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

Finance Working Paper N° 504/2017
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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 authority over corporate decisions can be freely allocated across the general meeting, the board, and management. We find that large owners and boards are substitutes and that boards exist in firms most prone to collective action problems. Boards monitor, advise, and mediate among shareholders, and these different roles entail different allocations of authority. Boards also arise to balance the need for small shareholder protection with the need to curb managerial discretion.

Keywords: Boards, corporate governance, authority allocation, private contracting

JEL Classifications: G3, D23, K2, N80

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We study how owners trade off the costs and benefits of establishing a board in a historical setting, where boards are optional and authority over corporate decisions can be freely allocated across the general meeting, the board, and management. We find that large owners and boards are substitutes and that boards exist in firms most prone to collective action problems. Boards monitor, advise, and mediate among shareholders, and these different roles entail different allocations of authority. Boards also arise to balance the need for small shareholder protection with the need to curb managerial discretion.

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Boards of directors are central to the governance of public corporations, wielding influence over corporate affairs through the powers vested in them by statutory law. The board is commonly described as a monitor of management on behalf of dispersed shareholders, but fundamental aspects of exactly how and when it adds value are still open questions (Adams, Hermalin, and Weisbach (2010)).

While a board helps to solve managerial agency problems, it also entails costs by introducing 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. The trade-offs between costs and benefits are, however, obscured because the statutory law in any jurisdiction not only mandates the board but also prescribes its powers and duties.

This paper addresses when and how boards add value for owners by studying a setting where they are not required by law and public corporations can therefore operate without a board. Our data cover 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.

Furthermore, owners had the contractual freedom to write the provisions included in the company's articles of association (statutes). That is, owners could decide at will which decision rights to give to the board (if instituted), to management, and to the general meeting (GM) over, for example, the firm's dividend policy or any other major decision. This unconstrained allocation of control allows us not only to study when boards are set up, but also to draw inferences about the economic roles boards perform, since different roles demand different powers of control.[1]

When a corporate body controls a decision, it holds formal authority over it, including the right to ratify it. The allocation of formal authority is a key aspect of governance design.[2] For

[1]This unique historical setting is described by Ostergaard and Smith (2011). The principle that private contracts are a legal bond became Norwegian law in 1687. Rulings by the City Court of Oslo from the 1880s demonstrate that company statutes were enforced.

[2]As 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.

example, when a decision must be ratified in a GM, shareholders can prevent management from pursuing initiatives that are against their interests. This helps control managerial agency problems. However, information or collective action problems can prevent shareholders from meaningfully evaluating decisions pertaining to particular aspects of the business. In this case, the shareholders may prefer to establish a board and give it the formal authority over certain decisions, but installing a board begets an additional agency problem. A third option is to give the authority to management, endowing it with discretion over that part of the firm's operations. Delegation to management is costly when preferences are incongruent but may nonetheless be preferable when managers are better informed than the board and (risk-averse) shareholders face high uncertainty over the outcome of their choices.[3] Overall, therefore, when considering whether to set up a board, shareholders in our firms trade off the costs and benefits of alternative distributions of formal authority across two layers of agency.

Firms in our setting can choose or dispense with a board and also determine its functions and authority free from legal constraints which is in sharp contrast to modern legal regimes. It is this unique feature that allows us to draw inferences about boards as an optimal governance choice. Consider, for instance, a firm that sets up a board and assigns authority to it. The additional agency costs of having a board must be smaller than the cost of leaving authority with the shareholders and, furthermore, also smaller than the cost of giving management more discretion. Otherwise, the owners, being unconstrained in their governance choices, would have allocated authority to either the GM or to management. Thus, by observing under what circumstances boards arise and which powers they are given, we can infer when boards add value and what function(s) they serve.

These conceptual considerations suggest several testable predictions: First, we expect shareholders to retain authority over a larger number of strategic corporate decisions when their informational disadvantage relative to management is small. That is, the GM should hold more decision power in firms with large, active owners who possess the incentives to keep themselves informed about the firm's business and its performance. Conversely, when owners are small and collective action problems exist, the cost of retaining control with the GM is

[3] Dessein (2002) shows that when the agent's information is superior and the principal faces high uncertainty, the delegation of formal authority to the agent can be optimal.

high. In such firms, shareholders are more likely to delegate some important decisions to either a board or to management. Second, firms plagued by collective action problems should be more likely to establish a board, since, by virtue of being a smaller body than the GM, its decision making is less costly. Third, we expect more authority to be transferred to the board, rather than management, in firms where managerial agency costs are high, indicating that the cost of managerial discretion exceeds the costs of having a board. Alternatively, if boards are set up for reasons other than to monitor management, they should not be given authority, so as to incentivize communication with better-informed managers (Adams and Ferreira (2007)). Finally, delegation of authority to management should be more prevalent when collective action problems exist and the managers have a strong informational advantage. Such situations can occur when, for example, the nature of the production technology renders the benefit of managerial expertise especially valuable.

In our empirical analysis, we consider the authority allocation of five major corporate decisions of a strategic nature that feature prominently in the statutes: the purchase or sale of company assets, secured borrowing, equity issuance, liquidation, and dividend payments.[4] Firms display considerable heterogeneity in their allocation of authority. Overall, the GM is the most powerful governance body. It possesses sole authority over 58% of the five decisions, but 47% of firms delegate authority over one or more decisions to the board or management; hence delegation is also prevalent.

We estimate equilibrium relations between authority allocation and firm characteristics and run firm-level regressions of indices of corporate bodies' authority on a proxy for collective action problems among shareholders. Because our data contain only sporadic shareholder lists, we have to make inference about ownership structures as most of them are not directly observable. We argue that small(er) owners are more likely to be found in firms that issue shares of low nominal value, so-called small-denomination firms, and, conversely, that large informed (active) owners are more likely to be found in large-denomination firms.[5]

The results suggest that collective action problems among owners are a first-order determinant of shareholders' decisions to delegate authority. Small-denomination firms are 18% more

[4]Since authority to amend the statutes is always assigned to the GM, we omit it from our analysis.

[5]This argument relies on observations that small-denomination firms are more likely to have many shareholders and to deter the formation of block ownership through voting caps (see Section 4.1).

likely to delegate some authority compared to other firms, whereas large-denomination firms are 16% less likely to do so. We therefore observe more delegation in firms where the cost of retaining authority with the GM is relatively high. We then investigate the role of boards. Almost 26% of firms set up a board, and small-denomination firms are 33% more likely to have a board than other firms. On average, firms with boards are larger in size and have a larger number of shares outstanding. Thus boards seem to arise when the shareholder base is large and more likely to include small investors, that is, when the potential for collective action problems is high. Large-denomination firms virtually never set up a board, suggesting that boards and active owners are substitutes.

