

Why Do Boards Exist? Governance Design in the Absence of Corporate Law

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Abstract

We study how owners trade off the costs and benefits of establishing a board in a historical setting, where boards are optional and their role can be identified from cross-sectional differences in authority allocation across the general meeting, the board, and management. We find that boards arise when numerous small shareholders own a sizeable fraction of equity, thereby aggravating collective action problems. Boards monitor but also mediate among large and small shareholders as voting caps limit blockholders' influence and help to ensure that small owners' interests are represented on the board. In some firms, boards arise mainly to advise.

Keywords: Boards, corporate governance, collective action, authority, private contracting.

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Boards of directors are central to the governance of public corporations and wield influence over corporate affairs through the powers vested in them by statutory law. Boards are commonly described as monitors of management on behalf of dispersed shareholders, but the evidence of their effectiveness is mixed (e.g. Adams (2017) or Hermalin and Weisbach (2003)). As pointed out by Adams, Hermalin, and Weisbach (2010), what boards do cannot be directly tested, since all corporations are mandated to have a board.

In this paper, we address the question of when and how boards add value for owners by studying a setting where they are not required by law. We study 85 Norwegian publicly traded industrial firms at the turn of the 20th century, when Norway had no statutory corporate law but limited liability firms had legal personhood. Individuals could freely found a corporation and decide whether to install a board. This optionality of boards allows us to identify the circumstances under which owners believed the cost of installing a board were outweighed by its benefits.

Furthermore, contractual freedom permitted owners to freely tailor the corporation's laws of governance through the provisions written into its articles of association (statutes). The statutes determined whether the board (if instituted), management, or the general meeting (GM) would control, say, dividend payout or other major decisions.¹ Thus, the power-structure within the firm could be designed to mitigate the managerial agency problem through the assignment of formal authority.

Our setting allows us to approach the *raison d'être* of boards in a direct manner that is unusual in the literature. We can study the circumstances under which boards appear but we can also observe when owners choose to concentrate decision-making powers in the board as opposed to the GM. Further, we can draw inferences about the economic roles boards perform by studying the powers assigned to them.

Effective governance requires the firm's statutes to address the agency conflict between shareholders and managers. To the extent there is a potential for conflicting preferences amongst shareholders, such as between large and small shareholders, the statutes must address that too. We discuss how authority allocation and other key aspects of the statutes may be

¹As pointed out by Coase (1937), transactions inside firms are based on procedures of authority. Fama and Jensen (1983) label authority over decisions initiation and implementation as decision management, and the authority to ratify, monitor, and reward decisions as decision control.

designed to mitigate these conflicts in turn.

Shareholders have the power to monitor management when formal authority over important decisions is retained in the GM. These decisions must then be ratified and shareholders can overturn managerial initiatives that go against their interests. Retaining authority in the GM, however, is costly when collective action problems are large. Arguably, the more dispersed is the shareholder base, the larger are collective action problems because owners must be informed about the firm's business to exercise in a meaningful way any authority allocated to them. Shareholders with little investment in the firm lack the incentive to collect costly information and prefer to free-ride on others' monitoring.²

When monitoring through the GM is costly, delegation of authority to a board may be optimal.³ Boards have lower information processing and communication costs on account of being a smaller body than the GM. Installing a board, however, imposes costs by adding an additional agency layer to the organizational structure. For example, costs arise when directors' interests are not fully aligned with those of owners or when directors are uninformed or poorly incentivized and merely rubber-stamp managerial proposals. As an alternative to a board, authority can be delegated to management. Owners will prefer to delegate to a board over managers when the latter and (outside) shareholders' preferences are sufficiently incongruent, because when management is given authority over certain decisions they command complete discretion of those.

An alternative governance mechanism to the board is that of concentrated ownership. Large investors possess the incentive to collect information and to monitor management, but may self-deal (Shleifer and Vishny (1986); Admati, Pfleiderer, and Zechner (1994); La Porta, de Silanes, and Shleifer (1999)). Thus, when small and large shareholders coexist and blockholders cannot commit to maximizing overall shareholder value, a second problem of conflicting interests is introduced. Blockholders cannot guide informed decision-making in the GM because small shareholders cannot unequivocally rely on their directions.

A heterogeneous shareholder base thus appears to reinforce the case for delegation of

²When small shareholders hold a large fraction of equity it requires a larger coalition of outside owners for the GM to put effective checks and balances on management. Decision-making involves more shareholders and must branch a wider range of preferences, and assembling a voting majority involves many individuals.

³Dessein (2002) shows that when the agent's information is superior and the principal risks making poor decisions because he is uninformed, the delegation of formal authority to the agent can be optimal.

authority to a board. But endowing a board with authority is not sufficient to resolve the conflict between small and large shareholders either, because blockholders have larger influence on appointments to the board. The conflict must be resolved by protecting small shareholders' interests through other means.

Modern corporate law contains multiple provisions that protect minority shareholders (see, e.g. LaPorta et al. (1997)). In our setting, protection of a subset of shareholders must be written into the statutes by the owners and our data suggest that such protection is tied to the most fundamental of shareholder rights, the right to vote. We observe that many of our firms impose voting caps that limit the influence of large shareholders.⁴

We propose that voting caps work to make firms' shares attractive to small investors while simultaneously ensuring effective monitoring of management, thereby balancing the two agency problems. Thus, when small and large investors coexist, authority is transferred to a board due to collective action costs, and voting caps give small shareholders' disproportionate influence over board composition by enhancing their power over appointments. This, in turn, helps ensure that the board gives their interests a larger weight. A balance of power is built into the structure of the board which induces mediation between heterogeneous shareholders. This design of governance is attractive for firms that depend on small investor finance and is likely in large shareholders' interests too, because it increases the proceeds from (current and future) equity sales.⁵ In firms with fewer small investors, collective action costs are small enough to retain authority with the GM, and voting caps help prevent expropriation of small shareholders by limiting large shareholders' influence directly. If delegation of authority to a board makes expropriation of small shareholders easier, because decision-making is rendered less transparent, we should expect voting caps to be stricter in firms with a board than in firms that retain authority in the GM.

It is also possible that voting caps deter formation of blockholders all together and effectuate a separation of investors into firms with only small investors, governed by boards, and firms with only large investors, without boards, governed by the GM. The effect of voting caps on

⁴Similar voting arrangements are known historically from many other countries (e.g. Dunlavy (2004)) and persists in Dutch, French, and Swiss corporations. Today, voting caps are permitted in U.S. and U.K. corporate law but not in German and Japanese law (e.g., Hansmann and Kraakman (2004)).

⁵Large shareholders may alternatively prefer not to impose voting caps if the value of the private benefits they can extract outweighs the value loss on their equity position.

ownership structure must be answered empirically but, whether large and small shareholders coexist or not, we expect board existence and voting caps to go hand-in-hand.

A recent literature on “friendly boards” points out that boards may have other roles than monitoring, in particular they may advise management (Adams and Ferreira (2007); Harris and Raviv (2008)). Such boards commit to not overrule the CEO by selecting management-friendly directors in order to incentivize communication. In our setting, where boards’ power is designed by owners, the authority entrusted to boards reveal their intended role in the corporation. Advisory boards can be implemented by withholding authority from the board, or, even stronger, by giving management authority.

The above conceptual considerations suggest the following testable predictions: Boards should appear in firms with the largest potential for collective action problems, that is, in firms with small (uninformed) owners. When owners are dispersed, we expect boards rather than the GM to have authority over major corporate decisions. We expect boards and voting caps to be complementary governance tools. Boards that monitor should be endowed with authority to enable overruling management, and firms where boards mediate should in addition have voting caps (mediation is inconsequential without authority). Boards that advice should not be endowed be authority.

In the empirical analysis, we consider the authority allocation of five major corporate decisions that feature prominently in the statutes: the purchase or sale of company assets, secured borrowing, equity issuance, liquidation, and dividend payments. We measure the power of each corporate body by an index that counts how many of the five decisions it holds authority over.

We first consider authority allocation across corporate bodies. Firms display considerable heterogeneity. The GM is the most powerful body overall, but delegation of authority is prevalent: 47% of firms delegate some authority to either a board or to management.

We estimate correlations between authority allocation and firm characteristics running firm-level regressions of authority indices on a proxy for ownership structure. A proxy is needed because we lack shareholder lists for most firms in our sample. We argue that ownership structure can be inferred from a firm’s nominal share value, or share denomination, because shares of large denomination were expensive and would have been within the means of only

wealthy individuals, and also constitute a larger stake in the firm (see Section 4.1). This implies that large-denomination firms are less likely to have small shareholders compared with small-denomination firms. Our main results derive from estimated differences between small and large-denomination firms. However, for a subsample of 17 firms we have recovered shareholder lists from historical archives. This allows us to directly compare the ownership structures of large and small-denomination firms, and also firms with and without a board, as the subsample contains five firms with a board.

We find that large denomination firms are more prone to retain authority in the GM than other firms, whereas small-denomination firms are more prone to delegate authority. This is consistent with managerial agency problems posing different challenges in large and small-denomination firms due to differences in ownership structure.

Next, we investigate when boards are installed and what authority they are given. Approximately 26% of firms set up a board. We run logit-regressions of board existence on share-denomination. Small-denomination firms are 33% more likely to have a board than other firms, whereas large-denomination firms virtually never set up a board. This suggests that boards are set up by firms most likely to experience collective action problems.

We show that this difference does not arise due to large-denomination firms being smaller or more frequently family-owned. We also show that firms with boards issue more equity, have a higher fixed-to-total asset ratio, and issue a larger number of shares. This suggests firms with boards have larger capital needs and set share denomination to appeal to smaller investors. Results from the subsample of 17 firms corroborates that small-denomination firms have significantly smaller and many more shareholders on average. The prevalence of small shareholders is especially pronounced in firms with a board where small owners contribute 58 percent of paid-in equity. Large-denomination firms have significantly fewer and larger owners. Notably, blockholders are present in both small and large-denomination firms, also in firms with a board.

Considering how board presence affects the balance of power in the corporation, we find that firms with a board give management and the GM significantly less authority compared to firms without a board, consistent with the monitoring role of boards. The decision most frequently controlled by the board is the dividend decision (73% of firms) but half of boards

also hold authority over one or several of the other four decisions.

We then consider voting caps. While they exist in both small and large-denomination firms, they are stricter among the former group and strictest in firms with a board, even after controlling for ownership structure. Loose voting caps do not increase the likelihood of having a board. That firms with boards impose the strictest caps is in line with our suggestion that authority delegation makes it easier to expropriate.

Next, we examine how boards' authority relate to their role in the corporation. The statutes outline not just boards' authority but often mention other duties. We find that when boards hold authority they are required to collect information through, e.g., inspections of company books and cash balances. This suggests that boards are given authority to monitor in combination with being asked to become informed to be able to decide and act independently. When boards hold authority over dividends only, they are not required to collect information, suggesting that such boards have a pure mediation role. We conjecture this relates to small shareholders' reliance on dividend income at a time when illiquid stock markets prevented the recreation of dividends through trading.⁶ A few firms install a board while simultaneously giving management authority. This seems to contrast with the monitoring role of boards but is consistent with the theory of advisory boards. We show that in these cases, boards are indeed given duties more synonymous with advice and the degree of voting capping is weaker.

Finally, we study the choice between delegation of authority to management versus a board. When the founder is involved in management, firms are approximately 20% more likely to give management discretion over one or more decisions and less likely to set up a board. Also, voting caps are looser when managers wield authority.

The above results relate to the balance of power between the board and the GM and have implications for the current debate over shareholder empowerment which advocates that legal power is moved from the board to shareholders to effectuate better monitoring of managers. The firms in our sample self-select into those that empower a board and those that empower shareholders. But our boards' empowerment comes in conjunction with strict measures to prevent large shareholders from capturing the board. Some critics of the shareholder primacy

⁶Brennan and Thakor (1990) and Eckbo and Verma (1994) show that dividend policy may be a contentious issue also in modern corporations.

view contend that exactly because shareholders are not a homogenous class, corporate control should be concentrated in the board to enable mediation of shareholders conflicts, see Anabtawi (2016). If so, our analysis implies that minority protection would need to be build into the very structure of the board to enhance their representation. Further, our findings indicate that the mediation role of corporate boards, which is largely unexplored in the finance literature, deserves further research.

We proceed as follows. Section 1 discusses how our setting and findings relate to two existing, but largely separate, literature strands, the first on boards and the other on authority allocation. Section 2 describes the data and firms' statutes. Section 3 describes the authority allocation across the corporate bodies. In Section 4 we test the empirical predictions set out above, and Section 5 presents concluding remarks. In the appendices we provide a brief account of the institutional corporate framework at the time of our data and summary statistics for the statutes.

1 Relation to the literature

In our setting, boards arise endogenously and not all firms set up a board. To the best of our knowledge, such a setting has not previously been investigated in the case of publicly held corporations. We provide empirical support for the common perception that boards monitor managers in the presence of collective action problems (e.g. Becht, Bolton, and Roell (2003); Hansmann and Kraakman (2004)). Our study appears to be the first to provide a quantitative test of this classic view of the role of boards but also yields new insights into the nature of collective action problems. Hence, it is the presence of numerous small shareholders, rather than the absence of blockholders, that give rise to board-centered governance. Our data thus mirrors ownership patterns of modern corporations where blockholders are ubiquitous, see La Porta et al. (1999) and Edmans and Holderness (forthcoming).

The literature has recently begun addressing the multiplicity of board roles, see Adams (2017).⁷ We infer boards' roles from their powers. In contrast, the existing literature largely infer boards' roles from their composition, but it may be difficult to disentangle board efficiency

⁷Recent empirical papers that highlight the multiplicity of board roles are Adams (2009) and Schmidt (2015).

and board role. For example, an observed lack of independent directors is consistent with an entrenched CEO but also with an (optimal) advisory board. The two hypotheses are observationally equivalent.

The role of mediation is not commonly associated with boards in financial economics but appear more recognized in the law literature, see, e.g., Bainbridge (2003), Gevurtz (2004), and Blair and Stout (1999). In our setting, the mediating role seems centered on conflicts between large and small shareholders but conflicts could arise along other dimensions such as investor horizon (Gaspar, Massa, and Matos (2005) and Chen, Harford, and Li (2007)) or union and nonunion owners (Matsusaka, Ozbas, and Yi (2017)).

We know of only two other papers that raise the notion of a mediation role for boards. Bennedsen (2002) and Villalonga et al. (2017) both propose that boards may be installed to mitigate conflicts between controlling and noncontrolling owners in closely-held firms where boards are not needed to monitor. Like us, both papers study firms without a legal requirement of boards, but otherwise differ from ours: Neither paper discusses the powers of boards, whereas our identification of board's roles derives from observation of their powers. We study firms with a separation between ownership and control which adds complexity to governance because boards must address a managerial agency problem in addition to any mediation.⁸ Our findings suggest that boards are not just a forum where conflicting parties meet. Installation of a board per se cannot resolve shareholder conflicts unless minority shareholders are empowered *within* the board. With this critical point in mind, it is interesting that Villalonga et al. (2017) report that their boards appear to support controlling owners in contentious issues.

