consolidated_Account_Data |
| 15007 | Fiscal year start | Startdato | Consolidated_Account_Data |
| 15008 | Fiscal year end | Avslutningsdato | Consolidated_Account_Data |
| 15009 | Revenue | Salgsinntekt | Consolidated_Account_Data |
| 15010 | Other operating income | Annen driftsinntekt | Consolidated_Account_Data |
| 15011 | Sum operating income | Sum Driftsinntekter | Consolidated_Account_Data |
| 15012 | New operating assets produced in-house | Endring i beholdning av egentilvirkede anleggsmidler | Consolidated_Account_Data |
| 15013 | Raw materials and consumables used | Varekostnad | Consolidated_Account_Data |
| 15014 | Payroll expense | Lønnskostnad | Consolidated_Account_Data |
| 15015 | Depreciation of fixed assets and intangible assets | Avskrivninger på varige driftsmidler og immaterielle eiendommer | Consolidated_Account_Data |
| 15016 | Write-down of fixed assets and intangible assets | Nedskrivning på varige driftsmidler og immaterielle eiendommer | Consolidated_Account_Data |
| 15017 | Other operating expenses (2) | Annen driftskostnad (2) | Consolidated_Account_Data |
| 15018 | Other operating expenses (1) | Annen driftskostnad (1) | Consolidated_Account_Data |
| 15019 | Operating profits | Driftsresultat | Consolidated_Account_Data |
| 15020 | Income from subsidiaries | Inntekt på investering i datterselskap | Consolidated Account Data |

Appendix 4.A1. Items in the CCGR database

| Item no. | English description | Norwegian description | File name |
|-----------------|--|---|---------------------------|
| 15023 | Interest received from group companies | Renteinntekt fra foretak i samme konsern | Consolidated_Account_Data |
| 15024 | Other interest received | Annen renteinntekt | Consolidated_Account_Data |
| 15025 | Other financial income | Annen finansinntekt | Consolidated_Account_Data |
| 15026 | Changes in market value of current financial assets | Verdiendring av markedsbaserte finansielle omløpsmidler | Consolidated_Account_Data |
| 15027 | Write-down on other current financial assets | Nedskrivning av andre finansielle omløpsmidler | Consolidated_Account_Data |
| 15028 | Write-down on fixed financial assets | Nedskrivning av finansielle anleggsmidler | Consolidated_Account_Data |
| 15029 | Interests paid to other group companies | Rentekostnad til foretak i samme konsern | Consolidated_Account_Data |
| 15030 | Other interest expenses | Annen rentekostnad | Consolidated_Account_Data |
| 15031 | Other financial expenses | Annen finanskostnad | Consolidated_Account_Data |
| 15032 | Net gain/loss on foreign expense | Agjo/disagio | Consolidated_Account_Data |
| 15033 | Operating profit before tax | Ordinært resultat før skattekostnad | Consolidated_Account_Data |
| 15034 | Tax on ordinary profits | Skattekostnad på ordinært resultat | Consolidated_Account_Data |
| 15035 | Operating profits (after tax) | Ordinært resultat | Consolidated_Account_Data |
| 15036 | Extraordinary income | Ekstraordinær inntekt | Consolidated_Account_Data |
| 15037 | Extraordinary expenses | Ekstraordinær kostnad | Consolidated_Account_Data |
| 15038 | Tax on extraordinary profits | Skattekostnad på ekstraordinært resultat | Consolidated_Account_Data |
| 15039 | Net profits | årsresultat | Consolidated_Account_Data |
| 15040 | Group contribution | Konsernbidrag | Consolidated_Account_Data |
| 15041 | Dividends | Utbytte | Consolidated_Account_Data |
| 15042 | Reserve for valuation variances | Fond for vurderingsforskjeller | Consolidated_Account_Data |
| 15043 | Transferred to retained earnings | Annen EK resultatdel | Consolidated_Account_Data |
| 15044 | Research and development | Forskning og utvikling;Konsesjoner, patenter, lisenser, varemærker og lignende rettigheter;Goodwill | Consolidated_Account_Data |
| 15045 | Deferred tax asset | Utsatt skattefordel | Consolidated_Account_Data |
| 15046 | Intangible assets | Immaterielle eiendeler | Consolidated_Account_Data |
| 15047 | Land, buildings and other property | Tomter, bygninger og annen fast eiendom | Consolidated_Account_Data |
| 15048 | Machinery and plant | Maskiner og anlegg | Consolidated_Account_Data |
| 15049 | Ships, rigs, airplanes, etc. | Skip, rigger, fly og lignende | Consolidated_Account_Data |