Furthermore, the existence of a board affects the balance of power in a corporation. Firms with a board give management and the GM significantly less authority compared to firms without a board. The decision most frequently controlled by the board is the dividend decision, which it holds in 73% of firms with a board. Half of the firms with a board also give it authority over one or more of the four other decisions and explicitly require it to collect information through, for example, inspections of the company's cash balance and books. This suggests that boards are given authority to monitor management and are asked to become informed to be able to act and decide independently.

Moreover, we show that boards perform multiple roles and that different roles are associated with different powers. Boards that hold authority over dividends only are not required to collect information. We conjecture that the main role of boards in these cases is to mediate between shareholders (with diverging preferences over dividends). In addition, we find that, in firms where managers have authority, board duties are more related to advice. Thus, we uncover three roles of boards: monitoring, advising, and mediating among shareholders. We also observe that boards complement voting caps intended to curtail the influence of large shareholders. While such restrictions protect minority shareholders, they also reduce the incentives for blockholders to emerge and therefore enlarge the scope for managerial discretion. Firms that cap votes at 5% or less are up to 15% more likely to set up a board. Thus, we document that boards can also arise to "obtain the right balance between managerial discretion and small shareholder protection" (Becht, Bolton, and Roell (2003)).

Finally, we find that the presence of founders in management affects the choice between

authority delegation to the board versus the management. Firms where the founder is involved are approximately 20% more likely to give management discretion over one or more decisions and less likely to set up a board. We also find that, when managers' and owners' preferences are aligned, costly contracting is sometimes avoided by leaving authority over decisions unassigned.

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.

1 Relation to the literature

A central question in the literature on boards is what boards actually do. As Adams et al. (2010) point out, whether boards play a role cannot be directly tested, since all corporations are mandated to have boards. In our setting, boards arise endogenously and not all firms set up a board.[6] We provide empirical support for the common perception that boards monitor managers in the presence of collective action problems (e.g. Becht et al. (2003); Hansmann and Kraakman (2004)). As we document, boards endowed with authority over assets are also required to become informed about the firm. The literature contains little direct evidence of how boards use information to monitor. A notable exception is the work of Cornelli, Kominek, and Ljungqvist (2013), who document that boards rely especially on soft information in their evaluation of management.[7]

The literature on "friendly boards" emphasizes that boards can also advise management (e.g. Adams and Ferreira (2007); Harris and Raviv (2008); Schmidt (2015)). This multiplicity of boards' roles resonates well with our results. In essence, the advisory role requires that the board commits to not overrule the chief executive officer (CEO) in order to elicit private information from the CEO in a strategic communication game (Crawford and Sobel (1982)). In

[6] In a setting where firms can choose between one- and two-tier boards, Belot, Ginglinger, Slovin, and Sushka (2014) show that the chosen board structure is related to the characteristics of the agency problems. Similar to us, they emphasize that different firms choose different board structures when they have the freedom to do so.

[7] Duchin, Matsusaka, and Ozbas (2010) provide indirect evidence that boards rely on information to monitor. They show that outside directors are better monitors when information is less costly to acquire.

our setting, this can be achieved by not giving the board authority over a decision or, even more strongly, by giving management authority over that decision. By contrast, boards nowadays usually cannot relinquish powers assigned to them by law.[8] The selection of management-friendly directors, who are unlikely to use their authority to overrule managerial decisions therefore leaving *real* authority with the CEO, is interpreted as a means of circumventing this restriction. This could be one of the reasons why the governance literature is focused on the composition of boards and underemphasizes the study of authority allocation to boards.

The mediator role, which is common among the boards in our sample, is not systematically investigated in the literature, though proposed by Bennedsen (2002) and Gevurtz (2004).[9]

Our paper is also related to the 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 agent's and principal's preferences are not fully aligned, delegation entails a loss of control but retaining authority with the principal also comes at a cost, since it could hinder informative communication (Dessein (2002)) or undermine the agent's initiative (Aghion and Tirole (1997); Burkart, Gromb, and Panunzi (1997)). Our findings support the notion that authority is allocated to the best-informed party and we show that information acquisition channels are established when a body with authority is not endowed with superior information.

While theory has succeeded in identifying both the costs and benefits of delegation, it rarely provides clear-cut recommendations as to optimal allocation across corporate bodies. Cornelli et al. (2013) document the potential ramifications of inefficient allocations of authority. They show that a legal reform that shifts the authority to fire the CEO from the GM to the board increases the correlation between CEO turnover and firm performance. Our results and the careful recording of authority allocation in the statutes also demonstrate that authority allocation has important implications for efficiency (e.g., Harris and Raviv (2005)).[10]

[8] Delaware statutory law limits shareholders' power to introduce changes in a firm's bylaws, when such changes interfere with the statutory authority of the board. "Specifically, the [Delaware Supreme] Court concluded that the board's statutory authority to manage the corporation operated as a constraint on shareholder power" (Fisch (2017)).

[9] A fourth role of boards, assessing CEO ability, has been extensively investigated by, for example, Hirshleifer and Thakor (1994) and Hermalin and Weisbach (1998). While many of the boards in our sample are engaged in the election of managers, we do not find any systematic relation between the boards' authority and this role.

[10] A recent study by Wagner and Wenk (2017) uncovers a negative stock market reaction to a Swiss reform that gives shareholders a binding say on directors' pay.

Finally, our paper is related to works in the law and finance tradition which use historical data from similar time periods (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 the practice of "good" corporate governance (La Porta, de Silanes, Shleifer, and Vishny (1998)). While the statutes in our sample also contain provisions that protect minority shareholders, our paper's focus is on the allocation of authority and the board's existence and role in the organization of the corporation.[11]

2 Data and description of statutes

2.1 Data collection

Our historical data were 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 town 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 were collected from individual company records to the extent they have survived. 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.

For reasons of compatibility, we construct a sample entirely of industrial firms. The shares of these companies were traded on the curb in Oslo by multiple brokers and the brokers' association published biweekly price lists for the most liquid shares.[12]

Overall, our sample comprises company statutes for 85 industrial corporations and firm-

[11] Studying shareholder rights in a time period comparable to ours, Guinnane, Harris, and Lamoreaux (2017) find that the provisions in the articles of association of UK firms tilts the balance of power in favour of directors. This tendency is uniform among both private and public firms, and hence it seems that the UK firms in their sample do not display the heterogeneity in governance that characterizes our sample firms.

[12] This list was known as the *Mæglernes Fællesforening* price list. The Oslo Stock Exchange listed shares of bank, insurance, and railway companies but did not list industrial shares until 1909. Kili (1996) reports that the class of new industrialists did not associate with the older class of merchants that controlled the Oslo Stock Exchange.

level financial data covering the period 1886-1920. For all but three firms, the company statutes are those in effect in 1900 (one firm was incorporated in 1905 and, for two other firms, the oldest statutes available to us are from 1907 and 1908, respectively, and we use those in lieu of the 1900 statutes). Firms periodically changed their statutes, especially in association with new equity issues, stock splits, and stock dividends. The frequency with which firms changed their statutes varies considerably, but two-thirds of our statutes were adopted between 1895 and 1900.