Our paper is also related to the theoretical literature on authority allocation in organizations. The delegation of formal authority is commonly rationalized with costs of acquiring, processing, and communicating information (Bolton and Dewatripont (2013)). When the preferences of agent and principal are not fully aligned, delegation entails a loss of control. However, the principal retaining authority is also not without costs, since it could hinder informative communication (Dessein (2002)) or undermine the agent's initiative (Aghion and

⁸The concentration of ownership in both studies vastly exceed that in our firms. In Villalonga, Trujillo, Guzmán, and Cáceres (2017), the average number of owners is 11 and the Herfindahl ownership concentration index is 0.45, and in Bennedsen (2002) the average number of owners is around 3. We document an average number of owners of 187 and a Herfindahl index of 0.097, see Table 4.

Tirole (1997); Burkart, Gromb, and Panunzi (1997)).

While theory has succeeded in identifying both costs and benefits of delegation, it rarely provides clear-cut recommendations as to the optimal allocation across corporate bodies. Two recent papers document that authority allocation can affect economic outcomes. Cornelli, Kominek, and Ljungqvist (2013) show that a legal shift in authority to fire the CEO from the GM to the board increases the correlation between CEO turnover and firm performance. Examining a Swiss reform, Wagner and Wenk (2017) document how giving shareholders a binding say on directors' pay causes negative stock price reactions.

Finally, our paper is related to works in the law and finance tradition which use historical data from similar periods to ours (Coffee (2000); Cheffins (2006); Musacchio (2008); Franks, Mayer, and Rossi (2009)). In general, the focus of these studies is on the necessity of statutory law for good governance (La Porta, de Silanes, Shleifer, and Vishny (1998)), whereas ours is on the board's role in the organization of the corporation. Guinnane, Harris, and Lamoreaux (2017) study the statutes of UK historical firms. In their sample, firms seem to tilt the balance of power in the favor of managers and do not display the heterogeneity in power allocation that characterizes our firms.

2 Data and description of statutes

2.1 Data collection

Our historical data are hand-collected from Carl Kierulf's annual *Handbook of Norwegian Bonds and Stocks (Haandbog over Norske Obligationer og Aktier)*, the *Norwegian trade register (Brønnøysundregistrene)*, and individual company records kept in various national and local archives. The Kierulf Handbook, first published in 1900, reports rudimentary financial information for publicly traded companies, including year-end dividend payments and January stock prices dating back three to five years. The first volume also contains company statutes. Additional company statutes and financial statements are collected from individual company records to the extent they still exist. Since firms were not required to disclose their financial statements, accounting variables are not available in all years for many firms and are completely missing for several firms.

Overall, our sample comprises company statutes for 85 industrial corporations and firm-level financial data covering the period 1886-1920.⁹ For all but three firms, the company statutes are those in effect in 1900 (one firm was incorporated in 1905, and the oldest statutes available for the two other firms are from 1907 and 1908, respectively). For reasons of comparability, our sample consists entirely of industrial firms. The shares of these companies were traded on the curb in Oslo by multiple brokers, and the brokers' association published bi-weekly price lists for the most liquid shares.¹⁰ While the shares are all traded in Oslo, the firms themselves are located around the country. For 17 of the 85 firms, the archives contain shareholder protocols, allowing us to construct lists of owners and their equity holdings for this subset of firms.¹¹ We map firms' statutes into a codable set of categorical and numeric governance variables, which we describe below. Appendix C lists these variables and provides descriptive statistics on their cross-sectional distributions.

In addition, we register whether a firm's founder is part of its management. Our data include the names of managers, making it straightforward to check whether a founder, once identified, was a member of the management group. Internet searches and archive information enable us to identify 17 firms in which the founder is a manager and 45 firms in which no founder is a manager at the time of our sample. In the remaining 23 firms, we are unable to establish whether the founder is involved in management.

2.2 The statutes

The statutes start by naming the firm, defining it as a limited liability company, stating the value of paid-in equity and the nominal share value, and typically also outline rules for transferring shares and issuing new ones. Thereafter, the rules of governance follow in a numbered list of paragraphs laying down the governance bodies and the allocation of authority amongst them.

Rules pertaining to corporate bodies include the size of the management group, managers' duties, the election of managers, whether managers must be shareholders, whether a board is

⁹Part of this data was collected for Ostergaard and Smith (2011).

¹⁰This list was known as the *Mæglernes Fællesforening* price list.

¹¹For five firms, listed stockholdings do not add up to the total number of shares and we assume that unaccounted shareholders hold stakes equal to the average stake of the firm's listed shareholders. The fraction of unaccounted shares ranges from 1.1 to 9.2 percent, with an average of 5.6 percent.

to be set up, the election of its members, its size, and its duties. Often stated are also which body determines managerial salaries and possibly bonus, and whether a superintendent shall be hired and by whom.

The statutes confer formal authority over strategic corporate decisions to either management, the board, or the GM. Such strategic decisions are decisions to expand the firm, to sell part of its assets, to borrow using the company's assets as security, the issuance of new equity, liquidation, the payment of dividends, and amendments to the statutes. Some statutes also assign authority over more operational decisions, such as inventory management, negotiations with third parties, and the pricing of products.

Typically GMs are carefully described, including rules for announcing, conducting the meeting, and voting, including restrictions on voting rights if they exist. The voting procedures are detailed. The required majority for the five major decisions we focus on is usually a simple majority, except for liquidation, where a qualified majority tends to be the rule. Furthermore, a quorum rule typically applies to votes. For example, in some cases at least one-third of equity capital must be represented at the meeting for a vote to be valid. Shareholders can also vote to change the statutes with a qualified majority.

While the statutes are quite homogeneous in their overall structure, there is ample heterogeneity in the individual provisions, as we document below. This heterogeneity aids the econometric identification of our hypotheses. Notably, not all statutes describe every one of the five decisions and may be silent on, for example, which corporate body controls the decision to liquidate the firm.

3 Firm governance bodies

All the firms in our sample have an (annual) GM of shareholders and a management group, called the board of directors. In addition, 26% of firms set up an intermediary body called the board of representatives which shares fundamental similarities with modern-day boards. We discuss the main features of each body in turn.

Shareholders exercise their power in the GM by voting on those corporate decisions over which it holds formal authority and, indirectly, by electing members to the board and the

management group. Voting rules are carefully laid out in the statutes and often involve voting caps that limit the total number of votes which can be exercised by a single owner and through graduated voting schemes where the exercisable votes increase less than proportionally with the number of shares.¹²

Despite its name, the boards of directors in our firms are closely involved with daily operations. This is in stark contrast to modern-day boards of directors but common for boards of directors in early corporations also in other countries (e.g., Hilt (2008)). Since the board of directors' character is that of a management group, to avoid confusion with the modern-day board of directors, we refer to it as the management group or just management.¹³

Management groups range in size from two to, in one case, nine members, with a median size of three. Most management groups (80%) consist of two or three persons, although 11% of firms operate with five. Members are typically elected for a two-year term, and terms are staggered. A total of 33% of statutes stipulate a minimum meeting frequency of the management group, ranging from four to 52 times a year, most frequently weekly (46%), with additional meetings when considered necessary by the chairperson. Most statutes also mention the hiring of a superintendent. Anecdotal evidence (biographies) suggests that many superintendents held an engineering degree and had work experience from abroad. The statutes rarely specify the duties of the superintendent and never delegate formal authority to him but state that he takes directions from management.

In between the management and the GM, some firms set up a so-called board of representatives which is akin to a modern-day board, and we refer to it as “the board” throughout the paper. Similarly to the characteristics of a modern board, as defined by Hansmann and Kraakman (2004), it is formally distinct from both management and the GM, and has multiple

¹²For example, Akers Mechanical Workshop, a shipbuilder and iron works company, implements the following voting scheme: one to two shares have one vote, three to five shares have two votes, six to 10 shares three votes, 11 to 15 shares four votes, and 16 to 20 shares five votes. Thereafter, any additional 10 shares provide one more vote but no shareholder can have more than 10 votes.

¹³It is evident from the tasks of the boards of directors that they are deeply involved in the daily management of firms. For example, the statutes of Union mineral water producer (§10) reads: “The board of directors meets at least once every two weeks. Negotiations and decisions must be protocolled. The board of directors must 1) carry out the necessary investigations and suggest building sites, determine the building plan, choose the master builder, and must carry these plans as determined together with the board; 2) decide and carry out everything deemed necessary for the management of the business, use the company's credit to raise additional working capital, if such is needed, decide the price of the products, and in general manage the company and its operations.” Another example is La Compania de Maderas (see Appendix B).

members elected by shareholders. The boards assume direct responsibilities over firms' strategic decisions, in contrast to a purely supervisory board. The board structure in our firms is, therefore, different from the German-style two-tiered board structure, which has a clear separation between executive and supervisory functions. Furthermore, half of our statutes have managers participate and vote in the meetings of the board and none of the statutes explicitly distinguishes between executive and supervisory tasks.¹⁴

Board members are elected amongst shareholders at the GM, typically for two-year terms which are staggered. Board sizes range from five to 24 members, most frequently 12 and 15 members. A total of 68% of firms with a board also stipulate a minimum meeting frequency, ranging from two to four times a year, with additional meetings when deemed necessary by the chairperson or requested by management. The statutes are mostly silent on remuneration for board members, in contrast to managers' remuneration, suggesting that the former are not paid for their services.

The directives for the board vary substantially across firms. For some firms, the statutes provide detailed instructions, as for instance those of the Christiania Joint Stock Beer Brewery available in Appendix B. Other statutes, such as those of the Christiania Swine Slaughterhouse, are kept more general and yet others are very brief, such as those of the Christiania News and Advertisement Periodical (see Appendix B). The statutes also differ considerably in the extent to which responsibilities and powers are bestowed upon the board. In addition to having formal authority over major decisions, the board may elect the members of the management group, decide their salary, hire auditors, set the auditors' salaries, approve the company's financial statements, and inspect the company books and cash holdings.

3.1 Allocation of authority: A first look

Shareholders face a managerial agency problem arising from the delegation of operational control to managers. Managing a firm generally involves a wide range of decisions and potential

¹⁴Already since 1884 German corporate law required a complete split between the supervisory and executive boards in joint stock companies, prohibiting individuals from sitting on both boards simultaneously. Contrasting the Norwegian board of representatives with the German supervisory board, Platou (1911) (page 8) writes about the former that '[its function is] to form a more narrow assembly of confidant shareholders compared with the general assembly', whereas, in Germany, 'this narrower body has been replaced by a constantly, or at least, continuously working, in its form controlling, in reality superior to the management group, body, *Aufsichtsrath*'.

agency conflicts span many dimensions, such as, e.g., investing too little or too much, hiring friends and family members, and diverting corporate resources. To mitigate agency conflicts, shareholders can assign formal authority over corporate decisions to the GM, but leaving formal authority with the GM is also not without costs. Hence, shareholders must trade off the costs and benefits of delegating authority. A corporate body that holds formal authority over a decision does not necessarily have to carry it out, but can choose to delegate its implementation to a subordinate body or person. Formal authority, however, entails the right to overrule the subordinate (ratification).

We code the authority of five strategic corporate decisions: (1) purchases/sales of company assets, (2) borrowing secured by company assets or real estate, (3) equity issuance, (4) liquidation, and (5) dividends. The statutes repeatedly single out these five decisions, allocating authority over each decision to one of the governance bodies. In some cases authority over a decision is shared between two bodies. The decisions largely coincide with those significant corporate decisions that modern-day corporate law reserves for special regulations, such as mergers and consolidations, voluntary dissolutions, new share issues, and distributions of capital (Hansmann and Kraakman (2004), Ch. 6). We refer to decisions (1) through (4) as “asset decisions” and sometimes study them separately from the dividend decision. Since authority to amend the statutes is always assigned to the GM, we omit it for lack of variation.

The extent and scope of the agency conflict is not likely to be uniform across firms or across corporate decisions. Therefore, we should not expect a firm to necessarily delegate all strategic decisions or none at all, but it may choose to delegate just those for which collective action problems are most severe. To measure the degree of authority allocated to a corporate body (GM, management, or the board), we construct an asset authority index that counts the number of asset decisions over which the body holds sole authority, but do not count those which are shared between two bodies. The index hence attains values from zero to four. In most statutes, a body is assigned authority over a given decision explicitly, but statutes can also assign authority indirectly, through a general authority statement conferring all authority to a particular body. Christiania Handle and Lock Factory is such an example: “Management holds any authority that is not reserved to the general meeting.” If a statute does not specifically allocate authority over one of the five strategic decisions to a particular body but contains a

general delegation statement, the authority index assigns authority over that decision to the body to which it is indirectly conferred.

We code authority over dividends in a separate (zero-one) index to allow for the possibility that authority over dividend policy is assigned according to considerations other than asset decisions. In particular, dividend income is an important source of disposable income for many investors in early financial markets (e.g. Baskin (1988); Michie (2000); Cheffins (2006)).

Figure 1 shows how authority is allocated across corporate bodies and highlights the heterogeneity in the distribution of authority across the sample firms. The GM is the most powerful body and holds sole authority over any one of the five decisions in approximately half or more of firms, corresponding to 58% of the 425 (5×85) possible decisions. It most frequently controls liquidation followed by dividends (89% and 60% of firms, respectively). The decisions concerning acquisitions and asset sales, borrowing, and equity issuance are each assigned to the GM in 45-50% of firms. Although shareholders control the bulk of the decisions, board and management also wield considerable authority. About 22% of the 425 decisions are delegated to the board or to management or to both in conjunction (18% to either body alone). The board most frequently holds authority over dividends (19% of firms), followed by acquisitions/sales and borrowing (almost 10% of firms). Only one firm assigns equity issuance to the board and none gives it the liquidation decision. Management is assigned authority over any decision in 10-15% of firms, except for the liquidation decision, which it controls in only one firm. When authority is shared, it is always shared between management and either the board or the GM. Shared authority occurs in about 5% of firms for any decision, most frequently for acquisitions/sales and borrowing. Shared authority is omitted from the subsequent analysis because we have not found any significant empirical pattern related to it. Note that the frequencies do not quite add up to 100% because authority over one or more decisions is, in some firms, not explicitly allocated to any one body. 17% of the 425 decisions are unallocated, most frequently new equity issues and least frequently liquidation and dividends.

To illustrate that the board and management commonly control multiple decisions, Figure 2 shows the distribution of the number decisions simultaneously controlled by each body. Although the GM typically controls several decisions and controls all five decisions in 14% of firms, the board and management each control up to three decisions.

4 Empirical analysis

In this section we uncover relations between authority allocation and board existence and study the role(s) and powers assumed by the board versus other corporate bodies. Regarding the interpretation of the results, we want to emphasize that the documented relations are generally not to be interpreted in a causal manner. We theorize that small shareholder prevalence is caused by exogenous financing constraints, but we do not purport to have an instrument for the number of small shareholders in the empirical analysis. Especially, this implies that we cannot rule out reverse causality of the type where boards are set up for other reasons, for example, due to common practice in a given industry. If wealthy individuals' prefer to invest in firms without boards, the causal effect would run from board presence to small shareholders, as opposed to the other way around. We attempt to rule out such alternative relations by presenting supplementary statistics on the characteristics of large and small-denomination firms, although the size and historical nature of our data sets a natural limit as to what can be done. The equilibrium relations we uncover are informative because they are derived in an, otherwise nonexistent, unconstrained setting that allows us to get at the *raison d'être* of boards.