| 15050 | Fixture and fittings, tools, office machinery, etc. | Driftsløsøre, inventar, verktøy, kontormaskiner og lignende | Consolidated_Account_Data |
| 15051 | Tangible fixed assets | Varige driftsmidler | Consolidated_Account_Data |
| 15052 | Investments in subsidiaries | Investeringer i datterselskap | Consolidated_Account_Data |
| 15053 | Investment in different company in same group | Investeringer i annet foretak i samme konsern | Consolidated_Account_Data |
| 15054 | Loans to group companies | Lån til foretak i samme konsern | Consolidated_Account_Data |
| 15055 | Investments in associated companies | Investeringer i tilknyttet selskap | Consolidated_Account_Data |
| 15056 | Loans to associated companies and jointly controlled companies | Lån til tilknyttet selskap og felles kontrollert virksomhet | Consolidated_Account_Data |
| 15057 | Investments in shares | Investeringer i aksjer og andeler | Consolidated_Account_Data |
| 15058 | Bonds and other receivables | Obligasjoner og andre fordringer | Consolidated_Account_Data |
| 15059 | Pension fund | Pensjonsmidler | Consolidated_Account_Data |
| 15060 | Subordinated debt | Ansvarlig lånekapital | Consolidated_Account_Data |
| 15061 | Financial fixed assets | Finansielle anleggsmidler | Consolidated_Account_Data |
| 15062 | Other fixed assets | Andre anleggsmidler | Consolidated_Account_Data |
| 15063 | Fixed assets | Anleggsmidler | Consolidated_Account_Data |
| 15064 | Inventories | Varer | Consolidated_Account_Data |
| 15065 | Accounts receivable | Kundefordringer | Consolidated_Account_Data |
| 15066 | Other receivables (1) | Andre fordringer(2) | Consolidated_Account_Data |
| 15067 | Other receivables (2) | Andre fordringer(1) | Consolidated_Account_Data |
| 15068 | Subscribed capital called but not paid | Krav på innbetalinger av selskapskapital | Consolidated_Account_Data |
| 15069 | Receivables | Fordringer | Consolidated_Account_Data |
| 15070 | Shares in group companies | Aksjer og andeler i foretak i samme konsern | Consolidated_Account_Data |
| 15071 | Listed stocks | Markedsbaserte aksjer | Consolidated_Account_Data |
| 15072 | Listed bonds | Markedsbaserte obligasjoner | Consolidated_Account_Data |
| 15073 | Other listed financial instruments | Andre markedsbaserte finansielle instrumenter | Consolidated_Account_Data |
| 15074 | Other financial instruments | Andre finansielle instrumenter | Consolidated_Account_Data |
| 15075 | Investments | Investeringer | Consolidated_Account_Data |
| 15076 | Bank deposits, cash on hand, etc. | Bankinnskudd, kontanter og lignende | Consolidated_Account_Data |
| 15077 | Other current assets | Andre omløpsmidler | Consolidated_Account_Data |
| 15078 | Current assets | Omløpsmidler | Consolidated_Account_Data |
| 15079 | Share capital | Selskapskapital | Consolidated_Account_Data |
| 15080 | Own shares | Egen aksjer | Consolidated_Account_Data |
| 15081 | Share premium reserve | Overkursfond | Consolidated_Account_Data |
| 15082 | Paid-in capital | Innskutt egenkapital | Consolidated_Account_Data |
| 15083 | Reserve for valuation variances | Fond for vurderingsforskjeller | Consolidated_Account_Data |
| 15084 | Other equity (Reserves) | Annen egenkapital (Reservefond) | Consolidated_Account_Data |
| 15085 | Other equity (2) | Annen egenkapital (2) | Consolidated_Account_Data |
| 15086 | Retained earnings | Opptjent egenkapital | Consolidated_Account_Data |
| 15087 | Equity | Egenkapital | Consolidated_Account_Data |
| 15088 | Pension liabilities | Pensjonsforpliktelse | Consolidated_Account_Data |
| 15089 | Deferred tax | Utsatt skatt | Consolidated_Account_Data |
| 15090 | Other provisions | Andre avsetninger for forpliktelse | Consolidated_Account_Data |
| 15091 | Provisions | Avsetning for forpliktelse | Consolidated_Account_Data |
| 15092 | Convertible loans | Konvertible lån | Consolidated_Account_Data |
| 15093 | Bonds | Obligasjonslån | Consolidated_Account_Data |
| 15094 | Liabilities to credit institutions | Gjeld til kredittinstitusjoner | Consolidated_Account_Data |
| 15095 | Other long-term liabilities (2) | øvrige langsiktig gjeld (2) | Consolidated_Account_Data |
| 15096 | Other long-term liabilities (3) | øvrige langsiktig gjeld (3) | Consolidated_Account_Data |
| 15097 | Other long-term liabilities (1) | øvrige langsiktig gjeld (1) | Consolidated_Account_Data |