We map firms' statutes into a codable set of categorical and numeric governance variables, which we describe in the subsection below. Appendix A lists these variables and provides descriptive statistics on their cross-sectional distributions.

2.2 Statutes' outline

The statutes start by naming the firm, defining it as a limited liability company, and stating the value of paid-in equity and the nominal share value. Typically, they also outline rules for transferring shares and issuing new ones.[13] Thereafter, the rules of governance follow in a numbered list of paragraphs laying down the firm's 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 to be set up, the election of board members, and the board's size and duties. Often stated are also which body determines managers' salaries and possibly bonuses 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 or 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 and

[13]The shares of all firms are alienable but four firms grant shareholders the first right of purchase.

voting at the meeting and restrictions on voting rights if they exist. The voting procedures are also detailed. The required majority for the five major decisions we study is usually a simple majority, except in the case of liquidation, where a qualified majority tends to be the rule. Typically a quorum rule 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 apply. Shareholders can also vote to change the statutes with a qualified majority.

While the statutes are quite homogeneous in overall structure, there is ample heterogeneity in the details of 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 above-mentioned rules 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 a management group, called the board of directors, and an (annual) GM of shareholders. In addition, 26% of firms have an intermediary board called the board of representatives. 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. Large shareholders' voting powers are restricted in the majority of our firms by the imposition of voting caps that limit the total number of votes which can be exercised by a single owner and, furthermore, through graduated voting schemes where the exercisable votes increase less than proportionally with the number of shares.[14] Such restrictions on voting rights were common in many countries but seem to have been maintained by Norwegian corporations at a time when firms in many other countries had adopted one share one vote structure.[15]

[14]For example, *A*kers Mechanical Workshop, a shipbuilder and iron works, implement 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.

[15]Restrictions on voting rights have been documented by, for example, Dunlavy (2004), Hilt (2008) and Musacchio (2008). Hannah (2007) reports that one share one vote was the standard in industrial firms in both Europe and the United States around 1900. Vote capping was prohibited in German open corporations in 1998, but persists among, for example, Dutch, French, and Swiss corporations today (e.g.Hansmann and Kraakman (2004)).

The board of directors is closely involved with daily firm operations. This is in stark contrast to modern-day boards of directors but common for boards of directors in early corporations, as well as 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 throughout.[16]

Management groups range in size from two to, in one case, nine members, with a median size of three members. Most 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 38% of firms appoint one member as the *administrative director*, indicating that this member is the lead manager (in modern Norwegian, *administrative director* is equivalent to CEO). 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 (Internet biographies) suggests that many superintendents held an engineering degree and had work experience abroad. The statutes rarely specify the duties of the superintendent and never delegate formal authority over strategic corporate decisions to the superintendent but usually explicitly state that the superintendent takes direction from management.

In between the management and the GM, some firms set up a so-called board of representatives, which we refer to as the board throughout this paper. Its members are elected amongst shareholders at the GM, typically for a two-year term, and the terms 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

[16]It 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 La Compania de Maderas, an importer of processed wood from Spain, states, "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). Another example is the statutes of Union (see Appendix B).

to managers' remuneration, suggesting that the former are not paid for their services.

As will become clear in the analysis below, the board is commonly given authority over one or more of the major business decisions that we study. Thus, 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. A further difference is that half of our statutes state that managers participate and vote in the meetings of the board and none of the statutes explicitly distinguishes between executive and supervisory tasks, placing each with a separate board. Rather, the boards in our firms share characteristics with modern-day boards of directors.[17]

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's books and cash holdings.

3.1 Allocation of authority across corporate bodies: 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 agency conflicts span many dimensions, such as 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, as we discuss in

[17] Already 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*".

Section 4.1, leaving formal authority with the GM is also not without costs and shareholders must eventually trade off the costs and benefits of delegation. A corporate body that holds formal authority over a decision does not necessarily have to carry it out but can choose to delegate the decision's initiation or implementation to a subordinate body or person. Formal authority, however, entails the right to overrule the subordinate (ratification).

We collect data on authority pertaining to five strategic corporate decisions: (1) purchases/sales of company assets, (2) borrowing secured in 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 firm's 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 for reasons discussed below.

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 the greatest. To measure the degree of authority allocated to a given 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 does not count cases where two bodies share authority. 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 firm's statute does not specifically allocate authority over one of the five strategic decisions to a particular body but contain 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 digital (zero-one) index to allow for the

possibility that authority over dividend policy is assigned according to considerations other than those for asset decisions. In particular, dividend income is an important source of disposable income for many investors in early financial markets, where high transaction costs prevent the re-creation of desired cash flow by trading (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 and second most frequently 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 have nonetheless 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.[18] 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 of strategic decisions controlled by each corporate body. The GM typically controls several strategic decisions simultaneously and, in 14% of firms, controls all five decisions. However, a significant number of firms have the board and/or

[18]Shared authority is omitted from the subsequent empirical analysis because we have not found any significant empirical pattern related to it.

management control up to three decisions simultaneously.[19]

4 Empirical analysis

This section aims to uncover the determinants of authority allocations, focusing on the role(s) and powers assumed by the board in the governance of the firm. Regarding the interpretation of the results, we emphasize that the documented relations are generally not to be interpreted in a causal manner, even though we may refer to "determinants" of a variable for expositional reasons. Since the governance rules in the statutes and many of the firm characteristics are determined endogenously, our estimates should be thought of as equilibrium relations between jointly determined variables.

4.1 Inferred ownership structures

Shareholders may delegate formal authority over strategic decisions to an agent because of collective action problems amongst them. We have in mind two such problems: the free-rider problem and heterogeneous owners. Shareholders need to be informed about the firm's business to apply, in a meaningful way, any authority that is allocated to the GM. Nevertheless, a shareholder with less than 100% of the firm's cash flow rights will not internalize the positive effect on other shareholders' stock of his or her collection of information. The subsequent underprovision of effort leaves shareholders with an informational disadvantage relative to management. Lower ownership concentration aggravates the free-rider problem, whereas the presence of blockholders mitigates it (Shleifer and Vishny (1986); Admati, Pfleiderer, and Zechner (1994)).