We first study how collective action problems affect the distribution of authority in the firms and whether they can explain board existence. Second, we study the relation between voting caps and board existence. Third, we examine the roles performed by boards from observed allocations of authority and other board duties. Last we consider the extent to which authority is delegated directly to managers instead of to a board.

4.1 Collective action problems and ownership structure

As argued above, collective action problems are likely most severe when firms have many small shareholders. We measure the presence of collective action problems by constructing a proxy of the likelihood that a firm has many small owners. Since we lack complete shareholder lists, we use the nominal share value, which we refer to as share denomination, to draw inferences about firms' ownership structures.

Share denominations vary noticeably across firms in our sample, ranging from 100 NOK to

10,000 NOK, or, equivalently, 687 USD to 68,750 USD in 2015.¹⁵ Figure 3 illustrates the wide distribution in denominations with spikes at 500 NOK and 1,000 NOK. For our analysis, we split firms into a large-denomination, a mid-denomination, and a small-denomination group according to the tertiles of the share denomination distribution. A total of 40 firms are in the small-denomination group, with share values from 100 NOK to 500 NOK; 40 firms are in the large-denomination group, with share values from 1,000 NOK to 10,000 NOK. The remaining five firms are in the mid-denomination group, with values from 501 NOK to 999 NOK. The split does not result in three groups of equal size due to tied observations at the thresholds of 500 and 1,000 NOK.

Firms with large share denominations are unlikely to have many small shareholders: First, in itself, one share in a large-denomination firm constitutes a larger investment when measured in terms of percentage ownership or in kroner value. Both large percentage and dollar-value holdings entail incentives for investors to become informed (Edmans and Holderness (forthcoming)). Thus shareholders in large-denomination firms are more likely to be informed than shareholders in small-denomination firms. In our sample, one large-denomination share amounts, on average, to 0.51% of the firm's equity, compared to 0.18% in a small-denomination firm, a three-fold difference (computed by dividing total equity by the number of shares). In terms of kroner value, an investor would have to put up a larger amount of money to acquire a large-denomination share, because in our data denominations and market values are highly correlated.¹⁶

Second, large-denomination shares are within the means of only wealthy individuals. The annual gross salary of a well-paid government official in 1900 ranges from 1,100 NOK to 6,000 NOK (Grytten (2007)) and large-denomination shares, therefore, would have been prohibitively costly for most groups in society. Large-denomination firms are more likely to have wealthier owners with connections to business communities and networks. Such shareholders

¹⁵These figures are adjusted for inflation and are translated into US dollars using the US dollar-Norwegian krone exchange rate of 8.8 as of December 31, 2015. Inflation is computed according to the Norwegian wholesale price index from 1900 to 1920 and the Consumer Price Index in later years (both published by the Central Bank of Norway).

¹⁶This seems to stem from a preference, at this point in time, for having shares trade at prices close to their nominal values, which tend to be written up or down in adjustment to (persistent) changes in market value. We have examples from general meeting protocols where shareholders carefully set the magnitude of equity write-ups to avoid having the share trade below par.

do not only have stronger incentives to become informed but are also bound to be in a better position to do so. Conversely, by being affordable to more individuals, small-denomination firms are more accessible to individuals with less resources to invest. Corroborating that small-denomination firms have a larger shareholder base is the fact that the statutes of small-denomination firms require shareholder meetings to be announced more widely, in, on average, 2.1 different newspapers, compared to 1.5 different newspapers for large-denomination firms. A t -test of this difference in means is significant at the 8% level.

4.2 GM authority and collective action problems

We start by investigating the prediction that authority is less likely to be held by the GM when collective action problems exist. Hence, we expect the GM in small-denomination firms to have authority over fewer corporate decisions than in large-denomination firms. Figure 4, which depicts the extent of delegation in large- and small-denomination firms, is in line with this prediction. In small-denomination firms, the GM retains authority over 2.5 decisions, on average, compared to 3.325 decisions in large-denomination firms. A t -test for the difference of 0.825 decisions is statistically significant at the 1% level. Thus, a distinctive feature of large-denomination firms is their tendency to be governed largely by the GM. The GM also relinquishes less authority in large-denomination firms, which delegate less than 0.5 decision to either the board or management, compared to almost 1.5 decisions in small-denomination firms. Note that less retention of control by the GM does not automatically imply more delegation, since authority can be shared by corporate bodies or left unassigned.

To validate that denomination captures the severity of collective action problems we need to control for firm size. In addition, we want to take into account that the power of the GM is greater when it controls more decisions. We estimate ordered logits, regressing the number of decisions controlled by the GM on share denomination, firm size, and two additional control variables (discussed below). We show the results for both the (continuous) share denomination variable and the binary dummy variables defining small- and large-denomination firms. The average marginal effects for the outcome that the GM retains all strategic decisions are presented in Table 1.¹⁷

¹⁷The average marginal effect is the average predicted probability computed using the values of the sample

The estimate of 0.04 in column (1) of Table 1 indicates that a one standard deviation increase around the average share denomination is associated with a four percentage points increase in the likelihood of the GM controlling all five decisions. Thus, consistent with our hypothesis, in firms with a larger share denomination, the GM retains authority over all decisions more often. Columns (2) and (3) illustrate this finding by comparing, respectively, the small- and large-denomination firms with all the remaining firms. Small-denomination firms are 18% less likely to have the GM control all decisions, whereas large-denomination firms are 16% more likely to give all authority to the GM. The estimated effects are economically sizable and indicate that collective action problems are a first-order determinant of delegation.

Semi-exogenous factors such as the production technology and complexity are likely to exert an independent influence on the benefits of delegation and are of interest in their own right. Larger firms may be more complex and information acquisition and processing more costly, rendering delegation more beneficial. Firm size is measured by the book value of paid-in equity since data on firm-level total assets is incomplete. For the sample period, we have one or more observations of total assets for 44 of the 85 firms, and the correlation between total assets and nominal equity is rather high (0.89). We include two additional variables to capture possible effects of technology: firm age in 1900 by founding year, and the average ratio of fixed to total assets in each industry. With respect to firm age, older firms may rely on more established and standardized production technologies, whereas younger firms may use newer, less tested technologies. Telecommunications and the fabrication of sulphite cellulose are examples of new technologies, and firms in these industries have an average age of 5.7 years and 11.2 years, respectively, compared to firms in an established industry like shipbuilding, which are on average 34 years old. The fixed asset ratio is computed at the industry level due to incomplete firm-level data and captures industry-specific aspects of production. One can argue that production processes that require more tangible assets leave management with less discretion over corporate resources. Firms with high fixed assets, therefore, may be less concerned about monitoring management. Alternatively, if capital adjustments are larger in industries with higher fixed asset ratios, investments require larger outlays and more resources under management control. In this case, owners may wish to retain authority.

observations.

In Table 1, the control variables are generally not significant. Firm size is always positively related to delegation, suggesting that size per se does add to the complexity of managing a firm, although size is not quite significant at the 15% threshold level. Firm age has the expected sign (negatively related to delegation) but is far from significant. In addition, the fixed assets ratio is not significant. Despite the lack of significance, we continue to control for these three variables in our analysis because of the above conceptual considerations. Furthermore, they do become significant in some specifications below.

4.3 Board existence and authority

The simple fact that not all firms choose to set up a board suggests that boards have costs as well as benefits. In our sample, 22 firms, or almost 26 percent, install a board. In this section we ask whether collective action problems can explain board existence.

Table 2 presents the results from logit regressions of board existence on share denomination and a set of control variables. In column (1), share denomination has a large negative effect on the existence of a board: A one-standard deviation increase around its mean is associated with a 40% lower probability of a board. Column (2) shows that small-denomination firms are 33% more likely to have a board than the rest of firms, whereas large-denomination firms are 48% less likely to have a board. In fact, in the group of large-denomination firms, we only observe one firm with a board. The mid-denomination group contains 3 firms with a board.

Firm size and age have significant effects above and beyond the effect of share denomination. Larger firms are more likely to set up a board, suggesting that production complexity exerts an independent positive effect on the cost of collective decision-making. The marginal effect of firm size is large at 13-16 percent. Notably, older firms are less likely to have a board although the effect is less significant than that of firm size.

The above results are strongly in line with our hypothesis. We now explore whether share denomination could be correlated with firm characteristics other than small shareholder presence. For example, large-denomination firms could be very small firms. Alternatively, if family firms tend to issue only few shares, by consequence of large-denomination, and an absence of boards in these firms reflect the absence of a managerial agency conflict, we would misinterpret the correlation between large denomination and board absence. This turns out

not to be the case.

Table 3 compares large and small-denomination firms, as well as firms with and without boards, along basic dimensions. Large-denomination firms are, on average, significantly larger than small-denomination firms, whereas firms with a board are larger, on average, than firms without a board. These two results may seem contradictory given our previous result that firms with a board tend to have smaller share denomination. The explanation, however, is that the group of small-denomination firms contains both very large firms but also quite small firms and it is the large firms that tend to install a board. Firms with a board are of approximately the same size as the average large-denomination firms. Hence, we can rule out that large-denomination firms tend to be small firms. Firms with a board tend to belong to industries with a higher ratio of fixed-assets-to-total-assets, and together with their larger size, this suggests that firms with boards have larger fixed capital needs. Firms with a board also issue a larger number of shares, and tend to be more recently founded. Lastly, founders are equally present whether we compare firms by denomination or by board existence. That is, large-denomination firms do not appear to have a higher likelihood of being family-owned.

We characterize the ownership structure in the 17 subsample firms in order to gauge the validity of the share-denomination proxy. Table 4 shows that small-denomination firms have a considerably longer tail of small shareholders. Small denomination firms have an average of 306.4 shareholders compared with 38.9 for large-denomination firms, and firms with boards have 446.6 shareholders on average. The table also verifies that shareholders in small-denomination firms have smaller stakes and therefore weaker incentives to become informed. Hence, the stake of the median owner is 1.86 in large-denomination firms, but only 0.58 in small-denomination firms—an over three-fold difference. In firms with a board, the median stake is even lower at 0.15. A similar pattern exist for the kroner value of the stake, 10,000; 1,310; and 101, respectively. These figures confirm our reasoning that share denomination proxies for the prevalence of small shareholders.

The table further reveals that large shareholder are present in all types of firms. The average of the largest stake in large and small-denomination firms is of the same order, 20.2 percent and 19.5 percent, respectively. The average stake, however, is significantly larger in large-denomination firms, 3.13 percent compared with 0.88 percent in small-denomination

firms, illustrating that in large-denomination firms the number of investors with a sizeable stake is considerably larger. This difference is especially pronounced when we measure ownership stakes in monetary values (17,918 kroner compared with 3,589 kroner). Even in firms with a board, the largest stake is 16.7 percent on average, but the average stake is only 0.37 percent or 2,967 kroner. Overall, small and large shareholders are ubiquitous, and by consequence, so is the potential for conflicts of interest.

Table 5 compares the ownership and control structures across firms. Small shareholders, illustrated by those with blocks below the 2.5 percent threshold, collectively own more than half the equity in small-denomination firms (57.9%) and even more in firms with a board (64.5%). In comparison, in large-denomination firms, they own approximately 25% of equity. This difference illustrates the sizeable mass of small owners in the former two types of firms. Large owners' collective ownership stakes, correspondingly, make up almost three quarters in large-denomination firms, and somewhat less in firms without a board (63.7%). This is consistent with decision-making in the GM being less costly in large-denomination firms. Another illustration of this, is the number of outside owners it requires to wield 20, respectively, 50 percent of the votes. In large-denomination firms it takes 3.3 and 14.6 owners, respectively, whereas in small-denomination firms and firms with a board, it takes 28.3 and 106, and 45.2 and 170.6 owners, respectively. Clearly, the coalitions that must be built to outvote management are considerably larger in the latter two types of firms, and the potential for collective action problems appear correspondingly larger. Inside ownership in small-denomination firms and firms with a board is low, at 7.7 and 8.5 percent respectively. Large-denomination firms have more concentrated inside ownership, but managers still own only 26.4 percent of equity. This confirms that there is indeed separation between ownership and control in our firms since large outside blockholders exist in most firms. When we measure ownership in terms of voting power, the separation is even larger.

Given a board is installed, does it get any power of control? To monitor management, the board needs formal authority over strategic decisions to be able to overturn managerial initiatives. Table 6 shows that in firms with a board, both managers and the GM have significantly less authority over assets and the GM has less authority over dividends. The average number of asset decisions controlled by management is 0.649 smaller and the average

number of assets decisions controlled by the GM is 0.786 smaller. The fraction of firms that delegate the dividend decision to the GM is 70.2 percentage points smaller.¹⁸ Hence, when a board is in place, it generally seizes authority from the two other governance bodies, implying that the cost of placing decision-power with the GM or management is large. That is consistent with the presence of, respectively, a collective action problem and a managerial agency problem in firms with a board. Notably, management is equally likely to be given authority over the dividend decision in firms with and without the board. This suggests that for the dividend-decision, the main cost is associated with the GM, perhaps indicating disagreement between shareholders over the level of dividends. For certain shareholders dividend income can comprise an important source of income, giving rise to a preference for large dividends (e.g. widows and unmarried daughters), whereas wealthier business men may be willing to forgo dividends to further the company's ability to invest and grow. The illiquidity of historical stock markets would likely have prevented shareholders from replicating dividends through trading. These findings are presented graphically in Figure 5.

4.4 Voting caps and shareholder conflicts

We now analyse how voting caps correlate with ownership structure and board existence. Voting caps were widespread in historical corporations in many countries and are generally believed to have been imposed in order to protect the interests of minority shareholders (Dunlavy (2004), Hilt (2008) and Musacchio (2008)). In the GM, voting caps directly limit the influence of large shareholders, thereby giving small shareholders greater influence on decisions. When authority is delegated to a board, the effect of voting caps on small shareholders' influence depends on the voting procedure. In our sample, minutes from general meetings found in historical archives, reveal that voting to the board and management occurred on a person-by-person basis. That is, shareholder cast their vote for each candidate in turn and candidates were elected according to the number of "yes"-votes they received. Voting caps, therefore, would have worked to limit the number of votes a large shareholder could cast in favor of a particular candidate and increased small shareholders' ability to prevent the candidate from

¹⁸An unreported ordered logit regression of authority indices on a dummy for a board and control variables for size, age, and fixed asset ratio produces similar results.

being elected if he was perceived not to represent their interests, or oppositely, elect their preferred candidates to the board. Small shareholders' interests, therefore, could be incorporated into the board's decision-making through its composition.