Appendix 4.A1. Items in the CCGR database

| Item no. | English description | Norwegian description | File name |
|---|--|------------------------------------|---------------------------|
| 15101 | Liabilities to credit institutions | Gjeld til kredittinstitusjoner | Consolidated_Account_Data |
| 15102 | Trade creditors | Leverandørgjeld | Consolidated_Account_Data |
| 15103 | Tax payable | Betalbar skatt | Consolidated_Account_Data |
| 15104 | Public duties payable | Skyldige offentlige avgifter | Consolidated_Account_Data |
| 15105 | Dividends | Utbytte | Consolidated_Account_Data |
| 15106 | Other short-term liabilities (2) | Annen kortsiktig gjeld (2) | Consolidated_Account_Data |
| 15107 | Other short-term liabilities (3) | Annen kortsiktig gjeld (3) | Consolidated_Account_Data |
| 15108 | Other short-term liabilities (1) | Annen kortsiktig gjeld (1) | Consolidated_Account_Data |
| 15109 | Current liabilities | Kortsiktig gjeld | Consolidated_Account_Data |
| 15110 | Minority interests | Minoritetsinteresse | Consolidated_Account_Data |
| 15111 | Comment code 1 | Kommentar kode 1 | Consolidated_Account_Data |
| 15112 | Comment code 2 | Kommentar kode 2 | Consolidated_Account_Data |
| 15113 | Number of employees | Antall ansatte | Consolidated_Account_Data |
| 15114 | CEO Salary | Lederlønn | Consolidated_Account_Data |
| 15115 | Auditor's fee | Revisors honorar | Consolidated_Account_Data |
| 15116 | Remuneration the board of directors | Styrehonorar | Consolidated_Account_Data |
| 15117 | Small/large company | Lite/stort firma | Consolidated_Account_Data |
| 15118 | Net profit ratio | Resultatgrad | Consolidated_Account_Data |
| 15119 | Liquidity ratio 1 | Likviditetsgrad 1 | Consolidated_Account_Data |
| 15120 | Liquidity ratio 2 | Likviditetsgrad 2 | Consolidated_Account_Data |
| 15121 | Solvency ratio | Soliditet | Consolidated_Account_Data |
| 15122 | Financial leverage ratio | Gjeldsgrad | Consolidated_Account_Data |
| 15123 | Interest coverage ratio | Rentedektningsgrad | Consolidated_Account_Data |
| 15124 | Cash flow | Kontantstrøm | Consolidated_Account_Data |
| 15125 | Inventory turnover | Lagerfinansiering | Consolidated_Account_Data |
| 15126 | Return on equity | Egenkapitalrentabilitet | Consolidated_Account_Data |
| 15127 | Return on assets | Totalkapitalrentabilitet | Consolidated_Account_Data |
| <i>Firm identity data</i> | | | |
| 11102 | Industry codes | Bransjekoder | Industry_Code |
| 11103 | Industry codes at level two | Bransjekoder nivå 2 | Industry_Code |
| 502 | Company name | Selskapsnavn | Misc_2000 |
| 503 | County number | Kommunennummer | Misc_2000 |
| 504 | District number | Fylkesnummer | Misc_2000 |
| 505 | Is City - Yes or No | Bystatus | Misc_2000 |
| <i>Stock listing status data</i> | | | |
| 402 | OSE Listing status | OSE noteringsstatus | Misc_1994 |
| 403 | Security type | Verdipapirtype | Misc_1994 |
| 404 | OBI company id | obi company id | Misc_1994 |
| <i>Consumer price index data</i> | | | |
| 13301 | CPI | KPI | Misc_1994 |
| 13302 | CPI 2005 | KPI 2005 | Misc_1994 |
| 13303 | Price adjusted | Prisjustert | Misc_1994 |
| <i>Auditor and banking relationship data</i> | | | |
| 13410 | Auditor's organization ID | Revisors organisasjonsnummer | Misc_2000 |
| 13411 | Auditor name | Revisors navn | Misc_2000 |
| 13412 | Name of bank relationship | Navn på bankforbindelse | Misc_2000 |
| <i>Management data</i> | | | |
| 13408 | CEO year of birth | Daglig leders fødselsår | Misc_2000 |
| 13409 | CEO year of birth | Daglig leders fødselsdato | Misc_2000 |
| 13415 | Chairman of board year of birth | Styreleder fødselsår | Misc_2000 |
| 13416 | Chairman of board date of birth | Styreleder fødselsdato | Misc_2000 |
| <i>Misc company characteristics</i> | | | |
| 13405 | Number of employees | Antall ansatte | Misc_2000 |
| 506 | Status | Status | Misc_2000 |
| 13417 | Registered share capital | Registrert aksjekapital | Misc_2000 |
| 13418 | Share capital comment | Aksjekapital kommentar | Misc_2000 |
| 13419 | Paid-in share capital | Aksjekapital innbetalt | Misc_2000 |
| <i>Foundation data</i> | | | |
| 13401 | Foundation date | Etableringsdato | Misc_2000 |
| 13420 | Company age | Selskapsalder | Misc_2000 |
| 13421 | Founding year | Etableringsår | Misc_2000 |
| <i>Credit rating data</i> | | | |
| 13501 | First rating date | Første rating dato | Misc_2000 |
| 13502 | First rating score | Første rating score | Misc_2000 |
| 13503 | Last rating date | Siste rating dato | Misc_2000 |
| 13504 | Last rating score | Siste rating score | Misc_2000 |
| 13505 | Number of rating scores this year | Antall ratinger i dette året | Misc_2000 |
| <i>Aggregated ownership data using direct ownership as source</i> | | | |
| 202 | Number Of Owners | Antall eiere | Ownership_Control |
| 203 | Number Of Owners With Unspecified Type | Antall eiere med uspesifisert type | Ownership_Control |
| 204 | Number Of Institutional Owners | Antall institusjonelle eiere | Ownership_Control |
| 205 | Number Of Personal Owners | Antall personlige eiere | Ownership_Control |
| 206 | Number Of Personal Male Owners | Antall manlige personlige eiere | Ownership_Control |
| 207 | Number Of Personal Female Owners | Antall kvinnelige personlige eiere | Ownership_Control |
| 208 | Number Of State Owners | Antall statlige eiere | Ownership_Control |
| 209 | Number Of International Owners | Antall internasjonale eiere | Ownership_Control |
| 210 | Number Of Industrial Owners | Antall industrielle eiere | Ownership_Control |