The second collective action problem is that of conflicting preferences among shareholders, which can impede collective decision making, for example, in the form of gridlocks between coalitions of shareholders. If the preferences of two coalitions differ widely, the cost of decisions coerced by the marginally larger coalition may be high. Arguably, conflicting preferences are more likely to arise the more heterogeneous a firm's shareholder base. Sources of heterogeneity

[19] In three firms (3.53%), the GM does not control any decisions. In those cases, either authority over asset decisions is shared between management and the board or is left unspecified and authority over the dividend decision is assigned to the board.

can arise from, for example, social classes, income, and wealth, and the potential for differences is likely increasing in the number of shareholders. For example, for certain shareholders dividend income can comprise a relatively large fraction of overall income, giving rise to a preference for high dividends (e.g. widows and unmarried daughters from bourgeois families), whereas wealthier business men may be willing to forgo dividends to further the company's ability to invest and grow.

To test the hypothesis that collective action problems affect authority allocation within firms, we construct a proxy for the likelihood of a firm having many small owners. Since we lack complete shareholder lists, we use the nominal size of ordinary shares, or share denomination, to draw inferences about ownership structure.

Share denominations vary noticeably across firms, ranging from 100 NOK to 10,000 NOK, which is equivalent to 687 USD to 68,750 USD in 2015.[20] Large-denomination shares appear prohibitively costly for many investors, considering that the annual gross salary of a well-paid government official in 1900 ranged from 1,100 NOK to 6,000 NOK (Grytten (2007)). Firms with large-denomination shares, therefore, would have relatively wealthier individuals among their owners.

Figure 3 illustrates the wide variation in denominations, which spike at values of 500 NOK and 1,000 NOK. For our analysis, we split firms into a large-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; and the remaining five firms are in the mid-denomination group, with values from 501 NOK to 999 NOK.[21]

Share denomination proxies for a firm's ownership structure and, therefore, the incentives to collect information and be active, for two reasons: First, one share in a large-denomination firm

[20]These 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, both provided by the Bank of Norway.

[21]The cutoff points of the denomination distribution are at 500 NOK and 1,000 NOK and we define the group of small-denomination firms as those with a share denomination of up to and including 500 NOK, large-denomination firms as those with a denomination of 1,000 NOK and above, and a mid-denomination group comprised of the remaining firms. The split does not result in three groups of equal size due to tied observations at denominations of 500 NOK and 1,000 NOK.

amounts, on average, to 0.51% of the firm's equity, compared to 0.18% in a small-denomination firm, a three-fold difference. Thus, one large-denomination share provides more incentives to become informed. Noticeably, that large-denomination shares constitute larger stakes *per se* implies that large-denomination firms are not just those with a larger amount of paid-in equity. Instead, these firms actually issue a significantly smaller number of shares, leaving room for fewer owners. Second, since large-denomination shares are only within the means of wealthy individuals, who are more likely to have connections to business communities and networks, it is less costly for large-denomination share owners to become informed about the firm.

Furthermore, small-denomination firms are less likely to have blockholders than large-denomination firms. Although a wealthy individual could, in principle, own or acquire a larger number of small-denomination shares, blockholding is, in practice, discouraged in many small-denomination firms through the use of voting caps. In our sample, large-denomination firms are less likely to impose caps and, when they do, the caps are less restrictive: 48% of the small-denomination firms cap voting rights at 5% or less, whereas only 8% of large-denomination firms cap votes at or below 5% (Figure 4). Finally, small-denomination firms have a larger shareholder base, making divergent opinions about corporate matters, notably dividend distributions, more likely. The fact that statute provisions in small-denomination firms require the announcement of shareholder meetings in, on average, 2.1 different newspapers, compared to 1.5 different newspapers for large-denomination firms,[22] supports small-denomination firms having significantly more shareholders, possibly from a wider range of social classes.

Thus, large-denomination firms are more likely to have blockholders but few, if any, small investors, whereas small-denomination firms tend to have many small owners and possibly more diverse preferences. Small-denomination firms, therefore, are more prone to collective action problems.

Table 1 compares large- and small-denomination firms along basic dimensions. Large-denomination firms are, on average, significantly larger than small-denomination firms but have significantly fewer shares outstanding. They also, on average, tend to be older firms, both by founding year and by year of incorporation, although the latter difference is not statistically significant. The ratio of fixed assets to total assets is approximately the same in

[22] A t-test of the difference between the two average numbers of newspapers is significant at the 8% level.

the two groups. Figure 5 shows the industry composition of the groups. Large-denomination firms are over-represented in the chemical industry and under-represented in transportation, shipbuilding, and telecommunications, but otherwise firms from both groups are found in all industries.

4.2 Authority of the GM

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 6, 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 effect of collective action problems, however, we need to control for firm size. In addition, we want to take into account that the power of the GM is greater the more decisions it controls. We estimate ordered logits, regressing the number of decisions controlled by the GM on share denomination, firm size, and two other 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 2.[23]

The estimate of 0.04 in correspondence of share denomination, in column (1) of Table 2, indicates that a one standard deviation increase around the average share denomination is

[23]The average marginal effect is the average predicted probability computed using the values of the sample observations.

associated with an increase of four percentage points 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 the degree of authority 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 due to incomplete data on firm-level total assets. For the sample period, we have one or more observations of total assets for 44 of the 85 firms and the correlation coefficient 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 firm's industry. With respect to firm age, older firms may rely on more established and standardized production technologies, whereas younger firms use newer, less tested technologies. For example, telecommunications and the fabrication of sulphite cellulose rely on relatively new technologies and firms in these industries have an average age of 5.7 years and 11.2 years, respectively, compared to firms in shipbuilding, which have an average age of 34 years. The fixed asset ratio is computed at the industry level due to incomplete firm-level data and captures industry-specific aspects of production. Production processes that require more tangible assets leave management with less discretion over corporate resources and are less susceptible to managerial opportunism. Firms with high fixed assets, therefore, may choose to delegate more. Alternatively, if capital adjustments are larger in industries with higher fixed asset ratios, expansions require a larger outlay by incumbent owners wanting to avoid dilution. Owners may therefore wish to control decisions concerning the firm's assets.

In Table 2, 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 their theoretical relation to authority allocation and they do become significant in certain specifications below.

4.3 The board

We now turn to the conditions under which boards are installed. The simple fact that not all firms choose to set up a board suggests that boards have costs as well as benefits. A board introduces an additional agency layer into a firm's governance structure. Hence, in firms with relatively small managerial agency problems, say, due to active owners, the costs of a board outweigh its benefits. Conversely, in firms where owners are relatively poor monitors, the benefits of a board outweigh its costs. We therefore expect boards to exist in the firms most prone to collective action problems.

Table 3 presents the results from logit regressions of a board's existence on share denomination and the same set of controls as in Table 2. In column (1), share denomination has a large negative effect on the presence of a board: A one-standard deviation increase around its mean is associated with a 40% lower probability of a board existing. Column (2) shows that small-denomination firms are 33% more likely to have a board, implying that firms with larger share denominations are relatively less likely to have a board. In fact, we only observe a board in the group of large-denomination firms once. In the subsequent analysis of boards, we often entirely omit the group of large-denomination firms. At the same time, we include the five firms that belong to neither the large- nor the small-denomination group, since three of them set up a board. The results also show that larger firms are much more likely to set up a board. The marginal effect of firm size is large, at 13-16%. Notably, older firms are less likely to set up a board.