It is possible that restrictions on voting rights address conflicts between other shareholder groups than large and small shareholders. In early corporations managers were usually elected from shareholders. This is also the case in our firms and implies that managers vote in the GM.¹⁹ When managers are large owners, mitigate managerial self-dealing when authority lies with the GM and prevent expropriation of outside shareholders. Voting caps may also serve to maintain a balance of power between different outside blockholders (Becht et al. (2003)).²⁰

Figure 7 displays the occurrence of voting caps in large and small-denomination firms. Strict voting caps appear in both groups but they are much stricter among small-denomination firms. 25 percent of small-denomination firms cap votes at 2.5 percent or less, compared with 5 percent of large-denomination firms. 75 firms (88% of the sample) impose a voting cap and only 10 firms (12%) adopt a one share-one vote rule.

The voting caps are prevalent suggest the potential for conflicts between large and small shareholders is widespread. This is consistent with the picture of ownership that emerges from Tables 4 and 5 where large and small shareholders coexist in both small and large denomination firms. The fact that voting caps are stricter in small-denomination firms, suggest that the need to protect small shareholders is larger in this group of firms.

We then examine how board existence relates to voting caps. Table 7 displays the results from logit regressions of a board dummy on voting caps, including share denomination and the same control variables as in Table 2. The reported values are estimated marginal effects. Columns (1) and (2) show that severe vote capping at the 2.5% or 5% level are positively associated with the likelihood of a board. The probabilities are 14% and 10% respectively, and both are significant. Notably, the magnitude and significance of the coefficient on share denomination are comparable to the results in Table 2. That the estimated effect of share

¹⁹We believe this is the case because none of the statutes rule out that managers vote in the GM.

²⁰Hansmann and Pargendler (2014) argue that restricted voting rules in early US corporations served to protect shareholders as consumers in contrast with the more widespread view that they served to protect small shareholders. They find that voting rules existed predominantly in local monopolies such as transportation, banking, and insurance, but we have few transportation firms in our sample and no banking or insurance firms. Thus, the pattern of voting caps in our sample does not seem consistent with this alternative theory.

denomination is unaffected by inclusion of voting caps in the regression implies that voting caps are not imposed “automatically” when a firm has small shareholders such that voting caps is just capturing small shareholder presence. Rather, voting caps and boards are intentionally set up together because small shareholder protection is more pertinent in firms with a board.

What could explain this pertinence? Above we showed that when boards are set up, they tend to be given authority (Table 6). We propose that small shareholders need more protection because delegation of authority obscures decision-making, and eases expropriation of shareholder groups that are not represented on the board. It is also possible that large shareholders’ incentive to expropriate varies across firms with and without a board. Thus, Table 5 revealed that collectively large shareholders stake is substantially smaller in firm with a board, on average 35.5% of equity, whereas in large-denomination firms, large shareholders’ stakes is 72.9% of equity. To the extent the ownership structures of our subsample are representative for the entire sample, cross-sectional differences in large shareholders’ ownership may help explain why the GM is a functional decision-making body in large-denomination firms.

To get a sense of how voting caps limit large shareholders’ control rights, we revisit the subsample of 17 firms. Table 8 illustrates the extent to which voting caps in firms with boards enlarges the control rights of small shareholders and diminishes the control rights of large shareholders. Small shareholders collectively control the bulk of votes in small-denomination firms and firms with a board, 70.9% and 85.1% respectively. In contrast, large shareholders control the majority of votes in large-denomination firms (65.7%). The O/V ratio measures ratio between a shareholder’s ownership (as a percentage of total equity) and the votes she holds in the GM (as a percentage of the total votes). The O/V ratio for the largest shareholder is a remarkably 8.50 on average in firms with boards, compared with 1.70 in firms without boards. In contrast, the ratio is below 1 for the smallest shareholder and not significantly different in firms with and without boards.

4.5 Board roles and the pattern of authority allocation

To further explore the role of boards, we record from the statutes those tasks and functions other than authority that are assigned to boards. We sort them into three indices, whose distributions are shown in Figure 6. The information index captures board members’ obli-

gations to become informed about the firm. A value of one is added to the index for each of the following requirements: The board approves the annual financial statements (73% of firms with a board), managers prepare a report (usually annually) for the board (68%), and board members are required to make unannounced inspections of the company books and cash balance (32%).²¹ The advice index counts the tasks fostering cooperation between board and management. A value of one is added to the index for each of the following requirements: The board must decide on issues brought to it by the managers (50%), managers participate in board meetings (55%), and managers vote in board meetings (50%). Typically, management is excluded from voting on issues concerning itself. Finally, the value of one is added to the career index when the board appoints managers (82%) and determines managerial salaries (68%).

We then study how board authority correlates with these task indices. Table 9 shows results from t-tests of differences in the mean index value for, respectively, boards that have authority over asset decisions (and possibly also over dividends), boards that have authority only over dividends, and boards that exist in firms where authority is given directly to managers. We can separate the effect of asset and dividend authority econometrically, because there are boards which only control dividends. Nine firms assign both dividend and one or more asset decisions to the board and two firms only asset decisions, corresponding to 50% of firms with a board. There are seven firms (32%) where the board controls the dividend decision but no asset decisions. In addition there are three firms with boards (14%) that assign authority to management which allows econometric identification of the relation between board tasks and management control.

Boards holds authority over assets are assigned 2.27 information-related duties on average, compared with 1.18 duties on average for the rest of boards. The difference is statistically significant at the 1 percent level. These boards are also assigned more career-related duties on average (significant at the 15 percent level). In contrast, boards that only hold authority over dividends are assigned significantly fewer information-related tasks. The board's dividend

²¹Infrequently mentioned tasks are not included in the analysis. For example, one firm has the board determine the work tasks and authority of managers and mediate in disputes among managers, four firms give the board authority over the reserve funds, and three firms assign a few specific operational tasks to the board. For example, Christiania Telephone Company assigns the duty of fixing and reporting price tariffs to the authorities 'in accordance with the company's concession' to the board.

authority per se, therefore, is not significantly associated with a duty to collect information. Boards in firms where managers hold authority are significantly more likely to be given advice-related tasks. They are assigned on average 3.00 such tasks, compared with 1.42 in other boards. These boards are also assigned less information or career-related tasks, although the difference is not statistically significant.²²

Overall, the results show that the asset authority of boards tends to go hand in hand with measures aimed at ensuring that the board is informed. Formal authority gives the board the power to overrule managerial decisions, hence it is desirable that boards make informed decisions and the statutes asks them to collect the relevant information. In contrast, firms where management controls asset decisions do not require boards to become informed. These firms deliberately give management authority and consequently do not set up a board to monitor management. Rather, the board plays an advisory role. One could argue that boards also need to be informed to fulfill their advisory role. However, if boards have no authority, managers have incentives to share their information with the board, to take advantage of its expertise. Our result, therefore, is in line with Adams and Ferreira (2007) who argue that advisory boards can be optimal.

In Table 10 we show how board authority correlates with other board characteristics. Firms where boards are given authority over asset decisions are also required to meet more frequently than other boards which seems to fit well with our interpretation that these boards monitor. Board in firms where managers hold authority are considerably larger in size on average than other boards, although the difference is not significant due to large standard errors, and strict vote capping is significant less pronounced. Both observations fit our interpretation that these boards advice.

4.6 Delegation to management

In this section, we address why firms choose to delegate formal authority to management as opposed to the board. Delegation is also beneficial when managerial knowledge and expertise are crucial for the quality of a decision. At the same time, a board may be too distant from the firm's operations to make a qualified decision. Therefore, the non-existence of a board

²²These results also obtain in regressions where we control for firm size.

does not necessarily imply that authority should remain with the GM.

The three control variables from the previous regressions (firm size, age, and the ratio of fixed-to-total assets) may capture the value of managerial expertise and superior information. Larger and younger firms, and firms with a higher ratio of fixed to total assets may use more advanced production technologies. Figure 8 shows the average degree of delegation to management by industry and suggests that industry effects exist to some extent. The number of observations is too small to include industry fixed effects, so we cannot estimate the significance of such effects. On the other hand, the figure also shows substantial variation in delegation within most industries that must be due to firm-specific factors.

One such possible factor is the presence of founders. One would expect more delegation when the founder is involved in management, either because the founder enjoys private benefits of control or because of valuable expertise. We therefore introduce two additional dummy variables: The first is a founder dummy that is equal to one if the founder is part of management. Internet searches enable us to identify 17 firms in which the founder is a manager and 45 firms in which no founder is a manager at the time of our sample.²³ In the remaining 23 firms, we are unable to establish whether the founder is involved in management. We classify these firms as not having a founder-manager which stacks the deck against finding evidence that founder presence correlates with delegation. In our sample, founders in management are equally prevalent among large- and small-denomination firms, eight and nine firms, respectively. The second dummy variable is the named person, which is equal to one if the statutes name a particular person as a member of management. In eight sample firms (9.4%), the statutes appoint by name a person as a permanent member of management and such a person is always a founder. Thus these firms comprise a subset of the firms for which the founder dummy equals one. A person is named in four large-denomination firms and four small-denomination firms.

We estimate ordered logits, regressing both asset authority and the dividend authority indices on a dummy variable for small-denomination firms, dummies for named person and for founder in management, as well as the three control variables. Columns (1) to (4) in Table 11 present the estimated change in the probability that one or more asset decisions are

²³Our historical data list the names of managers, making it straightforward to check whether a founder, once identified, was a member of the management group.

delegated to management. Share denomination is inversely related to the degree of delegation to management, and the group of small-denomination firms is 22% more likely to allocate one or more decisions to management compared to the rest of the firms. This result confirms that firms prone to collective action problems are more likely to delegate decisions to either management or the board.

Consistent with the above conjectures, we find that management involvement by either a named person or a founder are associated with more delegation to management. In particular, the named person effect is economically large, between 19% and 22%, and statistically highly significant. The founder dummy is also positively associated with delegation, but just outside the 15% significance threshold. Logit regression of each individual asset decision (not shown) reveals that the positive effects of named persons and founders are associated with authority over purchases/sales of assets and secured borrowing but not with the decision to issue new equity. Among the three control variables, only the fixed assets ratio is marginally significant, indicating that owners are less likely to delegate control to managers in firms with more tangible assets.

Columns (5) and (6) of Table 11 show that neither the founder nor the control variables have predictive power for the delegation of the dividend decision. Firms with a named person in management, however, never delegate dividend authority to management. A t-test of the differences in means with unequal variances between firms with a named person and all other firms is significant at less than the 1% level. The difference between shareholder willingness to delegate asset and dividend decisions is noticeable and in line with the notion that, at this point in time, dividends are the main component of owners' return on equity.²⁴

Table 12 ties together the existence of a board and the delegation of authority to management. Firms with founders involved in management are less likely to set up a board. Firms with a named person in management never set up a board. In unreported regressions of authority retention by the GM on the same set of variables as in Table 11, we find that neither the founder dummy nor the named person dummy is significantly related to authority held by the GM.

These results suggest that the presence of a founder is less important when it comes to

²⁴The named person dummy is omitted from the regressions due to lack of variation.

deciding whether to delegate authority in the first place, but makes a difference in the choice of to whom—the board or management—to delegate. Founder firms that delegate tend to delegate to management, but whether this is due to expertise or entrenchment cannot be determined from our results.

5 Conclusion

We study how owners, free from the constraints of corporate law, design the governance structure of publicly traded firms. Our particular focus is on the role of the board in the organization of the firm, that is, the choice of having a board or not, and how its role(s) relate to ownership structure.

We document that firms most prone to collective action problems are less likely to retain authority with the GM and more likely to set up a board. Collective action problems arise from having numerous small, uninformed, shareholders that collectively own a large fraction of equity. In contrast, firms more likely to have large and informed owners rarely have boards and retain authority with the GM.

We do not interpret these results to imply that today’s widely held corporations should consider divesting their boards to increase shareholder value. After all, our results expose a strong correlation between the number of shareholders and board existence, and firms at the turn of the 20th century were generally much smaller than modern corporations. Rather, our sample of firms with and without boards allows us to uncover circumstances when the benefits of having a board are relatively small or large. It is notable that our firms tend to choose corporate governance arrangements that mirror the different provisions across corporate legal regimes, where US law entrusts the board of directors with considerable authority, whereas shareholders are more powerful in European jurisdictions (Hansmann and Kraakman (2004)).

Our results suggest that firms relying on small shareholder finance much tackle two simultaneous agency problems in their design of governance. Collective action problems require that authority is moved from the GM to a board, and to prevent the board from being captured by large shareholders, small shareholders’ representation on the board is enhanced. This is done through the use of voting caps that exacerbate small shareholders’ influence on the election of

directors. Boards simultaneously monitor managers and mediate between shareholders with conflicting interests. We uncover three roles of boards: monitoring, mediation, and advising.

The prominence of voting caps in our data begs the question of why they seem to have disappeared from modern public corporations. One reason may be that minority protection rules in statutory corporate law have left them superfluous. The voting caps in our setting, however, protect small shareholders by leveraging their representation on the board. That would appear to be a much more direct and likely stronger form of protection than that arising from the ability to, e.g., call extraordinary meetings, being able to vote by proxy, or even from oppressed minority mechanisms that allow minority shareholders the legal right to challenge decisions of management or the GM. An alternative explanation could be that the manager-shareholder conflict over time has grown to overshadow the conflict of interest between large and small shareholders, in which case voting caps would mainly work to hinder managerial oversight by restricting the power of large shareholders. Yet another explanation could be rooted in changes in the social conception of the corporation (Dunlavy (2004)). Whatever the reason, the significance of voting caps in our sample is to enable the balancing of small shareholder protection with the need to curb managerial discretion. Becht et al. (2003) refer to this as the fundamental trade-off in corporate governance and, evidently, it was as important in the early corporations as it is today.