Appendix 4.A1. Items in the CCGR database

| Item no. | English description | Norwegian description | File name |
|---|---|--|-------------------|
| 212 | % Equity Held by owner with rank 2 | % eierandel til eier med rank 2 | Ownership_Control |
| 213 | % Equity Held by owner with rank 3 | % eierandel til eier med rank 3 | Ownership_Control |
| 214 | % Equity Held by owner with rank 4 | % eierandel til eier med rank 4 | Ownership_Control |
| 215 | % Equity Held by owner with rank 5 | % eierandel til eier med rank 5 | Ownership_Control |
| 216 | Sum % Equity Held | Sum eierandeler i % | Ownership_Control |
| 217 | Aggregate % held by Of Owners With Unspecified Type | Aggregert fraksjon eid av uspesifiserte eiere | Ownership_Control |
| 218 | Aggregate % held by Institutional Owners | Aggregert fraksjon eid av institusjonelle eiere | Ownership_Control |
| 219 | Aggregate % held by Personal Owners | Aggregert fraksjon eid av personlige eiere | Ownership_Control |
| 220 | Aggregate % held by Personal Male Owners | Aggregert fraksjon eid av personlige mannlige eiere | Ownership_Control |
| 221 | Aggregate % held by Female Owners | Aggregert fraksjon eid av personlige kvinnlige eiere | Ownership_Control |
| 222 | Aggregate % held by State Owners | Aggregert fraksjon eid av staten | Ownership_Control |
| 223 | Aggregate % held by International (Foreign) Owners | Aggregert fraksjon eid av internasjonale eiere | Ownership_Control |
| 224 | Aggregate % held by Industrial Owners | Aggregert fraksjon eid av industrielle eiere | Ownership_Control |
| 225 | Herfindahl ownership concentration ratio | Herfindahl | Ownership_Control |
| 226 | Number of owners with more than 5% share | Antall eiere med minst 5% andel | Ownership_Control |
| 227 | Number of owners with more than 10% share | Antall eiere med minst 10% andel | Ownership_Control |
| 228 | Aggregate % held by owners with more than 5% share | Andel eid av eiere med minst 5% andel | Ownership_Control |
| 229 | Aggregate % held by owners with more than 10% share | Andel eid av eiere med minst 10% andel | Ownership_Control |
| 230 | Largest owner is Unspecified | Største eier er uspesifiserte | Ownership_Control |
| 231 | Largest owner is Institutional | Største eier er institusjonell | Ownership_Control |
| 232 | Largest owner is Personal | Største eier er personlig | Ownership_Control |
| 233 | Largest owner is State | Største eier er statlig | Ownership_Control |
| 234 | Largest owner is International (Foreign) | Største eier er internasjonal | Ownership_Control |
| 235 | Largest owner is Industrial | Største eier er industriell | Ownership_Control |
| 13601 | Share owned by CEO | Andel av selskapet eid av CEO | Ownership_Control |
| <i>Aggregated ownership data using ultimate ownership as source</i> | | | |
| 14002 | Number Of Owners | Antall eiere | Ownership_Control |
| 14003 | Number Of Owners With Unspecified Type | Antall eiere med uspesifisert type | Ownership_Control |
| 14004 | Number Of Institutional Owners | Antall institusjonelle eiere | Ownership_Control |
| 14005 | Number Of Personal Owners | Antall personlige eiere | Ownership_Control |
| 14006 | Number Of Personal Male Owners | Antall mannlige personlige eiere | Ownership_Control |
| 14007 | Number Of Personal Female Owners | Antall kvinnelige personlige eiere | Ownership_Control |
| 14008 | Number Of State Owners | Antall statlige eiere | Ownership_Control |
| 14009 | Number Of International (Foreign) Owners | Antall internasjonale eiere | Ownership_Control |
| 14010 | Number Of Industrial Owners | Antall industrielle eiere | Ownership_Control |
| 14011 | % Equity Held by owner with rank 1 | % eierandel til eier med rank 1 | Ownership_Control |
| 14012 | % Equity Held by owner with rank 2 | % eierandel til eier med rank 2 | Ownership_Control |
| 14013 | % Equity Held by owner with rank 3 | % eierandel til eier med rank 3 | Ownership_Control |
| 14014 | % Equity Held by owner with rank 4 | % eierandel til eier med rank 4 | Ownership_Control |
| 14015 | % Equity Held by owner with rank 5 | % eierandel til eier med rank 5 | Ownership_Control |
| 14016 | Sum % Equity Held | Sum eierandeler i % | Ownership_Control |
| 14017 | Aggregate % held by Of Owners With Unspecified Type | Aggregert fraksjon eid av uspesifiserte eiere | Ownership_Control |
| 14018 | Aggregate % held by Institutional Owners | Aggregert fraksjon eid av institusjonelle eiere | Ownership_Control |
| 14019 | Aggregate % held by Personal Owners | Aggregert fraksjon eid av personlige eiere | Ownership_Control |
| 14020 | Aggregate % held by Personal Male Owners | Aggregert fraksjon eid av personlige mannlige eiere | Ownership_Control |
| 14021 | Aggregate % held by Female Owners | Aggregert fraksjon eid av personlige kvinnlige eiere | Ownership_Control |
| 14022 | Aggregate % held by State Owners | Aggregert fraksjon eid av staten | Ownership_Control |
| 14023 | Aggregate % held by International (Foreign) Owners | Aggregert fraksjon eid av internasjonale eiere | Ownership_Control |
| 14024 | Aggregate % held by Industrial Owners | Aggregert fraksjon eid av industrielle eiere | Ownership_Control |
| 14025 | Herfindahl ownership concentration ratio | Herfindahl | Ownership_Control |
| 14026 | Number of owners with more than 5% share | Antall eiere med minst 5% andel | Ownership_Control |
| 14027 | Number of owners with more than 10% share | Antall eiere med minst 10% andel | Ownership_Control |
| 14028 | Aggregate % held by owners with more than 5% share | Andel eid av eiere med minst 5% andel | Ownership_Control |
| 14029 | Aggregate % held by owners with more than 10% share | Andel eid av eiere med minst 10% andel | Ownership_Control |
| <i>Aggregated board data</i> | | | |
| 602 | Board size | Antall styremedlemmer | Ownership_Control |
| 603 | Directors' mean age | Styremedlemmers gjennomsnittlig alder | Ownership_Control |
| 604 | Directors' age dispersion | Styremedlemmers standardavik i alder | Ownership_Control |
| 605 | Number of female directors | Antall kvinnelige styremedlemmer | Ownership_Control |
| 606 | Number of employee-elected directors | Antall ansattvalgte styremedlemmer | Ownership_Control |
| 607 | Number of female employee-elected directors | Antall ansattvalgte kvinnelige styremedlemmer | Ownership_Control |
| 608 | Number of female stockholder-elected | Antall aksjonærvalgte kvinnelige styremedlemmer | Ownership_Control |
| 609 | Mean male director age | Mannlige styremedlemmers gjennomsnittlige alder | Ownership_Control |
| 610 | Mean female director age | Kvinnelige styremedlemmers gjennomsnittlige alder | Ownership_Control |
| <i>Group structure data</i> | | | |
| 14502 | Group ID | Konsern ID | Ownership_Control |
| 14503 | is Parent | er morselskap | Ownership_Control |
| 14504 | is Subsidiary | er datterselskap | Ownership_Control |
| 14505 | is Joint Control | er felleskontrollert | Ownership_Control |
| 14506 | is Associated | er tilknyttet selskap | Ownership_Control |
| 14507 | is Independent | er uavhengig | Ownership_Control |