The interpretation that boards arise in the presence of collective action problems is also consistent with the unilateral observations shown in Table 4. In the full sample (top portion of the table), firms with boards have more shares but are not necessarily larger. Indeed, we have already documented that large-denomination firms tend to be larger and rely on governance

by the GM. However, when we consider the group of nonlarge-denomination firms (bottom portion of table), firms with boards not only have more shares but are also larger in size . The last line in Table 4 documents that firms with boards tend to impose other rules that seem to address managerial agency conflicts and inefficient shareholder monitoring. They are more likely to assign the appointment rights of auditors to shareholders or the board, giving us a first indication that one economic function of boards is to monitor management.

If a board's function is to monitor management, it needs formal authority over strategic decisions to be able to overturn managerial initiatives. Table 5 shows that in firms with a board, both managers and the GM have significantly less formal authority over assets and the GM has less authority over dividends. The average number of asset decisions controlled by management is 0.649 less and the average number of assets decisions controlled by the GM is 0.786 less. The fraction of firms that delegate the dividend decision to the GM is 70.2 percentage points less.[24] Hence, when a board is in place, it seizes authority from the two other governance bodies. These findings are presented graphically in Figure 7.

To further explore the functions of boards, we code tasks and functions explicitly given to them in the statutes and sort them into three indices, whose distributions are shown in Figure 8. The information index captures board members' obligations 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 firm's annual financial statements (73% of firms with a board), managers prepare a report (usually annually) for the board on the firm's situation (68%), and board members are required to make unannounced inspections of the company's books and cash balance (32%).[25] The advice index counts the tasks fostering cooperation between the 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

[24] An 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.

[25] Infrequently 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 firm's 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.

career index when the board is to appoint managers (82%) and the board determines managers' salaries (68%).

For the group of firms with a board, we then regress each task index on the allocation of authority, including authority indices for all three corporate bodies in the regressions simultaneously. That is, we study how board authority correlates with the tasks assigned to the board, conditioning on how much authority is allocated to management and the GM. We split board authority into two indices, separating boards with asset authority from those with only dividend authority, to uncover whether different types of authority are associated with different tasks. We can separate the effect of asset and dividend authority econometrically, because we have observations where the board holds authority over dividends only. Table 6 shows regressions of task indices on authority indices. The index for board authority on assets and possibly dividends counts the number of asset and dividend decisions that the board controls contingent on controlling at least one asset decision. Nine firms assign both dividend and one or more asset decisions to the board and two firms assign asset but not the dividend decision, corresponding to 50% of firms with a board. The index for board authority on dividends takes the value of one for firms where the board controls the dividend decision but no asset decisions. There are seven such firms (32%). Our sample also contains firms with boards that assign authority to management (three firms, or 14%), which allows econometric identification of the relation between board tasks and management control. The management authority index counts the number of asset and dividend decisions delegated to management in firms with a board. There is a linear relationship between the allocation of authority to the different bodies, since the number of decisions controlled must sum to five. The constant, therefore, captures the effect of authority held by the GM on board tasks for a firm of size 1 million NOK.[26] We estimate the relations with ordinary least squares. Due to the small number of observations, we include only firm size as a control variable.[27] In column (1) of Table 6, we regress the board information index on authority indices. Firms in which the board holds authority over assets have a statistically significant 0.49 higher value for the information index, that is, such

[26]Specifically, the constant captures the effect of the omitted categories, which is mainly authority held by the GM but also includes decisions for which authority is not specified and decisions with shared authority.

[27]Ordered logit regressions yield similar results, but we must omit regressions with the advice index due to too little variation in the management authority index (where positive values of the index are always associated with the value three of the advice index).

firms assign an additional 0.49 information-related task to the board for each decision they put under its control. The allocation of asset authority to the board, therefore, is significantly related to its duty to collect information about the firm. In contrast, boards that only hold authority over dividends are not given more information-related tasks; if anything, they are allocated fewer such tasks, although the negative effect is not significant. The board's dividend authority per se, therefore, is not significantly associated with a duty to collect information about the firm. Neither is management authority, as indicated by the coefficient estimate on the management authority index.

Regression of the advice index on the authority allocation variables in column (2) of Table 6 shows that boards are significantly more likely to be given advice-related tasks when management holds authority. Each decision allocated to management entails 0.78 additional advice-related tasks for the board but does not affect the number of its information-related tasks. Finally, column (3) shows the association between the board's career-related tasks and authority allocation. Boards with asset authority also tend to have appointment rights.

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. This is further evidence that boards are put in place to monitor management. Formal authority gives the board the power to overrule managerial decisions, hence it is desirable that boards make informed decisions and the statutes provide them with information collection channels. In contrast, firms where management controls asset decisions do not impose measures for boards to become informed. These firms deliberately give management authority and do not need to install 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 all the interest to share their information and take advantage of boards expertise. Our result, therefore, supports the theoretical predictions of Adams and Ferreira (2007).

Boards with authority over dividends but not assets are less likely to have high information index values. Given that the board tends to seize dividend authority from the GM (Table 5), this suggests that boards have additional roles besides monitoring management. Specifically, dividends are of particular interest to owners since low market liquidity at the time, made selling of shares a poor substitute for dividend income. The problem is exacerbated when

owners have conflicting preferences over the level of dividend income. Letting the board decide dividends can be viewed as a means of resolving possible shareholder conflicts. In this capacity, therefore, the board serves as a *mediator* between shareholders.

4.4 Complementarity of voting caps and the board

The preceding analysis shows how boards can arise to mitigate agency conflicts between management and owners. A conflict can also exist among diverse shareholders, notably large and small shareholders. When the shareholder base comprises large, informed shareholders, leaving authority with the GM helps prevent managerial misconduct but need not protect minority shareholders from expropriation by the dominant shareholder(s). Furthermore, since large shareholders can influence the board's composition, giving authority to the board may not be an effective remedy.

One way to limit the emergence of large, powerful shareholders is through voting restrictions. In our data, most firms (88%) impose a cap on the number of votes that can be cast and/or adopt a graduated voting scheme where the exercisable votes increase less than proportionally with the number of shares. Strict voting caps appear in both large- and non-large-denomination firms, but they are generally much stricter in the latter group (see Figure 4). Only 10 firms (11.7%) have a one share, one vote rule. While voting caps protect minority shareholders from expropriation by controlling shareholders, they aggravate the managerial agency problem. Consequently, we would expect firms that impose strict voting caps to have boards and vice versa.

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.