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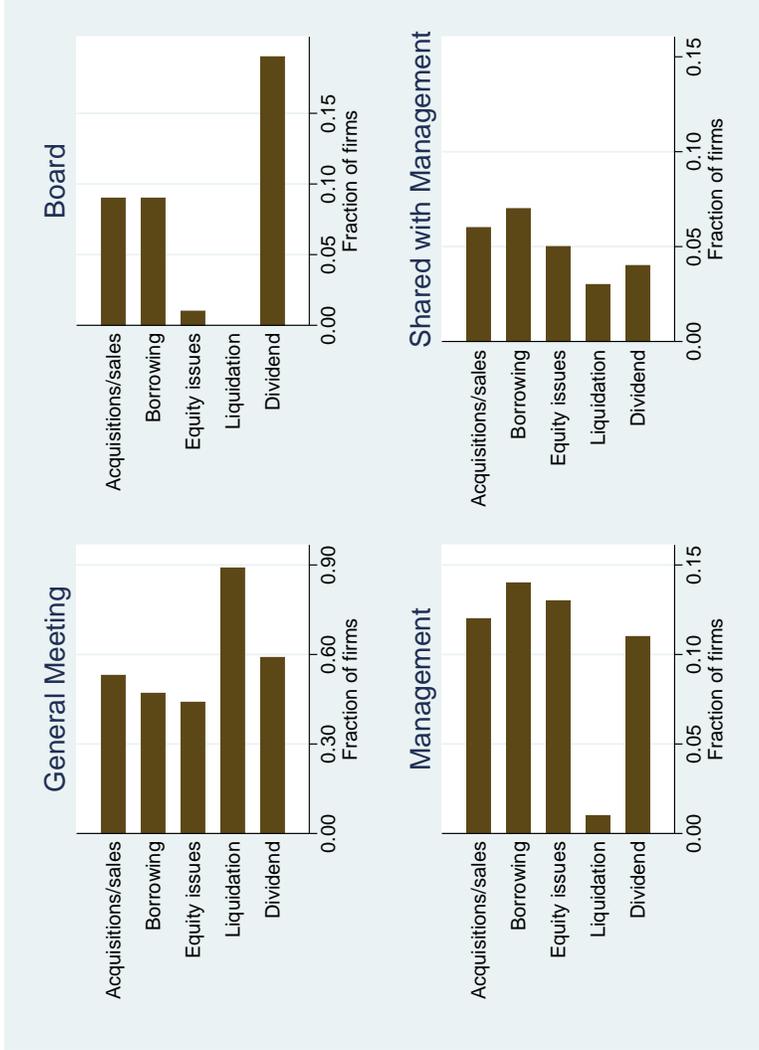
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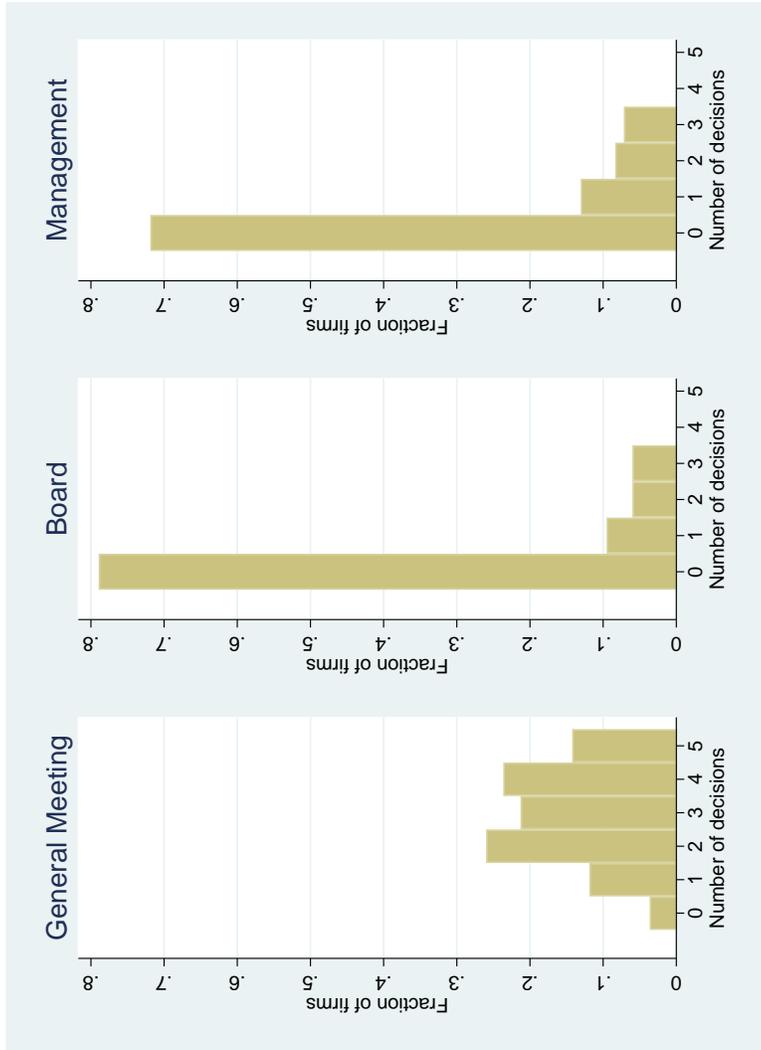
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Figure 1: Allocation of Authority Over Strategic Decisions



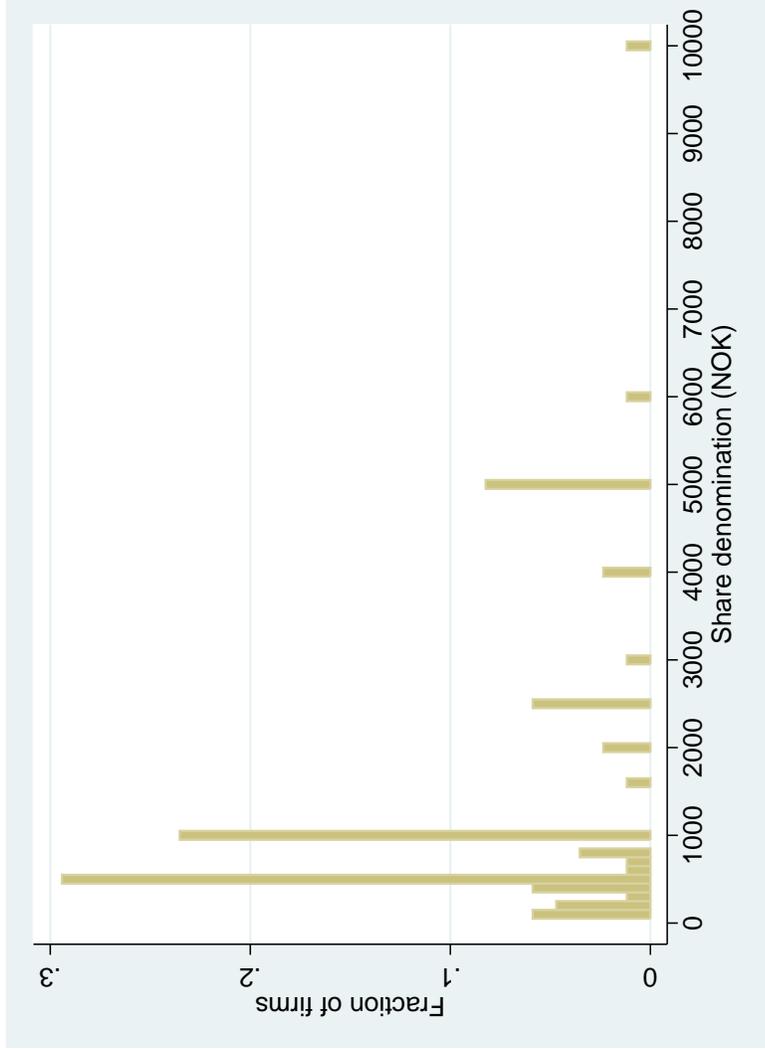
This figure shows the fraction of firms that allocate the authority over a given strategic decision to GM, board, and management, respectively. The bottom-right graph shows the fraction of firms where the authority over a given strategic decision is shared between management and either the GM or the board. The strategic decisions are acquisitions/sales of assets, borrowing against the firm's assets, equity issuance, firm liquidation and dividend payments.

Figure 2: Authority Over Strategic Decisions: Scope of Authority



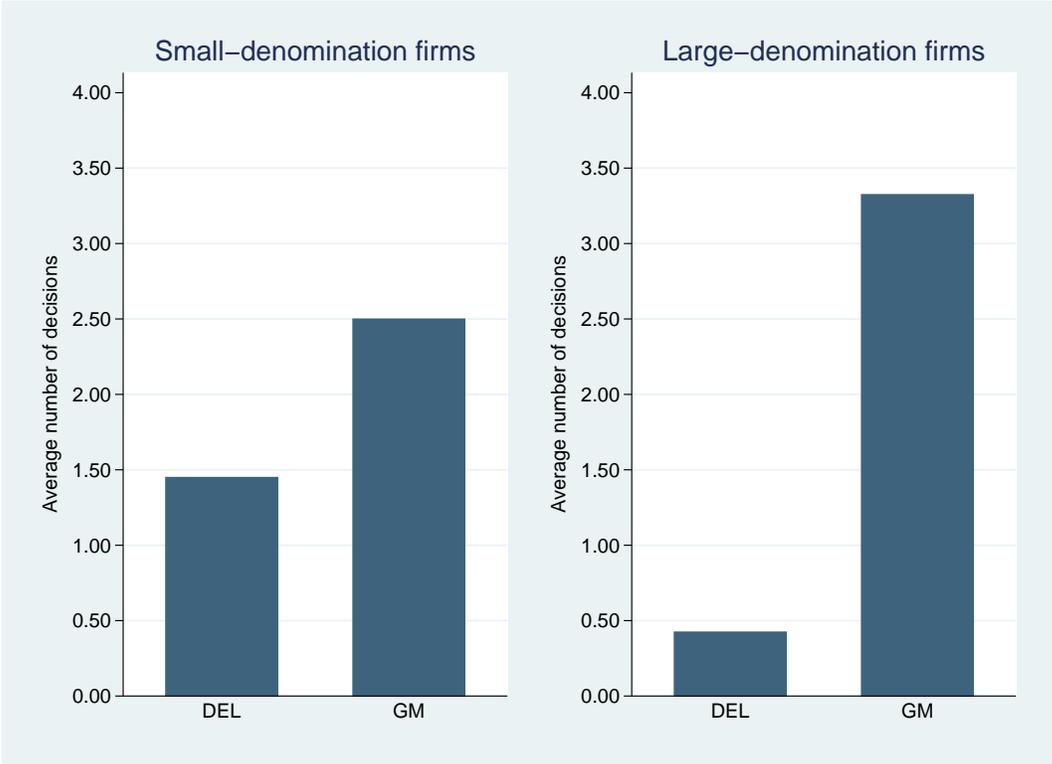
This figure shows the frequency distribution of the number of strategic decisions allocated exclusively to the GM, the board, or management, respectively.

Figure 3: Distribution of Share Denomination



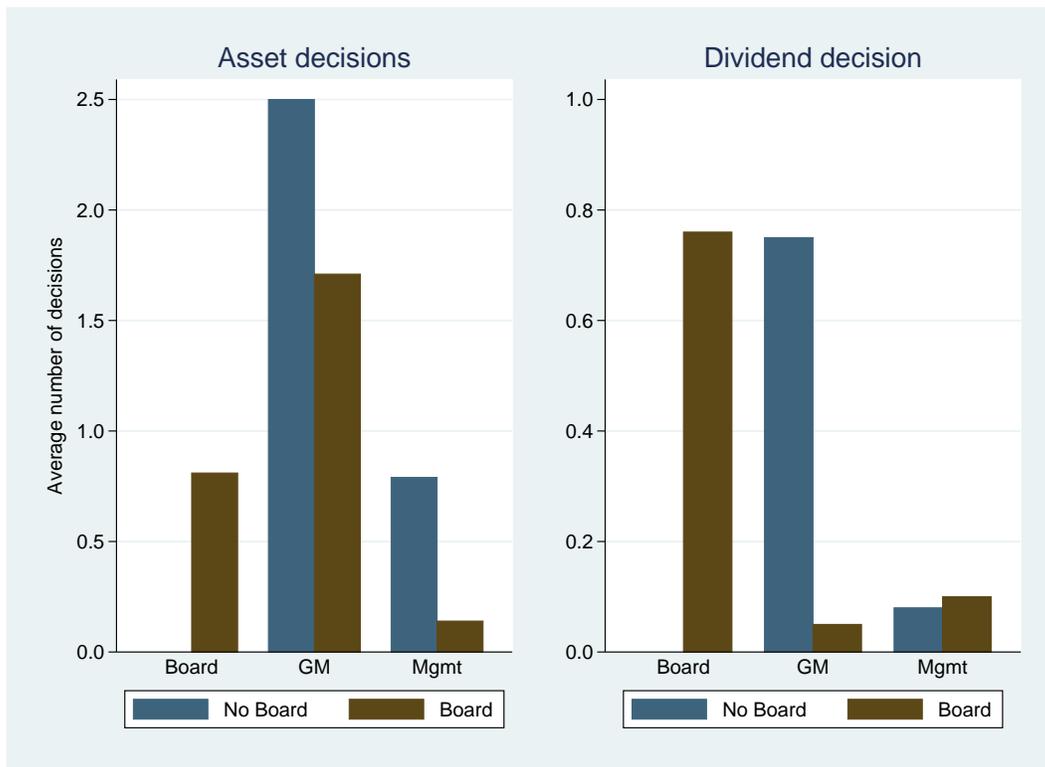
This figure shows the frequency distribution of share denominations across the sample firms.

Figure 4: Delegation of Authority over Strategic Decisions by Share Denomination



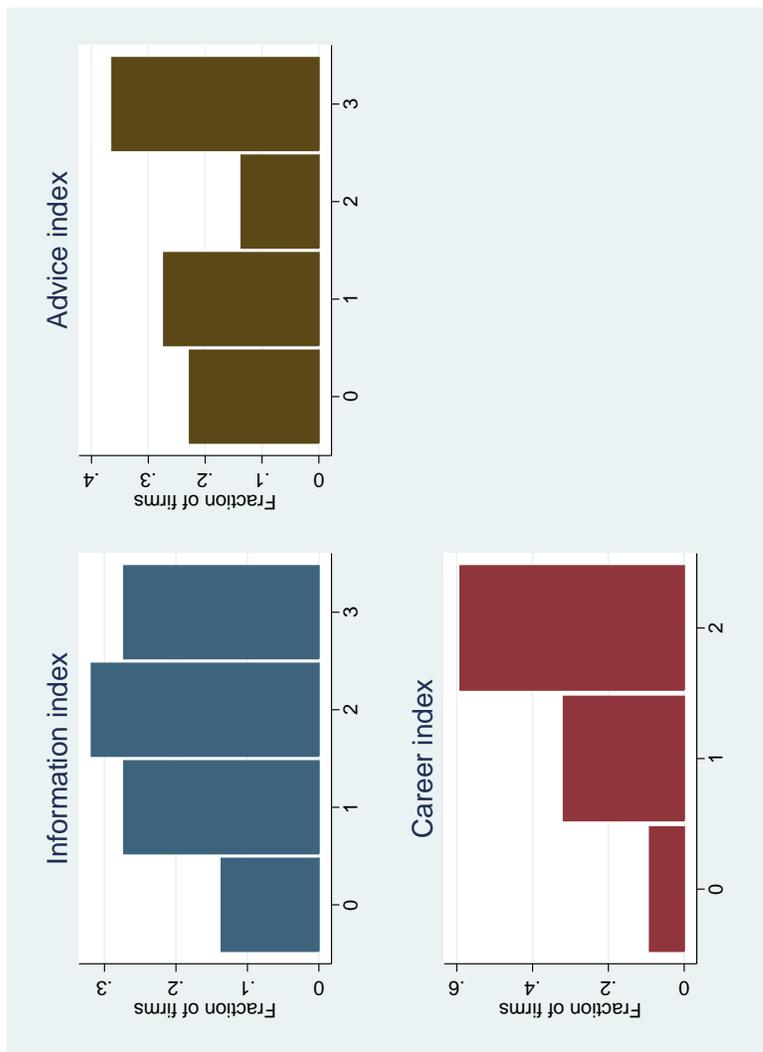
This figure shows the average number of strategic decisions retained by the GM or delegated to either the management or the board (DEL), for small- (left) and large-denomination (right) firms.