Appendix 4.A2. Classifying firms by their NAICS level 3 code into one of nine industry sectors

| NAICS code | NAICS label | Industry sector code | Industry sector |
|------------|---------------------------------------|----------------------|--|
| 1 | Agriculture and hunting | 1 | Agriculture, forestry, fishing, mining |
| 2 | Forestry and logging | 1 | Agriculture, forestry, fishing, mining |
| 5 | Fishing, fish farming, incl. services | 1 | Agriculture, forestry, fishing, mining |
| 10 | Coal mining and peat extraction | 1 | Agriculture, forestry, fishing, mining |
| 12 | Mining of uranium and thorium ores | 1 | Agriculture, forestry, fishing, mining |
| 13 | Mining of metal ores | 1 | Agriculture, forestry, fishing, mining |
| 14 | Other mining and quarrying | 1 | Agriculture, forestry, fishing, mining |
| 27 | Basic metals | 2 | Manufacturing, chemical products |
| 28 | Fabricated metal products | 2 | Manufacturing, chemical products |
| 29 | Machinery and equipment n.e.c. | 2 | Manufacturing, chemical products |
| 30 | Office machinery and computers | 2 | Manufacturing, chemical products |
| 31 | Electrical machinery and apparatus | 2 | Manufacturing, chemical products |
| 32 | Radio, TV sets, communication equip | 2 | Manufacturing, chemical products |
| 26 | Other non-metallic mineral products | 2 | Manufacturing, chemical products |
| 34 | Motor vehicles, trailers, semi-tr. | 2 | Manufacturing, chemical products |
| 21 | Pulp, paper and paper products | 2 | Manufacturing, chemical products |
| 33 | Instruments, watches and clocks | 2 | Manufacturing, chemical products |
| 25 | Rubber and plastic products | 2 | Manufacturing, chemical products |
| 24 | Chemicals and chemical products | 2 | Manufacturing, chemical products |
| 35 | Other transport equipment | 2 | Manufacturing, chemical products |
| 22 | Publishing, printing, reproduction | 2 | Manufacturing, chemical products |
| 36 | Furniture, manufacturing n.e.c. | 2 | Manufacturing, chemical products |
| 20 | Wood and wood products | 2 | Manufacturing, chemical products |
| 19 | Footwear and leather products | 2 | Manufacturing, chemical products |
| 18 | Wearing apparel., fur | 2 | Manufacturing, chemical products |
| 17 | Textile products | 2 | Manufacturing, chemical products |
| 16 | Tobacco products | 2 | Manufacturing, chemical products |
| 15 | Food products and beverages | 2 | Manufacturing, chemical products |
| 23 | Refined petroleum products | 2 | Manufacturing, chemical products |
| 40 | Electricity, gas and steam supply | 3 | Energy |
| 11 | Oil and gas extraction, incl. serv. | 3 | Energy |
| 45 | Construction | 4 | Construction |
| 91 | Membership organizations n.e.c. | 5 | Service |
| 74 | Other business activities | 5 | Service |
| 73 | Research and development | 5 | Service |
| 72 | Computers and related activities | 5 | Service |
| 71 | Renting of machinery and equipment | 5 | Service |
| 37 | Recycling | 5 | Service |
| 80 | Education | 5 | Service |
| 99 | Extra-territorial org. and bodies | 5 | Service |
| 85 | Health and social work | 5 | Service |
| 75 | Public administration and defense | 5 | Service |
| 90 | Sewage, refuse disposal activities | 5 | Service |
| 70 | Real estate activities | 5 | Service |
| 92 | Cultural and sporting activities | 5 | Service |
| 55 | Hotels and restaurants | 5 | Service |
| 93 | Other service activities | 5 | Service |
| 95 | Domestic services | 5 | Service |
| 50 | Motor vehicle services | 5 | Service |
| 41 | Water supply | 5 | Service |
| 64 | Post and telecommunications | 5 | Service |
| 66 | Insurance and pension funding | 6 | Financial |
| 65 | Financial intermediation, less ins. | 6 | Financial |
| 67 | Auxiliary financial intermediation | 6 | Financial |
| 52 | Retail trade, repair personal goods | 7 | Trade |
| 51 | Wholesale trade, commission trade | 7 | Trade |
| 63 | Supporting transport activities | 8 | Transport |
| 62 | Air transport | 8 | Transport |
| 61 | Water transport | 8 | Transport |
| 60 | Land transport, pipeline transport | 8 | Transport |
| | | 0 | Multisector |