4.5 Delegation of authority to management

In this section, we address why firms choose to delegate formal authority to management as opposed to the board. The benefit of delegation depends partly on exogenous factors such

as production technology and the legal and institutional environment in which firms operate. It also applies to the importance of managerial knowledge and expertise for the quality of a decision. For example, if expertise is required to evaluate a decision, the informational advantage of managers is great, whereas a board that meets infrequently and is distant from the firm's operations finds it costly to make a decision. Therefore, the non-existence of a board does not necessarily imply that authority should not be delegated at all.

The three control variables from the previous regressions (firm size, age, and the ratio of fixed-to-total assets) may capture managers' informational advantage. Firm size and age may reflect the complexity of firm operations and a higher ratio of fixed to total assets may proxy for technologies that require more expertise. Figure 9 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 in the regressions, 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 driven by 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 from retaining some control or because the founder has 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 enables us to identify 17 firms in which the founder is a manager in the year the statutes were written.[28] For 45 other firms, we can rule out that the founder was a manager at the time of our sample. In the remaining 23 firms, we were, however, unable to establish whether the founder was involved in management. Since we classify these firms as not having a founder-manager, they stack the deck against finding evidence that founder presence is correlated with delegation. 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 firms, amounting to 9.4% of the sample, the statutes appoint by name a person as a permanent member of

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

management and such persons are always founders. These firms therefore comprise a subset of the firms for which the founder dummy variable equals one. A person is named in four large-denomination firms and four small-denomination firms.

We estimate ordered logits, regressing both the management asset authority and the dividend authority indices on a dummy variable for small-denomination firms, the dummies for named person and founder in management, as well as the three control variables. Columns (1) to (4) in Table 8 present the estimated change in the probability that one or more asset decisions are 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 the named person's and founder's involvement in management are associated with more delegation of authority to management. In particular, the named person effect is economically large, between 19% and 22%, and highly statistically significant. The founder dummy is also positively associated with delegation, but just outside the 15% threshold level of significance. 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 8 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 the named person firms and the rest of the 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.[29]

[29]The named person dummy is omitted from the regressions due to lack of variation.

Table 9 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 8, we find that neither the founder dummy nor the named person dummy is significant.

This result, together with the previous findings, suggests that the presence of a founder is less important when it comes to deciding whether to delegate 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.

4.6 Unassigned authority

As noted in Section 3.1, it is not uncommon for firms to leave formal authority over a decision unspecified, in the sense that the statutes neither explicitly allocate the authority to a corporate body nor state that an authority is shared between bodies. In our sample, 17% of the 425 possible decisions are unassigned. Since unassigned authority over dividends occurs in only one firm, the issue concerns the allocation of asset authority only.[30]

Why would shareholders leave authority unspecified? If it is difficult to foresee the pertinence of current skills and information for future decisions, the pinning down of authority today is costly. Mistaken allocations are difficult to revoke because changes to the statutes require a supermajority. This cost, however, must be traded off against the cost of leaving authority "up for grabs". When the potential for conflicts of interest between corporate bodies is large, shareholders are more willing to pay the cost of a contractually binding authority allocation.

One noticeable and common provision of the statutes that seems to address the issue of conflicts of interests is the requirement that the managers must be shareholders. In the face of it, this provision gives the impression of aligning managers' and shareholders' interests and one might therefore expect that managers are given more authority in these firms. In addition,

[30] A total of 20 firms (23.5% of the sample) leave one decision unassigned, eight firms (9.4%) leave two decisions unassigned, 10 firms (11.8%) leave three decisions unassigned, and two firms (2.3%) leave all four asset decisions unassigned. About half of the firms, 52.9%, never leave authority unassigned.

one might expect that more decisions are left unassigned in firms where alignment is high, particularly if unassigned authority ends up leaving managers with the real authority. At the same time, alignment could be higher in firms without a shareholder requirement, since in these firms the requirement may be superfluous because alignment is high to begin with. Alternatively, these firms may omit the requirement to avoid narrowing the pool from which managers can be drawn, because the cost of not having the right person(s) in place outweighs the cost of possible conflicts.

We investigate these questions running regressions of authority indices on dummies for small- and large-denominations, separately, and a dummy equal to one when the shareholder requirement holds. Table 10 shows how the shareholder requirement is related to the authority held by the GM or management and unassigned authority

Firms that require managers to be shareholders are less likely to leave formal authority with the GM (columns (1) and (2) of Table 10). This does not indicate that authority is delegated to managers (columns (3) and (4)) but, rather, that authority is more likely to be unassigned. In fact, the 15 firms that do not impose the shareholder requirement leave only 0.1 decision unassigned, compared to one decision, on average, for the firms with the requirement. Thus, firms without the shareholder requirement virtually always allocate authority over decisions.[31] Furthermore, firms that leave decisions unassigned allocate authority to managers over 0.69 other decisions, compared to 0.08 decisions in firms that assign authority over all decisions.

Our results suggest that the shareholder requirement reflects better alignment of interests between managers and shareholders. In firms that impose it, more authority is left unassigned and managers obtain authority over some remaining decisions. Conversely, in firms where managers need not be owners, authority over particular decisions is always assigned and managers have control over few decisions. That is, the firms leave little ambiguity as to the limits of managerial authority. These results suggest that costly contracting is avoided when the alignment of preferences is high.

[31] In a t-test of means, this difference is statistically significant at less than the 0.1% level.

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 existence of boards and their roles, as well as how their functions relate to the powers retained by owners or delegated to management (allocation of authority). Not all of our sample firms choose to have boards. Instead, firms that are likely to have many small shareholders tend to have a board to address collective action problems. Boards function as monitors, mediators, and advisers but are also put in place to balance the need for minority shareholder protection with the need to curb managerial discretion. Furthermore, boards are given formal authority over strategic corporate decisions to be able to act as monitors and mediators. In contrast, firms that are likely to have active owners never have a board and grant more decision authority to the owners/shareholders.

Today, statutory law prescribes which corporate body is in charge of which decision, although deviations through opt-outs or further-reaching statute provisions are permitted in some matters. However, considerable differences exist across jurisdictions. For example, in the United States, dividend policy is controlled by the board of directors, whereas French, German, and British law mandates shareholder approval of dividends. More generally, US law entrusts the board of directors with considerable authority, whereas shareholders are more powerful in European jurisdictions (Hansmann and Kraakman (2004)). In light of these differences, it is notable that our sample firms tend to choose corporate governance arrangements that mirror the different legal regimes. Our findings are also a reminder that one size does not fit all and, more specifically perhaps, that attempts to micromanage boards through detailed regulation may be misguided.