Figure 5: Authority Allocation in Firms with and without a Board



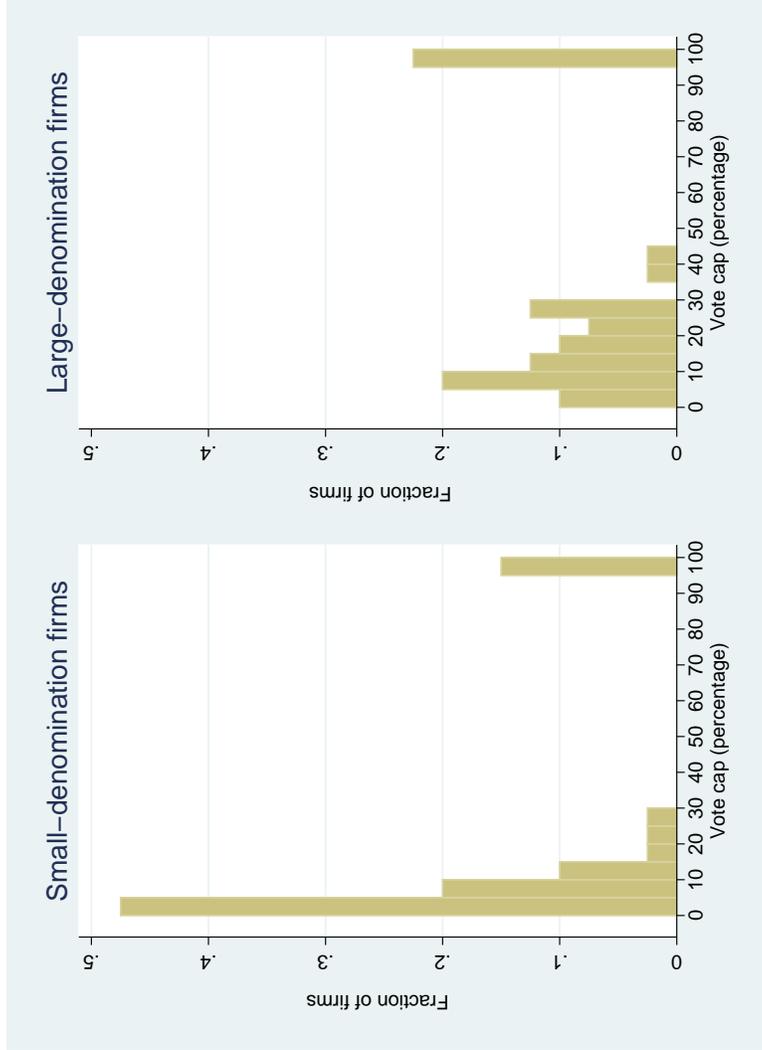
This figure shows the number of asset and dividend decisions controlled by the board, the GM, and management, in non-large-denomination firms with (22 firms) and without (24 firms) a board.

Figure 6: Board Task Indices



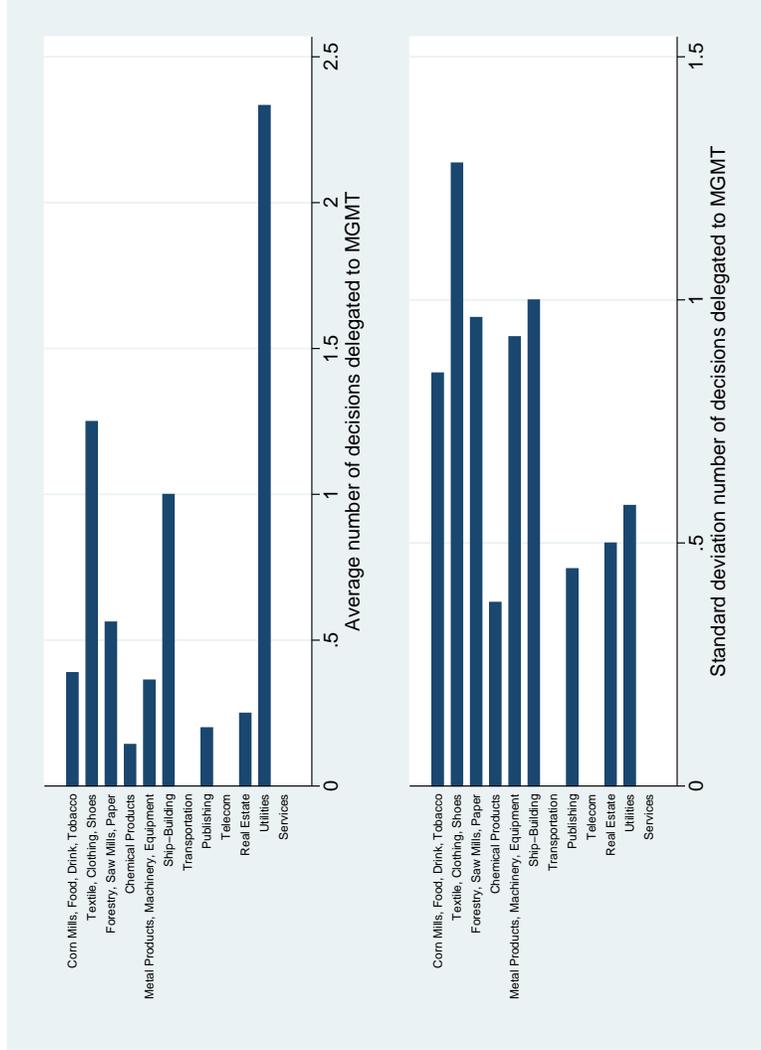
This figure shows the frequency distribution of three additional tasks assigned to the board, summarized by the information, advice and career indices. A value of one is added to the information index, for a given board, if one of the following requirements is found in the statute: The board approves the firm's annual financial statements, managers prepare a report to the board, and board members are required to make unannounced inspections of the company's books and cash balance. A value of one is added to the advice index for a given board if one of the following requirements is found in the statute: The board must decide on issues brought to it by the managers, managers participate in board meetings, and managers vote in board meetings. A value of one is added to the career index for a given board when the statute requires that the board appoints managers or that the board determines managers' salaries.

Figure 7: Voting Caps by Share Denomination



This figure shows the frequency distribution of the voting caps for the small-denomination (left) and large-denomination (right) firms. Vote capping at $\alpha\%$ implies that the voting rights of shares held in excess of $\alpha\%$ of a firm's paid-in equity cannot be exercised.

Figure 8: Strategic Decisions Delegated to Management by Industry



This figure shows the average number of strategic decisions delegated to management (MGMT) for each industry (top) and the standard deviation of the number of strategic decisions delegated to management for each industry (bottom).

Table 1: **Retention of Authority in the General Meeting**

	Change in probability that the GM holds authority over all decisions		
	(1)	(2)	(3)
Share Denomination ('000)	0.04+ (0.11)		
Small-Denomination Dummy		-0.18** (0.02)	
Large-Denomination Dummy			0.16*** (0.01)
Size (log)	-0.03 (0.35)	-0.04 (0.16)	-0.04 (0.19)
Firm age in 1900	0.01 (0.59)	0.02 (0.43)	0.01 (0.61)
Fixed Assets Ratio	0.00 (0.84)	0.02 (0.37)	0.02 (0.40)
Constant1	-2.89*** (0.00)	-3.47*** (0.00)	-2.07* (0.05)
Constant2	-1.26 (0.16)	-1.76** (0.02)	-0.37 (0.70)
Constant3	0.13 (0.88)	-0.29 (0.68)	1.11 (0.25)
Constant4	1.01 (0.26)	0.60 (0.40)	2.01** (0.04)
Constant5	2.32** (0.01)	1.97*** (0.01)	3.36*** (0.00)
Obs.	85	85	85
<i>p</i> -Value	0.55	0.08	0.07
Pseudo R-squared	0.01	0.04	0.04

This table presents the average marginal effects of firm characteristics on the outcome that authority over all five strategic decisions is retained by the GM. Marginal effects are estimated from ordered logit regressions of a GM authority index on the following firm characteristics: share denomination of ordinary shares, dummies for large and small share denominations, firm size (log), firm age in 1900 by founding year, and the industry average ratio of fixed to total assets. For share denomination, size (log), firm age in 1900, and the fixed assets ratio, the reported marginal effect corresponds to an increase in the probability of the GM retaining authority from a one standard deviation increase around the mean of the variable. For the small-denomination and large-denomination dummies, the marginal effects are the change in the probability of the GM retaining authority from a change in the value of the dummy from zero to one. Constants 1 to 5 are the estimated cutoff points. The *p*-Values for the marginal effects, based on robust standard errors, are reported in parentheses. In addition, the table reports the *p*-Values from a test of joint significance of the explanatory variables and McFadden's pseudo R-squared values. Statistical significance is reported at the 15% (+), 10% (*), 5% (**), and 1% (***) levels.

Table 2: **Board Existence**

	(1)	(2)	(3)
Share Denomination ('000)	-0.40*** (0.00)		
Small-Denomination Dummy		0.33*** (0.00)	
Large-Denomination Dummy			-0.48*** (0.00)
Size (log)	0.16*** (0.00)	0.13*** (0.00)	0.15*** (0.00)
Firm age in 1900	-0.05+ (0.15)	-0.06+ (0.15)	-0.08** (0.05)
Fixed Assets Ratio	0.02 (0.67)	0.04 (0.29)	0.03 (0.43)
Constant	-4.88*** (0.01)	2.58** (0.02)	0.49 (0.74)
Obs.	85	85	85
<i>p</i> -Value	0.00	0.00	0.00
Pseudo R-squared	0.42	0.27	0.41

This table presents the average marginal effects of share denomination on the existence of a board. Marginal effects are estimated with logit regressions of an indicator of the board existence on share denomination and a dummy for small and large-denomination shares, respectively. Controls include firm size (log), firm age in 1900 by founding year, and the industry average ratio of fixed to total assets. For share denomination, size (log), firm age in 1900, and the fixed assets ratio, the reported marginal effect is the increase in the probability of the existence of a board from a one standard deviation increase around their respective means. For the small-denomination dummy, the marginal effect is the change in the probability of the existence of a board from a change in the value of the dummy from zero to one. The *p*-Values for the marginal effects, based on robust standard errors, are reported in parentheses. In addition, the table reports the *p*-Value from a test of joint significance of the explanatory variables and McFadden's pseudo R-squared values. Statistical significance is reported at the 15% (+), 10% (*), 5% (**), and 1% (***) levels.

Table 3: Characteristics of Large and Small-Denomination Firms and Firms With and Without Boards

	Small- denomination firms	Large- denomination firms	Difference in means (p-value)	Firms with boards	Firms without boards	Difference in means (p-value)
Size (log)	-1.02 (0.18)	-0.45 (0.13)	-0.57*** (0.01)	-0.44 (0.19)	-0.83 (0.13)	0.39* (0.10)
Fixed Assets Ratio	0.63 (0.02)	0.48 (0.02)	0.15*** (0.03)	0.63 (0.03)	0.53 (0.02)	0.09*** (0.01)
Number of Shares ('000)	1.65 (0.29)	0.56 (0.11)	1.10*** (0.00)	2.37 (0.46)	0.65 (0.09)	1.71*** (0.00)
Firm age in 1900 (found.)	15.6 (2.6)	23.8 (3.5)	-8.18* (0.06)	14.9 (3.3)	22.3 (2.6)	-7.36* (0.09)
Firm age in 1900 (incorp.)	10.5 (1.93)	12.8 (2.02)	-2.38 (0.40)	10.7 (2.52)	13.2 (1.68)	-2.51 (0.41)
Founder in management	0.23 (0.07)	0.20 (0.06)	0.03 (0.79)	0.14 (0.07)	0.22 (0.05)	0.09 (0.35)

This table presents the two-tailed t -Test of the difference in the means of five firms' characteristics with unequal variances between large-denomination firms (40 firms) and small-denomination firms (40 firms), and firms with boards (22 firms) and firms without boards (63 firms), respectively. The variables are defined in Appendix C.1. The standard errors are reported in parentheses for the group averages, p -Values are reported in parentheses for a two-sided t -Test of the difference in means (unequal variances).

Table 4: Ownership Structure

	All firms (mean)	Small denomination firms	Large denomination firms	Difference in means	<i>p</i> -Value	Firms with a board	Firms without a board	Difference in means	<i>p</i> -Value
Number of shareholders	187.3	306.4 (101.5)	38.9 (7.0)	267.6**	0.030	446.6 (158.4)	79.2 (19.3)	367.3*	0.081
Herfindahl index	0.097	0.105 (0.065)	0.089 (0.023)	0.017	0.816	0.054 (0.019)	0.115 (0.049)	-0.061	0.264
Ownership (equity percentage)									
average shareholder	1.79	0.88 (0.42)	3.13 (0.53)	-2.25***	0.006	0.37 (0.11)	2.38 (0.49)	-2.01***	0.002
median shareholder	1.08	0.58 (0.40)	1.86 (0.36)	-1.28**	0.031	0.15 (0.05)	1.47 (0.37)	-1.33***	0.004
smallest shareholder	0.28	0.11 (0.05)	0.55 (0.16)	-0.44**	0.037	0.04 (0.01)	0.39 (0.11)	-0.34**	0.011
largest shareholder	19.94	19.47 (7.84)	20.15 (4.71)	-0.68	0.942	16.66 (4.29)	21.31 (6.11)	-4.65	0.542
Monetary Value (NOK/'000)									
average shareholder	9.67	3.58 (0.88)	17.9 (2.97)	-14.3***	0.002	2.96 (1.16)	12.47 (2.61)	-9.51***	0.005
median shareholder	4.94	1.31 (0.34)	10.00 (1.04)	-8.68***	0.000	1.01 (0.33)	6.58 (1.36)	-5.57***	0.002
smallest shareholder	1.61	0.36 (0.04)	3.35 (0.82)	-2.99**	0.011	0.29 (0.07)	2.15 (0.63)	-1.86**	0.013
largest shareholder	198.8	223.4 (152.0)	161.5 (70.1)	61.9	0.719	142.2 (52.2)	222.4 (117.1)	-80.16	0.542

This table presents t-tests for the difference in means of a number of ownership-related variables, for a subsample of 17 firms whose shareholder lists are available. Of the 17 firms, seven firms are large-denomination firms, nine firms are small-denomination firms and one firm falls in the mid-denomination group. Five firms have a board: four small-denomination firms and the mid-denomination firm. Two sets of t-tests are performed one for the difference between the averages of small-denomination and large-denomination firms, and the other for the difference between the averages of firms with and without a board. The variables considered are the number of shareholders and the concentration of the firms' ownerships (Herfindahl index). t-tests are also performed for the difference in means of the percentage of equity owned and the NOK value invested by, in turn, the average shareholder, the median shareholder, the smallest shareholder and the largest shareholder. Standard errors are reported in parentheses for the group averages. Statistical significance is reported at the 15% (+), 10% (*), 5% (**), and 1% (***) levels.