Appendix 6.A1. Definitions of corporate finance variables

| Variable | Abbrev. | Definition (item number and acctg. variable name from Appendix 4.A1) |
|--|-----------------------|--|
| After Tax Earnings After Extr. Items | NE | 39 Result for the year |
| Operating Earnings After Tax | NOE | 35 Operating result |
| Total Debt | D | [91 Provisions] + [98 Other long-term liabilities] + [109 Current liabilities] |
| Current Debt | CD | 109 Current liabilities |
| Working Capital | WC | [78 Current assets]-[109 Current liabilities] |
| Current Assets | CA | 78 Current assets |
| Dividends | Div | 105 Dividends |
| Operating Earnings Before Interest After Tax | EBI | { [19 Results of operations] + [20 Income from subsidiaries] + [21 Income from other group entities] + [22 Income from associates] + [23 Interest received from group companies] + [24 Other interest received] + [25 Other financial income] + [26 Changes in marked value of financial current assets] } * { 1 - (-[34 Tax on ordinary result] / [33 Operating results before tax] or 28% if null) } |
| Total Assets | A | [63 Fixed assets] + [78 Current assets] |
| Owners Equity | EQ | 87 Equity |
| Sales | S | [11 Sum operating income] + [24 Other interest received] + [25 Other financial income] |
| Company's Age | Age | [current year] - [13421] or [year firm entered our sample if null] or [1983 defined as 1994 minus average age of firms in 2000=11.99 years, the first year founding date is reported, if a firm is in our sample in 1994 but has no age reported] |
| Year Founded | Year Founded | [13421] or [year firm entered our sample if null] or [1983 defined as 1994 minus average age of firms in 2000=11.99 years, the first year founding date is reported, if a firm is in our sample in 1994 but has no age reported] |
| Estimated Tax | EstTax | -([34 Tax on ordinary result] / [33 Operating results before tax]) or 28% if null |
| Industry number | Industry Sector Label | 0 Missing; 1 Agriculture, forestry, fishing, mining 2 Manufacturing, chemical products; 3 Energy 4 Construction; 5 Service 6 Financial; 7 Trade 8 Transport; 9 Multi Group |
| Inventory | Inv | 64 Inventory |
| Accounts Receivable | AR | 69 |
| Deposits, Cash, Other | Cash | [76 Bank Deposits, Cash] + [77 Other current assets] |
| Debt to Assets | DtA | D / A |
| Current Debt to Debt | CDtD | CD / D |
| Dividend Payout | DIVtE | Div / NOE |
| Assets to Sales | AtS | A / S |
| Assets to Employees | AtEm | A / EmFill |
| Assets to Employees | StEm | S / EmFill |
| Sale Growth | gS | annual growth St / St-1 replace with null if S or lag1.S is 0 i.e. no reporting, |
| Asset Growth | gA | annual growth At / At-1 replace with null if A or lag1.A is 0 i.e. no reporting, |
| Earnings Growth | gNOE | annual growth NOEt / NOEt-1 replace with null if S or lag1.S is 0 i.e. no reporting, |
| Working Capital to Assets | WCtA | WC / A |
| Investments in Depreciable Assets | INVEST | ([46 Intangible assets] - [45 Deferred tax asset]) + [51 Tangible fixed assets] - [15 Depreciation of fixed assets and intangible assets] - [16 Write-down of fixed assets and intangible assets] - (lag1.46 - lag1.45 + lag1.51) replace with null if DA or lag1.DA is 0 i.e. no reporting, note 15 16 are reported with negative sign |
| Investment to Depreciable Assets | INVEST tDA | INVEST / {[lag1.46 Intangible assets] - [lag1.45 Deferred tax asset] + [lag1.51 Tangible fixed assets]} should not adjust for inflation as book values are not adjusted: replace with null if DA or lag1.DA is 0 i.e. no reporting, note 15 16 are reported with negative sign |

Appendix 6.A1. Definitions of corporate finance variables

| Variable | Abbrev. | Definition (item number and acctg. variable name from Appendix 4.A1) |
|------------------------------------|----------------|--|
| Employees | Employees | We use consolidated statement data for companies that report consolidated assets that are at least 85% of non consolidated assets in any year. If consolidated employees are never reported, we use non consolidated data (and v.v.). For listed we use consolidated statements unless no positive values are ever reported; then we use non consolidated statements. Zeros are replaced by null values as the use of zeros did not exhibit consistent pattern in data (we did not find information in zeros; however, for firms with just non consolidated statements we do not replace zeros with nulls). Then missing (or gaps in time series) but not zero values are filled in with the latest positive value around the gap. |
| Average Employees | AvgEm | Average of [Employees] |
| Depreciation to Depreciable Assets | DDA | - [15 Depreciation of fixed assets and intangible assets] / (lag1.46 - lag1.45 + lag1.51) calculated if DA and lag1.DA are not Null |
| Writeoff to Depreciable Assets | WDA | - [16 Write-down of fixed assets and intangible assets] / (lag1.46 - lag1.45 + lag1.51) calculated if DA and lag1.DA are not Null |
| Degree of Tangibility of assets | TANG | [51 Tangible fixed assets] / A |
| Non-debt Tax Shield | NDTS | [15 Depreciation of fixed assets and intangible assets] / { [19 Results of operations] + [20 Income from subsidiaries] + [21 Income from other group entities] + [22 Income from associates] + [23 Interest received from group companies] + [24 Other interest received] + [25 Other financial income] + [26 Changes in marked value of financial current assets] } |
| Tax Exhaustion Dummy | TEDum | 1 if CF<=0 |
| Cash Flow | CF | 19 + 15 + 16 - (64 - lag1.64) - (65 - lag1.65) + (102 - lag1.102) - 103 |
| Leverage | Lev | Financial debt / (Book Shareholders Funds + Financial Debt) |
| Size category | Size | IIf([EmFill]<1,0,IIf([EmFill]<5,1,IIf([EmFill]<10,2,IIf([EmFill]<20,3,IIf([EmFill]<50,4,IIf([EmFill]<100,5,IIf([EmFill]<200,6,IIf([EmFill]<500,7,IIf([EmFill]<1000,8,IIf([EmFill]>=1000,9)))))))))) |
| isConsolidated | isConsolidated | 1 if we use consolidated statements. Note that we use consolidated if they are available and in no year consolidated total assets are less than 85% of non consolidated assets. |
| ROA | ROA | ROA: [EBI]/IIf([A]=0,Null,[a]) |