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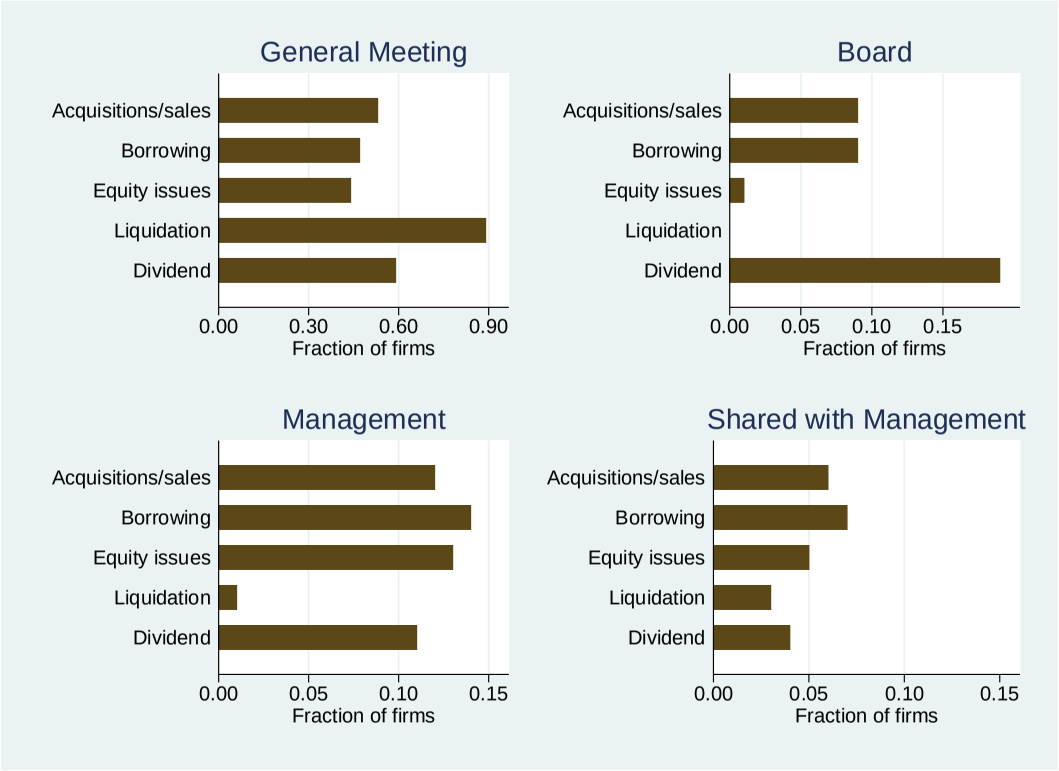
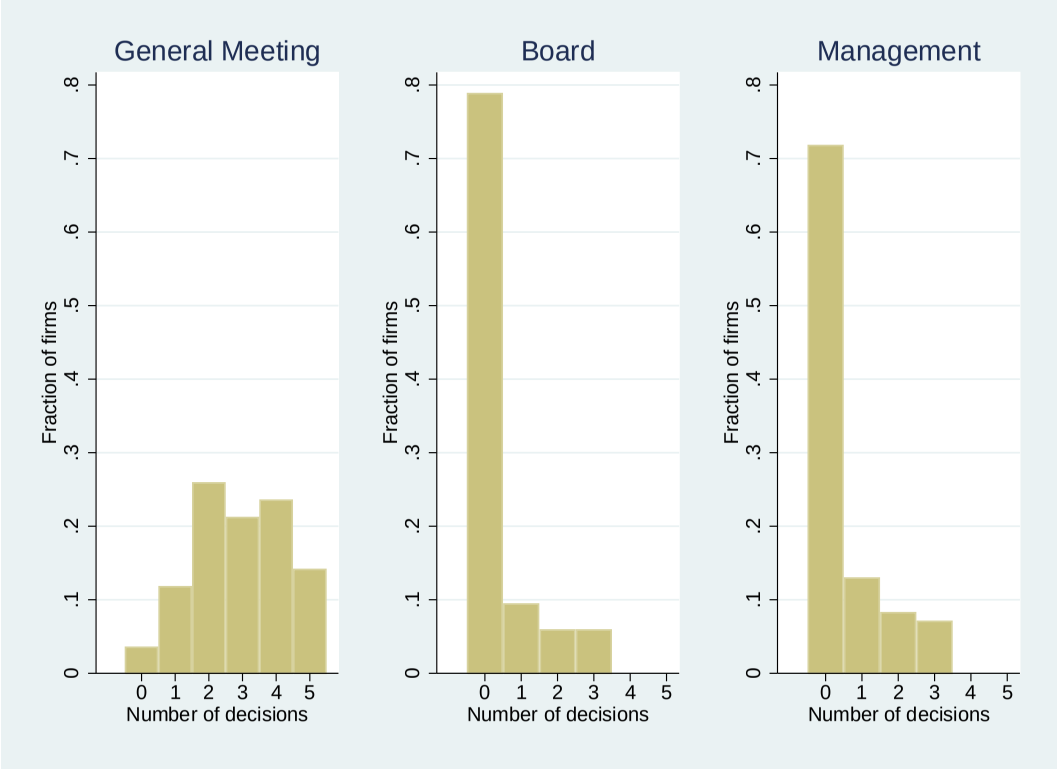
Figure 1: **Allocation of Authority Over Strategic Decisions**



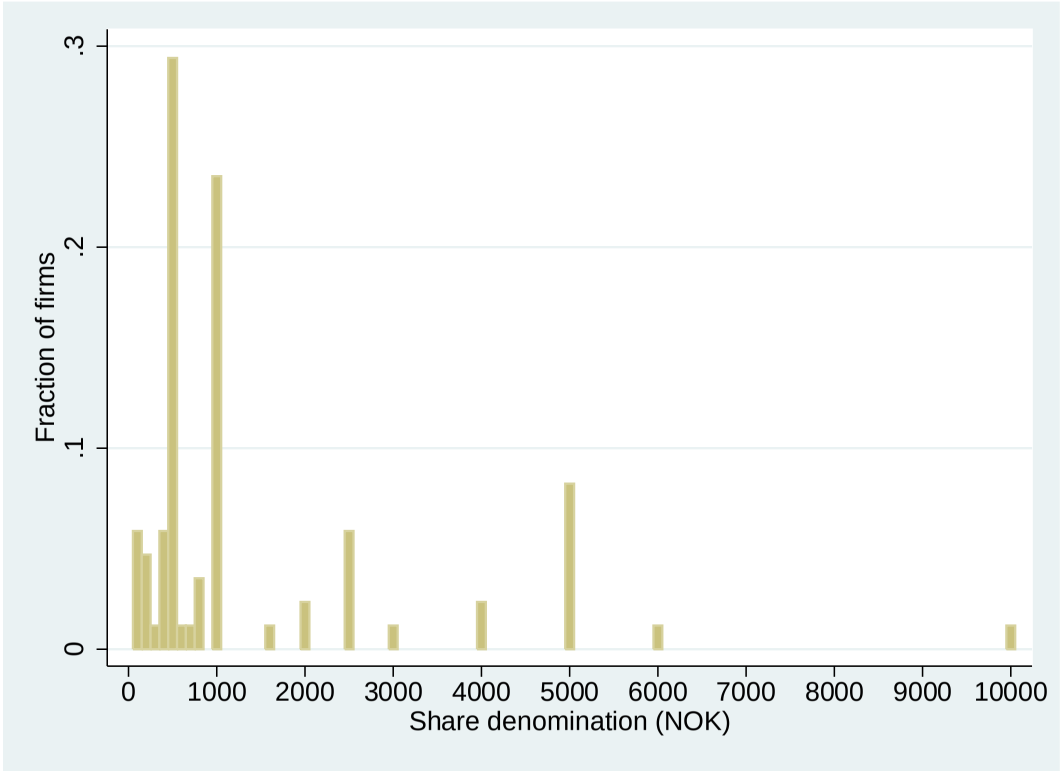
This figure shows the fraction of firms that allocate the authority over a given strategic decision to GM, board, and management, respectively. The bottom-right graph shows the fraction of firms where the authority over a given strategic decision is shared between management and either the GM or the 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**