Table 5: Ownership and Control

	All firms (mean)	Small denomination firms	Large denomination firms	Difference in means	<i>p</i> -Value	Firms with a board	Firms without a board	Difference in means	<i>p</i> -Value
Aggregate ownership (equity percentage)									
small shareholders (individual ownership <2.5%)	44.6	57.9 (9.6)	27.1 (7.0)	30.8**	0.021	64.5 (9.6)	36.3 (7.7)	28.2**	0.046
large shareholders (individual ownership ≥2.5%)	55.4	42.1 (9.6)	72.9 (7.0)	-30.8**	0.021	35.5 (9.6)	63.7 (7.7)	-28.2**	0.046
inside shareholders (managers)	15.1	7.7 (3.4)	26.4 (8.1)	-18.7*	0.064	8.5 (4.9)	17.9 (5.7)	-9.4	0.234
Number of outside shareholders needed									
to reach 20% of total votes	16.6	28.3 (14.1)	3.3 (0.3)	25.0 ⁺	0.114	45.2 (23.5)	4.7 (1.2)	40.5	0.159
to reach 50% of total votes	63.3	106.0 (48.2)	14.6 (1.7)	91.4*	0.095	170.6 (77.0)	18.6 (4.1)	152.0 ⁺	0.120

This table presents t-tests for the difference in means of a number of ownership-related variables, for a subsample of 17 firms whose shareholder lists are available. Of the 17 firms, seven firms are large-denomination firms, nine firms are small-denomination firms and one firm falls in the mid-denomination group. Five firms have a board: four small-denomination firms and the mid-denomination firm. Two sets of t-tests are performed one for the difference between the averages of small-denomination and large-denomination firms, and the other for the difference between the averages of firms with and without a board. The variables considered are the number of and the aggregate percentage equity owned by, in turn, all large (individual ownership ≥2.5%), all small (individual ownership < 2.5%) and all inside (managers) shareholders. t-tests are also performed for the difference in means of the smallest number of outside shareholders needed to reach 50% and 20% of the total available votes within the GM. Standard errors are reported in parentheses for the group averages. Statistical significance is reported at the 15% (⁺), 10% (*), 5% (**), and 1% (***) levels.

Table 6: **Authority Structures in Firms with and without a Board**

	Non-Large-Denomination Firms			
	Average in firms with a board	Average in firms without a board	Difference in means	<i>p</i> -Value
Authority of Managers over asset decisions	0.14 (0.10)	0.79 (0.23)	-0.65**	0.013
over dividend decision	0.10 (0.07)	0.08 (0.06)	0.01	0.892
Authority of GM over asset decisions	1.71 (0.29)	2.50 (0.23)	-0.79**	0.039
over dividend decision	0.05 (0.05)	0.75 (0.09)	-0.70***	0.000

This table presents the differences in the average number of decisions over assets and dividends assigned to management and the GM between non-large-denomination firms that have a board (21 firms) and non-large-denomination firms without a board (24 firms). The last column reports two-sided *t*-Tests with unequal variances of the difference between the sample means. The standard errors of the sample means are reported in parentheses. *p*-Values for the tests are reported in the last column. Statistical significance is reported at the 15% (+), 10% (*), 5% (**), and 1% (***) levels.

Table 7: Board Existence and Vote Capping

	(1)	(2)	(3)	(4)
Share Denomination ('000)	-0.39*** (0.00)	-0.38*** (0.00)	-0.39*** (0.00)	-0.40*** (0.00)
Vote Capping at 2.5%	0.14** (0.05)			
Vote Capping at 5%		0.10+ (0.13)		
Vote Capping at 7.5%			0.08 (0.30)	
Vote Capping at 10%				0.06 (0.50)
Controls	yes	yes	yes	yes
Constant	5.09** (0.02)	4.64** (0.02)	4.42** (0.03)	4.32** (0.04)
Obs.	85	85	85	85
<i>p</i> -Value	0.00	0.00	0.00	0.00
Pseudo R-squared	0.44	0.44	0.43	0.42

This table presents the results from logit regressions of the existence of a board on dummies for vote capping thresholds and firm characteristics (firm size (log), firm age in 1900 by founding year, and the industry average ratio of fixed to total assets). The estimates displayed are the average marginal effects. For share denomination, the reported marginal effect is the increase in the probability of a board's existence from a one standard deviation increase around its mean. For the vote capping dummies, the marginal effect is the change in the probability of a board's existence from a change in the value of the dummy from zero to one. The *p*-Values for the marginal effects, based on robust standard errors, are reported in parentheses. In addition, the table reports the *p*-Values from a test of joint significance of the explanatory variables and McFadden's pseudo R-squared. Statistical significance is reported at the 15% (+), 10% (*), 5% (**), and 1% (***) levels.

Table 8: Ownership and Voting Rights

	All firms (mean)	Small denomination firms	Large denomination firms	Difference in means	<i>p</i> -Value	Firms with a board	Firms without a board	Difference in means	<i>p</i> -Value
Aggregate votes (as percentage of total)									
small shareholders (individual ownership <2.5%)	56.2	70.9 (11.12)	34.3 (9.30)	36.6**	0.024	85.1 (7.34)	44.2 (9.26)	40.9***	0.004
large shareholders (individual ownership ≥2.5%)	43.8	29.1 (11.12)	65.7 (9.30)	-36.6**	0.024	14.9 (7.34)	55.8 (9.26)	-40.9***	0.004
inside shareholders (managers)	13.6	7.02 (3.71)	23.2 (7.25)	-16.2*	0.078	7.75 (5.66)	16.0 (5.10)	-8.28	0.301
Ratio between ownership and votes (O/V)									
smallest shareholder	0.56	0.49 (0.11)	0.66 (0.12)	-0.17	0.317	0.41 (0.11)	0.63 (0.96)	-0.22	0.153
median shareholder	0.80	0.75 (0.07)	0.89 (0.03)	-0.17*	0.057	0.65 (0.09)	0.87 (0.04)	-0.22*	0.074
largest shareholder	3.70	5.29 (2.11)	1.45 (0.09)	3.84 ⁺	0.107	8.50 (3.26)	1.70 (0.21)	6.80 ⁺	0.105

This table presents t-tests for the difference in means of a number of ownership-related variables, for a subsample of 17 firms whose shareholder lists are available. Of the 17 firms, seven firms are large-denomination firms, nine firms are small-denomination firms and one firm falls in the mid-denomination group. Five firms have a board: four small-denomination firms and the mid-denomination firm. Two sets of t-tests are performed one for the difference between the averages of small-denomination and large-denomination firms, and the other for the difference between the averages of firms with and without a board. The variables considered are the aggregate votes (as a percentage of total votes) held by, in turn, all large (individual ownership ≥2.5%), all small (individual ownership <2.5%) and all inside (managers) shareholders. t-tests are also performed for the difference in means of three O/V measures. The three O/V measures are defined as the ratio between the percentage of equity owned and the votes (as a percentage of total votes) held by, in turn, the smallest shareholder, the median shareholder and the largest shareholder. Standard errors are reported in parentheses for the group averages. Statistical significance is reported at the 15% (⁺), 10% (*), 5% (**), and 1% (***) levels.

Table 9: Board Duties and Allocation of Authority

	Boards with authority over asset decisions	Rest of boards	Difference in means (p-value)	Boards with authority over dividend decision only	Rest of boards	Difference in means (p-value)	Boards in firms where management has authority	Rest of boards	Difference in means (p-value)
Information-related duties	2.27 (0.30)	1.18 (0.23)	1.09*** (0.01)	1.29 (0.29)	1.93 (0.28)	-0.65+ (0.13)	1.00 (0.58)	1.84 (0.23)	-0.84 (0.28)
Advice-related duties	1.82 (0.38)	1.45 (0.37)	0.36 (0.50)	1.43 (0.48)	1.73 (0.32)	-0.30 (0.61)	3.00 (0.00)	1.42 (0.27)	1.58*** (0.00)
Career-related duties	1.72 (0.14)	1.27 (0.24)	0.45+ (0.12)	1.42 (0.30)	1.53 (0.17)	-0.10 (0.76)	1.33 (0.33)	1.52 (0.16)	-0.19 (0.64)

This table presents the two-tailed t -Test of the difference in the means of five firms' characteristics with unequal variances between large-denomination firms (40 firms) and small-denomination firms (40 firms), and firms with boards (22 firms) and firms without boards (63 firms), respectively. The variables are defined in Appendix C.1. The standard errors are reported in parentheses for the group averages, p -Values are reported in parentheses for a two-sided t -Test of the difference in means (unequal variances). 11 firms with asset authority, 7 with only div authority, 3 where management has authority.

Table 10: Other Board Characteristics and Allocation of Authority

	Boards with authority over asset decisions	Rest of boards	Difference in means (p-value)	Boards with authority over dividend decision only	Rest of boards	Difference in means (p-value)	Boards in firms where management has authority	Rest of boards	Difference in means (p-value)
Meeting frequency (annually)	2.82 (0.48)	1.45 (0.47)	1.36* (0.06)	1.71 (0.68)	2.33 (0.43)	-0.62 (0.46)	2.67 (0.67)	2.05 (0.41)	0.61 (0.48)
Board size	13.1 (1.26)	11.6 (0.93)	1.45 (0.36)	12.1 (0.89)	12.4 (1.08)	-0.11 (0.94)	17.0 (3.60)	11.6 (0.61)	5.37 (0.27)
Vote capping at or below 2.5%	0.55 (0.16)	0.27 (0.14)	0.27 (0.21)	0.19 (0.18)	0.47 (0.13)	-0.18 (0.44)	0.00 (0.00)	0.47 (0.12)	-0.47*** (0.00)

This table presents the two-tailed t -Test of the difference in the means of five firms' characteristics with unequal variances between large-denomination firms (40 firms) and small-denomination firms (40 firms), and firms with boards (22 firms) and firms without boards (63 firms), respectively. The variables are defined in Appendix C.1. The standard errors are reported in parentheses for the group averages, p -Values are reported in parentheses for a two-sided t -Test of the difference in means (unequal variances).

11 firms with asset authority, 7 with only div authority, 3 where management has authority. Meeting freq. Set equal to zero if nothing specified

Table 11: Determinants of Formal Delegation of Authority to Management

	(1)	(2)	(3)	(4)	(5)	(6)
	Change in the probability that management holds authority over at least one asset decision			Change in the probability that management holds authority over dividend decision		
Share Denomination ('000)	-0.19** (0.04)		-0.19** (0.02)		-0.04* (0.10)	
Small-Denomination Dummy		0.22*** (0.03)		0.22** (0.04)		-0.01 (0.94)
Named Person	0.19* (0.06)	0.22** (0.04)				
Founder in management			0.12 (0.24)	0.15 (0.17)	-0.06 (0.56)	-0.08 (0.47)
Size (log)	0.04 (0.40)	0.06 (0.36)	0.04 (0.42)	0.03 (0.48)	0.00 (0.89)	0.01 (0.65)
Firm age in 1900	-0.00 (0.97)	-0.01 (0.81)	-0.00 (0.96)	-0.02 (0.67)	-0.02 (0.61)	-0.01 (0.72)
Fixed Assets Ratio	-0.07 (0.17)	-0.06 (0.23)	-0.07 (0.16)	-0.08+ (0.11)	-0.02 (0.61)	-0.00 (0.65)
Obs.	85	85	85	85	85	85
<i>p</i> -Value	0.07	0.11	0.26	0.29	0.72	0.95
Pseudo R-squared	0.08	0.07	0.07	0.06	0.04	0.01

This table presents the average marginal effects of firm characteristics on the probability that no asset decision (columns (1) to (4)) or dividend decision (columns (5) and (6)) is delegated to management. Marginal effects are estimated from ordered logit regressions of asset and dividend authority delegation indices on firm characteristics: share denomination, a small-denomination dummy, a dummy that takes a value of one if the statutes appoint a named person to the management board, a dummy that takes a value of one if the founder is on the management board, firm size (log), firm age in 1900 by founding year, and the industry average ratio of fixed to total assets. Threshold constants are not displayed in the table. For share denomination, size (log), firm age in 1900, and the fixed assets ratio, the reported marginal effect is the increase in the probability of board existence from a one standard deviation increase around the respective means. For the small-denomination dummy, founder in management, and named person, the marginal effect is the change in the probability from a change in the value of the dummy from zero to one. The *p*-Values for the marginal effects, based on robust standard errors, are reported in parentheses. In addition, the table reports the *p*-Values from a test of joint significance of the explanatory variables and McFadden's pseudo R-squared values. Statistical significance is reported at the 15% (+), 10% (*), 5% (**), and 1% (***) levels.

Table 12: **Determinants of Board Existence: Founders in Management**

	(1)	(2)
Share Denomination ('000)	-0.42*** (0.00)	
Small-Denomination Dummy		-0.33*** (0.00)
Founder in management	-0.21*** (0.00)	-0.18*** (0.03)
Controls	yes	yes
Constant	6.89** (0.02)	3.60** (0.00)
Obs.	85	85
<i>p</i> -Value	0.00	0.00
Pseudo R-squared	0.47	0.30

This table presents the results from logit regressions of the existence of a board on firm characteristics: share denomination, a dummy for small-denomination firms, a dummy for when the founder of the firm is in management, firm size (log), firm age in 1900 by founding year, and the industry average ratio of fixed to total assets. The estimates displayed are the average marginal effects. For share denomination, the reported marginal effect is the increase in the probability of board existence from a one standard deviation increase around its mean. For the founder in management, the marginal effect is the change in the probability from a change in the value of the dummy from zero to one. The *p*-Values for the marginal effects, based on robust standard errors, are reported in parentheses. In addition, the table reports the *p*-Values from a test of joint significance of the explanatory variables and McFadden's pseudo R-squared values. Statistical significance is reported at the 15% (+), 10% (*), 5% (**), and 1% (***) levels.

Appendix A Legal and institutional background

Around 1900, Norwegian stock markets flourished and dispersed corporate ownership had emerged in a fashion similar to that of many other industrialized nations (Kili (1996)). But already from the turn of the 19th century, Norwegian law enabled the free establishment of joint stock companies as a legal person without the need for a government concession, and from the 1840s joint stock companies began emerging in large numbers.²⁵ However, public unfamiliarity with the new company form and episodes of outright swindle, generated a need for protecting third parties and for clarification the conditions under which limited liability firms could be set up (Langeland (2005)).

In 1874 the first business registration law (“Law of Company Registry”) was enacted. It laid down the fundamental principle that if a company failed to inform the public about its legal form, all of its members would be personally liable against third parties. The law was replaced with a more extensive law in 1890 (“Law of Trade Registry, Firms, and Procura”). The 1890 law required a company to report to an official registry its founding date, a brief description of its line of business, the location of its headquarter, the founders’ full names and addresses, the amount of paid-in equity, how the capital was divided among the owners, whether shares were registered or bearer shares, and whether the shares were fully paid in. The company had to further register the names of individuals able to contract with third parties on its behalf, whether the firm were to make periodic disclosures to the public, and, if so, in which periodicals. Finally, the company’s articles of association had to be attached to the registration along with proof of identification of the founding managers (Beichmann (1890)). The registrations had to be published in a timely fashion in a new official periodical, “Norwegian Journal of Announcements”.