Appendix 7.A1. Definitions of corporate governance variables

| Category | Var nr | Variable Name | VPS exist | Description ("_D" stands for direct "_U" stands for ultimate) |
|------------------------------|--------|-----------------|-----------|--|
| 7.1. Ownership concentration | 7.1.01 | HoldLarge1_D | x | the largest owner (rank ties split by a uniform random number) |
| 7.1. Ownership concentration | 7.1.02 | HoldLarge2_D | x | 2nd largest owner |
| 7.1. Ownership concentration | 7.1.03 | HoldLarge3_D | x | 3rd largest owner |
| 7.1. Ownership concentration | 7.1.04 | HoldLarge4_D | x | 4th largest owner |
| 7.1. Ownership concentration | 7.1.05 | HoldLarge5_D | x | 5th largest owner |
| 7.1. Ownership concentration | 7.1.06 | HoldLargeSum2_D | x | the sum of the 2 largest holdings |
| 7.1. Ownership concentration | 7.1.07 | HoldLargeSum3_D | x | the sum of the 3 largest holdings |
| 7.1. Ownership concentration | 7.1.08 | HoldLargeSum4_D | x | the sum of the 4 largest holdings |
| 7.1. Ownership concentration | 7.1.09 | HoldLargeSum5_D | x | the sum of the 5 largest holdings |
| 7.1. Ownership concentration | 7.1.10 | HoldLargeOuts_D | | Largest outside owner |
| 7.1. Ownership concentration | 7.1.11 | HoldSmallOuts_D | | Smallest outside owner share |
| 7.1. Ownership concentration | 7.1.12 | Herfindahl_D | x | Herfindahl index |
| 7.1. Ownership concentration | 7.1.13 | NrOwners_D | x | Number of Owners |
| 7.1. Ownership concentration | 7.1.14 | NrOwnersIns | | Number of Inside Owners |
| 7.1. Ownership concentration | 7.1.15 | HoldMean_D | x | Mean owner |
| 7.1. Ownership concentration | 7.1.16 | HoldMedian_D | x | Median owner |
| 7.1. Ownership concentration | 7.1.17 | TypeLarge1_D | x | Type of owner with rank 1, (includes VPS) |
| 7.1. Ownership concentration | 7.1.18 | HoldLarge1_U | | the largest owner |
| 7.1. Ownership concentration | 7.1.19 | HoldLarge2_U | | 2nd largest owner |
| 7.1. Ownership concentration | 7.1.20 | HoldLarge3_U | | 3rd largest owner |
| 7.1. Ownership concentration | 7.1.21 | HoldLarge4_U | | 4th largest owner |
| 7.1. Ownership concentration | 7.1.22 | HoldLarge5_U | | 5th largest owner |
| 7.1. Ownership concentration | 7.1.23 | HoldLargeSum2_U | | the sum of the 2 largest holdings |
| 7.1. Ownership concentration | 7.1.24 | HoldLargeSum3_U | | the sum of the 3 largest holdings |
| 7.1. Ownership concentration | 7.1.25 | HoldLargeSum4_U | | the sum of the 4 largest holdings |
| 7.1. Ownership concentration | 7.1.26 | HoldLargeSum5_U | | the sum of the 5 largest holdings |
| 7.1. Ownership concentration | 7.1.27 | HoldLargeOuts_U | | Largest outside owner |
| 7.1. Ownership concentration | 7.1.28 | Herfindahl_U | | Herfindahl index |
| 7.1. Ownership concentration | 7.1.29 | NrOwners_U | | Number of Owners |
| 7.1. Ownership concentration | 7.1.30 | HoldMean_U | | Mean owner |
| 7.1. Ownership concentration | 7.1.31 | HoldMedian_U | | Median owner |
| 7.1. Ownership concentration | 7.1.32 | Block5NR_D | x | Number of owners with more than 5% share |
| 7.1. Ownership concentration | 7.1.33 | Block10NR_D | x | Number of owners with more than 10% share |
| 7.1. Ownership concentration | 7.1.34 | Block5SH_D | x | Share owned by owners with more than 5% share |
| 7.1. Ownership concentration | 7.1.35 | Block10SH_D | x | Share owned by owners with more than 10% share |
| 7.1. Ownership concentration | 7.1.36 | Block5NR_U | | Number of owners with more than 5% share |
| 7.1. Ownership concentration | 7.1.37 | Block10NR_U | | Number of owners with more than 10% share |
| 7.1. Ownership concentration | 7.1.38 | Block5SH_U | | Share owned by owners with more than 5% share |
| 7.1. Ownership concentration | 7.1.39 | Block10SH_U | | Share owned by owners with more than 10% share |
| 7.2. Owner types | 7.2.01 | HoldUnsp_D | x | Fraction of unspecified owner type |
| 7.2. Owner types | 7.2.02 | HoldInst_D | x | Fraction of institutional owner type |
| 7.2. Owner types | 7.2.03 | HoldPers_D | x | Fraction of personal owner type |
| 7.2. Owner types | 7.2.04 | HoldStat_D | x | Fraction of state owner type |
| 7.2. Owner types | 7.2.05 | HoldIntl_D | x | Fraction of foreigner owner type |
| 7.2. Owner types | 7.2.06 | HoldIndu_D | x | Fraction of industrial owner type |
| 7.2. Owner types | 7.2.07 | dLargeType0_D | | dummy: is unspecified type the largest cumulative owner type |
| 7.2. Owner types | 7.2.08 | dLargeType1_D | | dummy: is institutional type the largest cumulative owner type |
| 7.2. Owner types | 7.2.09 | dLargeType2_D | | dummy: is personal type the largest cumulative owner type |
| 7.2. Owner types | 7.2.10 | dLargeType3_D | | dummy: is state type the largest cumulative owner type |
| 7.2. Owner types | 7.2.11 | dLargeType4_D | | dummy: is foreigner type the largest cumulative owner type |
| 7.2. Owner types | 7.2.12 | dLargeType5_D | | dummy: is industrial type the largest cumulative owner type |
| 7.2. Owner types | 7.2.13 | SumHold_D | x | total percentage of shares accounted for |
| 7.2. Owner types | 7.2.14 | HoldUnsp_U | | Fraction of unspecified owner type |
| 7.2. Owner types | 7.2.15 | HoldInst_U | | Fraction of institutional owner type |
| 7.2. Owner types | 7.2.16 | HoldPers_U | | Fraction of personal owner type |
| 7.2. Owner types | 7.2.17 | HoldStat_U | | Fraction of state owner type |
| 7.2. Owner types | 7.2.18 | HoldIntl_U | | Fraction of foreigner owner type |
| 7.2. Owner types | 7.2.19 | HoldIndu_U | | Fraction of industrial owner type |
| 7.2. Owner types | 7.2.20 | SumHold_U | | total percentage of shares accounted for |
| 7.2. Owner types | 7.2.21 | dLargeType0_U | | dummy: is unspecified type the largest cumulative owner type |
| 7.2. Owner types | 7.2.22 | dLargeType1_U | | dummy: is institutional type the largest cumulative owner type |
| 7.2. Owner types | 7.2.23 | dLargeType2_U | | dummy: is personal type the largest cumulative owner type |
| 7.2. Owner types | 7.2.24 | dLargeType3_U | | dummy: is state type the largest cumulative owner type |
| 7.2. Owner types | 7.2.25 | dLargeType4_U | | dummy: is foreigner type the largest cumulative owner type |
| 7.2. Owner types | 7.2.26 | dLargeType5_U | | dummy: is industrial type the largest cumulative owner type |
| 7.3. Inside owners | 7.3.01 | InsHold_CEO | | CEO Share, 0 if the entry missing for a company |
| 7.3. Inside owners | 7.3.02 | InsHold_BDexCEO | | Board ex CEO share, 0 if the entry missing for a company |
| 7.3. Inside owners | 7.3.03 | InsHold_BD | | Board share (incl. chairman), 0 if the entry missing for a company |
| 7.3. Inside owners | 7.3.04 | InsHold_all | | All insider share (CEO+board ex CEO), 0 if the entry missing for a company |
| 7.3. Inside owners | 7.3.05 | InsHold_Large1 | | Largest insider, 0 if the entry missing for a company |
| 7.3. Inside owners | 7.3.06 | InsHold_Large2 | | 2nd largest insider |
| 7.3. Inside owners | 7.3.07 | InsHold_Large3 | | 3rd largest insider |
| 7.3. Inside owners | 7.3.08 | InsHold_Large4 | | 4th largest insider |
| 7.3. Inside owners | 7.3.09 | InsHold_Large5 | | 5th largest insider |

Appendix 7.A1. Definitions of corporate governance variables

| Category | Var nr | Variable Name | VPS exist | Description ("_D" stands for direct "_U" stands for ultimate) |
|----------------------|--------|------------------|-----------|---|
| 8. Board composition | 8.01 | bd_size | | board size (# directors), excludes va: temporary and obs: observers |
| 8. Board composition | 8.02 | bd_size_exempl | | board size excluding employees (# directors): always zero in 03 and 05 due to data availability |
| 8. Board composition | 8.03 | bd_avg_age | | mean director age |
| 8. Board composition | 8.04 | bd_avg_age_m | | mean male director age |
| 8. Board composition | 8.05 | bd_avg_age_f | | mean female director age |
| 8. Board composition | 8.06 | bd_sd_age | | director age dispersion (std of director age) |
| 8. Board composition | 8.07 | bd_nr_empl | | number of employee directors |
| 8. Board composition | 8.08 | bd_nr_fem | | number of female directors |
| 8. Board composition | 8.09 | bd_nr_fem_stockh | | number of female stockholders elected |
| 8. Board composition | 8.10 | bd_nr_fem_empl | | number of female employee elected |
| 8. Board composition | 8.11 | dCEOdirector | | dummy: is CEO a director (but not chair, just any director, excluding "va", including "obs" etc.; for some directors the type is unknown but all those boards are larger than 1 person) |
| 8. Board composition | 8.12 | dCEOchBD | | dummy: is CEO the chair, reported just if both ceo and chair are known |
| 8. Board composition | 8.13 | BD_Turn | | board turnover excluding employees and temporary (va, ar): all_t1: size now; all_t0: size last period; same: match of members with full id length; short_t1: members with incompl id now; short_t0: members with incompl id last period; unchanged: same +min(short_t1, short_t0). turnover: 1-unchanged/[(0.5*(all_t1+all_t0)]. Reset to null if size in t1 or t0 is 0 or null. OLD:(new members/year start members) or ([a129_bd_turn_s3_1],[All]-[Same])/[a129_bd_turn_s3_1],[All] |
| 8. Board composition | 8.14 | disCHsame | | dummy: is chairman same this year, 1 if the same |
| 8. Board composition | 8.15 | dbd_nr_fem_empl | | dummy: is female employee elected on board [this is missing and seem not to be provided by the data providers- ask Pal to verify] |
| 8. Board composition | 8.16 | disCEOsame | | dummy: is new CEO this year, 1 if the same |
| 8. Board composition | 8.17 | dCEOknow | | dummy is CEO known |
| 8. Board composition | 8.18 | dCHBDknown | | dummy is chairman of board known |
| 9. Ranking and Misc | 9.03 | HoldTypeRank1 | x | type with the largest aggregate holding (direct owners and includes VPS) we use estimated share (C) if share info not available, but rank is available: A= min (share) B= min (100%-SumShares)/(2n), 1/2*A), where n is number of missing owners C= B + B/(100*Rank) |
| 9. Ranking and Misc | 9.06 | CFShareEst | | for calculations: if A missing, replace by 100, if SumShares>=100, replace by 99.99, if Sumshares Missing, replace by 0 missing shares replaced by C |
| 9. Ranking and Misc | 9.07 | bd_nr_empl_perc | | if bd_nr_empl>0 then bd_nr_empl_perc=bd_nr_empl/bd_size; else bd_nr_empl_perc=0; |
| 9. Ranking and Misc | 9.08 | bd_nr_fem_stockh | | if bd_nr_fem_stockh>0 then bd_nr_fem_stockh_perc=bd_nr_fem_stockh/bd_size_exempl; else bd_nr_fem_stockh_perc=0; |

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