Norwegian authorities and legal scholars were well aware of the legal developments in other European countries and especially UK and German corporate legislations were intensively debated. There was, however, considerable resistance to a more comprehensive regulation of the joint stock company. Especially from businesses and the shipping industry which feared

²⁵As a result of war, Norway was in a union with Sweden from 1814 to 1904, but during this time the Norwegian parliament enacted its own legislation. Thus, the Swedish corporate law of 1895 did not apply to Norway.

restrictions on their livelihoods. A commission was deployed in 1881 to produce a proposal for a corporate law, but it would take another 30 years before a law was finally enacted in 1910 (Villars-Dahl (1984)).

The principle of contractual freedom was strongly asserted in Norway, and the evidence suggests that the articles of associations adopted by Norwegian joint stock companies were enforced by the courts. The principle that private contracts are a legal bond had been an integral part of Norwegian law already for two centuries.²⁶ Furthermore, contemporary rulings from the city court of Oslo suggest that the court interpreted companies' statutes to the letter.²⁷ For example, a ruling from Oslo Town Court 1888 concerns a conflict between shareholders over an individual's transfer of a share to his son as a gift. While the company's statutes assigned a first right of purchase to the other shareholders, the court rejected the latter's complaint with reference to the fact that the statutes only referred to the *sale* of shares.²⁸

Appendix B Excerpts from statutes

Example of management group duties (board of directors):

La Compania de Maderas, importer of processed wood from Spain (§10): The board of directors hires and fires the superintendents in the Spanish branches and other required clerks, determines their salaries and assigns the necessary powers of attorney. The board itself carries out purchases and sales of timber and what is otherwise required for the operations of the firm, carries out in all instances the interests of the company in accordance with its laws'. The four types of operational decisions commonly allocated to the management group are the pricing of products, purchases of materials (inventory management), contracting with third parties, and short-term borrowing (working capital).

Examples of board duties (board of representatives):

²⁶The law stated that "anyone is bound to fulfill" contracts "promised and agreed to" by "mouth, hand and seal". This code applied to all "voluntary" contracts whether regarding "purchases, sales, gifts, exchange of property, liens, loans, rents, obligations, promises, and other that can be mentioned by name, which does not go against the law or decency", and dates back to the Law of King Christian the 5th from 1687. It is still part of today's Norwegian Law.

²⁷A search through all rulings by the Oslo city court in the period 1867-1905 revealed three rulings with direct reference to the company's articles of association. We have not found any cases heard by the court that concerned a firm included in our data set.

²⁸Oslo Byret: Ruling 1429 of 20. August 1888, case no. 476/87.

Christiana Joint Stock Beer Brewery (§20): It is the responsibility of the board or representatives to a) elect directors and determine their salary, cf. §11, b) approbate the board of directors election of the officers mentioned in §16 and, together with the board of directors, determine their salary, c) make a decision in questionable cases presented [to it] by the board of directors, d) quarterly inform itself of the exact operation and situation of the brewery, e) several times a year and at random times and without warning, conduct examinations of the books and cash holdings, f) together with the board of directors, make decisions regarding acquisitions of land, building plans and builder, acquisitions of fixed assets, and the brewery's assumption of collateralized debt, g) hire an auditor of the brewery's books and accounts and decide his salary, to accredit the accounts, i) annually present the GM with a complete summary of the brewery's business, and k) together with the board of directors, decide how much of the year's surplus should be paid out as dividend.

Christiana Swine Slaughterhouse (§11): The board of representatives must make a decision in cases presented to it by the board of directors, make a decision about the distribution of the year's surplus, make a decision to convene ordinary and extraordinary GMs, the latter also when requested by the board of directors or by shareholders representing a fifth of the equity capital, make a decision about any disposition that involves the use of the company's reserve fund, arrange for auditing of the company's accounts by a paid auditor whom it hires to accredit vulnerable [sensitive] items.

Christiana News and Advertisement Periodical (§6): The board of representatives makes a decision on the use of surplus from operations. Its opinion should be obtained by the board of directors in important cases.

Appendix C Variables and descriptive statistics

C.1 List of variables

The variables collected from the company statutes and financial accounts are constructed as described below. Unless otherwise indicated, the sources are various editions of Kierulf's Handbook and historical archives. Table A1 reports the descriptive statistics for the variables.

Asset Authority Index: Index that counts the number of asset decisions over which a given corporate body (GM, management, or the board) holds sole authority. Asset decisions include (1) purchases/sales of company assets, (2) borrowing secured by company assets or real estate, (3) equity issuance, and (4) liquidation. The index attains values from zero to four.

Board Dummy: Dummy variable taking the value of one if a firm's statutes stipulate that a board must be established.

Board Advice Index: Index that counts the number of the following advice-related tasks imposed on the board by a firm's statutes: (1) The board must decide on issues brought to it by the managers, (2) managers participate in board meetings, and (3) managers vote in board meetings except on matters that concern the actions or decisions of the management group.

Board Career Index: Index that measures whether the board has control over managers' careers. A value of one is added to the index for each of the following rules stipulated by a firm's statute: (1) the board appoints the managers of the firm and (2) the board determines managers' salaries.

Board Information Index: Index that counts the number of the following information-related tasks imposed on the board by a firm's statute: (1) The board must approve the firm's annual financial statements, (2) managers must prepare and present to the board a periodical (typically annual) report on the firm's situation, and (3) board members are required to make unannounced inspections of the company's books and cash balance.

Dividend Authority: Dummy variable taking the value of one if a given corporate body (GM, management, or the board) holds sole authority over the decision to pay dividends.

Family Firm: Dummy variable taking the value of one if one or more persons from the second, or later generation of the founder's family is in the management group. (Source: Internet searches).

Firm Age in 1900 (found.): The firm's age in 1900 measured relative to the year the firm was founded.

Firm Age in 1900 (incorp.): The firm's age in 1900 measured relative to the year the firm was incorporated.

Firm size: The nominal value of paid-in equity (in millions of NOK) as applied in the year the firm's statutes were adopted.

Fixed Assets Ratio: The industry-averaged ratio of a firm's tangible assets to total assets. The variable is measured on an industry basis because we only have accounting data allowing the construction of this ratio for 44 firms. In addition, tangible assets and total assets are not available in every year of Kierulf's Handbook, so the average is taken over the period 1876-1920 to employ all the available information. We would prefer to compute the ratio using data from the pre-law period 1896-1910, but in this case the fixed asset ratio cannot be computed for two industries due to lack of data. We therefore employ accounting data up to 1920, which allows us to include these two industries. If the cross-sectional distribution of fixed asset ratios does not change much over time, this should not cause any systematic error in the regressions.

Founder in Management: Dummy variable taking the value of one if the firm's founder is in the management group.

GM or Board Appoints Auditor: Dummy variable taking the value of one if a firm's statute gives authority over the appointment of an auditor to the GM or the board.

Large-Denomination Dummy: Dummy variable taking the value of one if the share denomination is larger or equal to 1,000 NOK.

Mgmt. Must Keep Minutes: Dummy variable taking the value of one if a firm's statute stipulates that the management group must keep a written protocol of their meetings.

Named Person: Dummy variable taking the value of one if the firm's statute grants a specific person a seat in the management group.

Number of Shares: The number of shares constructed as the value of paid-in equity divided by the nominal value of the firm's shares (in 1,000 NOK).

Share Denomination: The nominal value of a firm's common share (in 1,000 NOK).

Small-Denomination Dummy: Dummy variable taking the value of one if the share denomination is smaller than or equal to 500 NOK.

Vote Capping at $\alpha\%$ Dummy: Dummy variable taking the value of one if a firm's statute caps the votes that can be exercised by a single shareholder at or below a threshold level

corresponding to $\alpha\%$ of paid-in equity. That is, when a shareholder has acquired a stake of $\alpha\%$, the shareholder's votes are exhausted.

C.2 Descriptive statistics

In Table A1 we present the descriptive statistics for the variables used in the empirical analysis. The table documents how our sample exhibits a large degree of variation, despite comprising only 85 observations.

Table A2 contains a breakdown of the 85 sample firms by industry. We categorize firms into 12 different industries based on the NACE classification system. Producers of consumer goods encompass a wide variety of firms, including breweries (mostly beer), corn mills, textile mills, and manufacturers of products as diverse as shoes, tobacco, furniture, locks, matches, sailcloth, and crackers. Industrials encompasses ironworks and shipbuilders, firms involved in commercial maritime transportation, and producers of marble, nails, horseshoe nails, and rifles. Consumer services include steamship companies, hotels, and rail transportation companies in travel and leisure, printing companies, and a steam-operated cafeteria. Basic resources mostly comprises forestry and sawmills, and chemicals is dominated by firms converting wood products to paper, including companies using sulphite-based technologies for converting cellulose to paper pulp, as well as a nitroglycerin producer. The telecommunications industry consists of one manufacturer of telephone equipment and two telephone exchanges and utilities are producers of hydroelectricity. Firms in the real estate sector are akin to today's real estate investment trusts, earning revenue through the rents generated from land and building holdings.

Figure 9 plots the industry composition of according to ownership structure. Large-denomination firms are overrepresented in the chemical industry and underrepresented in transportation, shipbuilding, and telecommunications, but otherwise firms from both groups are found in all industries.

Table A1: Summary Statistics

	Obs.	Mean	Median	Std Dev.	Min	Max
Share denomination (NOK)	85	1,393	750	1,747	100	10,000
Number of shares	85	1,079	583	1,434	27	10,000
Firm size ('000,000 NOK)	85	0.741	0.583	0.784	0.008	6.00
Firm size ('000,000 USD)	85	0.198	0.156	0.100	0.002	1.60
Fixed assets ratio	85	0.56	0.53	0.16	0.22	0.85
Firm age in 1900 (establ.)	85	20.4	12	19.5	1	85
Firm age in 1900 (incorp.)	85	12.6	8	13.0	-5	49
GM or board appoints auditor (dummy)	85	0.91	1	0.29	0	1
Mgmt. must keep minutes	85	0.68	1	0.47	0	1
Founder in management (dummy)	85	0.20	0	0.40	0	1
Named person (dummy)	85	0.09	0	0.29	0	1
Family firm (dummy)	22	0.07	0	0.26	0	1
Managers must be shareholders (dummy)	85	0.82	1	0.38	0	1
Vote capping at 2.5% (dummy)	85	0.15	0	0.36	0	1
Vote capping at 5% (dummy)	85	0.34	0	0.48	0	1
Vote capping at 7.5% (dummy)	85	0.44	0	0.50	0	1
Vote capping at 10% (dummy)	85	0.59	1	0.50	0	1
Asset authority index						
GM	85	2.32	2	1.24	0	4
Board	22	0.77	0.5	0.87	0	2
Management	85	0.40	0	0.83	0	3
Dividend authority						
GM	85	0.59	1	0.50	0	1
Board	22	0.73	1	0.46	0	1
Management	85	0.11	0	0.31	0	1
Board dummy	85	0.26	0	0.44	0	1
Board advice index	22	1.72	2	1.03	0	3
Board career index	22	1.64	1.5	1.22	0	3
Board information index	22	1.50	2	0.67	0	2

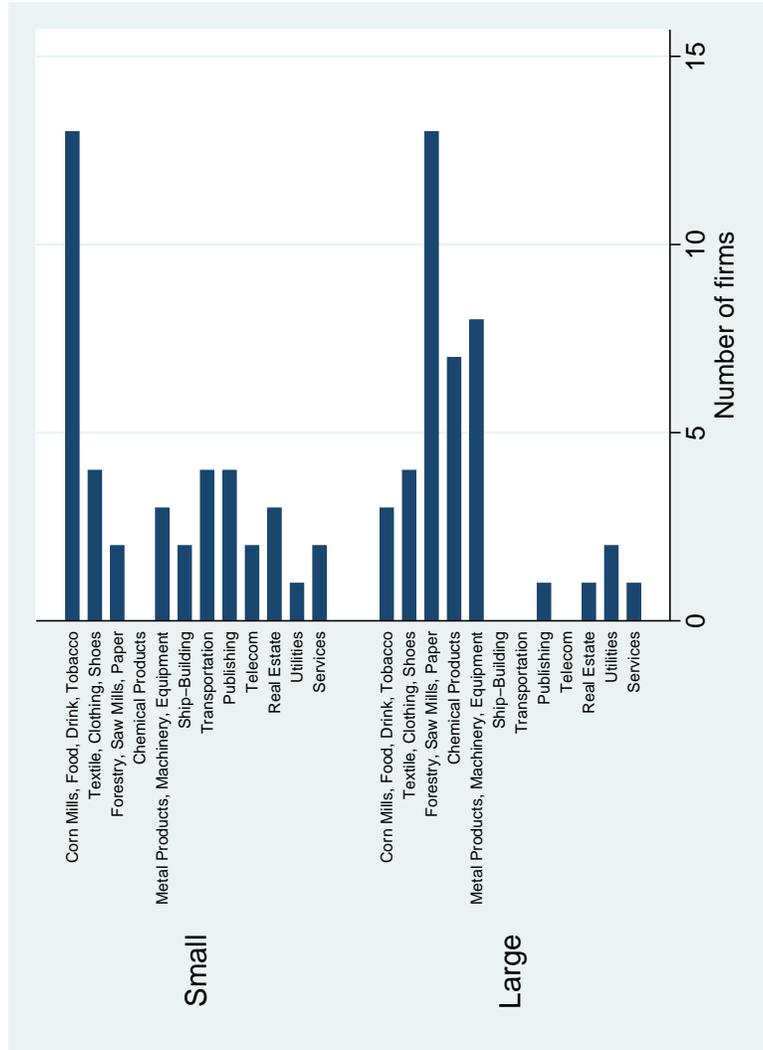
This table presents summary statistics for the variables defined in Section C.1. Firm size in 1900 Norwegian kroner (NOK) is translated into 1900 US dollars using an average 1900 exchange rate of 3.74 NOK per US dollar, obtained from Norges Banks historical monetary statistics (www.norges-bank.no). For comparison, Hilt (2008, Table 2) reports that, for 1826/27, the New York-based manufacturing companies in his sample have an average level of paid-in equity of 57,405 USD.

Table A2: **Distribution of Sample Firms by Industry**

	Number	Percent
Corn mills, food, drink, tobacco	18	21.2%
Forestry, saw mills, paper	17	20.0%
Metal products, machinery, equip.	10	11.8%
Textile, clothing, shoes	7	8.2%
Chemical products	7	8.2%
Publishing	5	5.9%
Transportation	4	4.7%
Real estate	4	4.7%
Services	4	4.7%
Ship-building	3	3.5%
Telecom	3	3.5%
Utilities	3	3.5%
Total	85	100.0%

This table presents the industry composition of the sample firms. Industries are classified according to the NACE industry classification system.

Figure 9: Industry Composition by Share Denomination



This figure shows the industry composition according to the NACE-industry classification code for the 40 small- (top) and 40 large-denomination (bottom) firms.