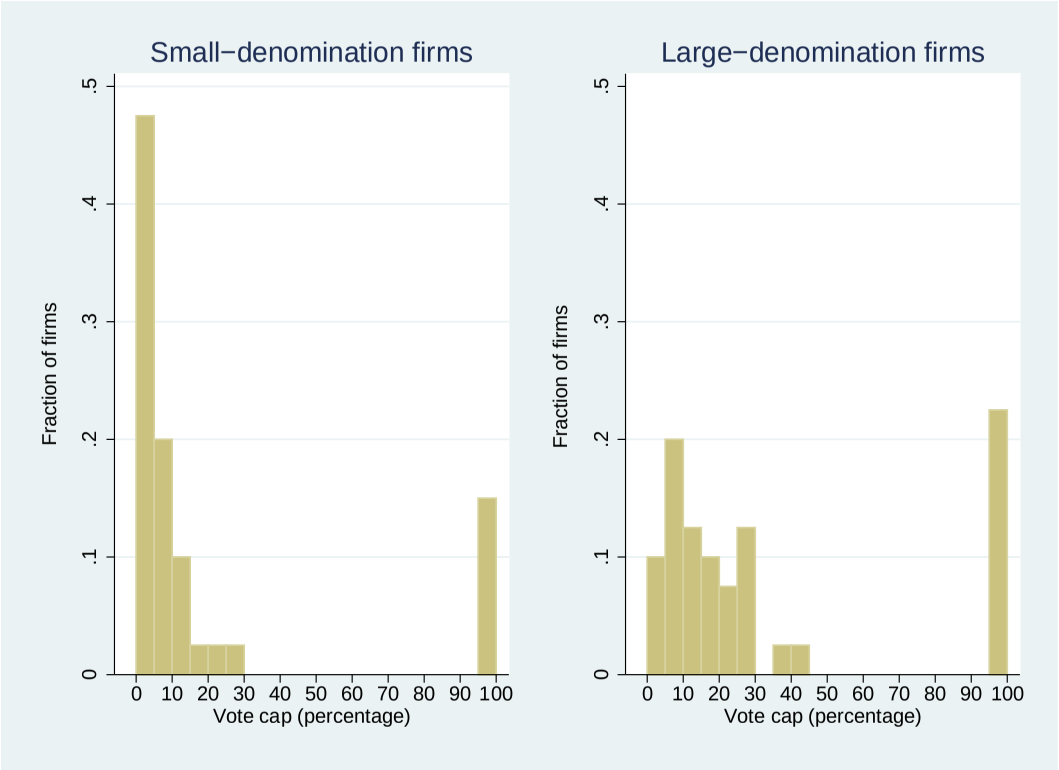
This figure shows the frequency distribution of the number of strategic decisions allocated exclusively to the GM, the board, or management, respectively.

Figure 3: **Distribution of Share Denomination**



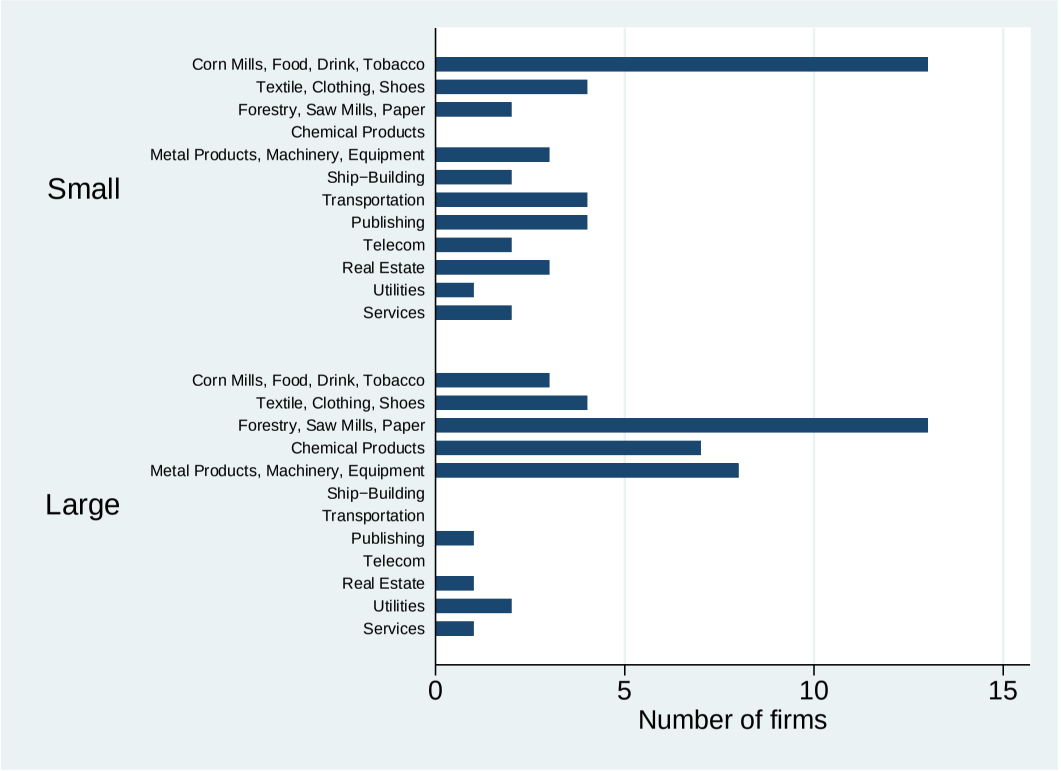
This figure shows the frequency distribution of share denominations across the sample firms.

Figure 4: **Voting Caps by Share Denomination**



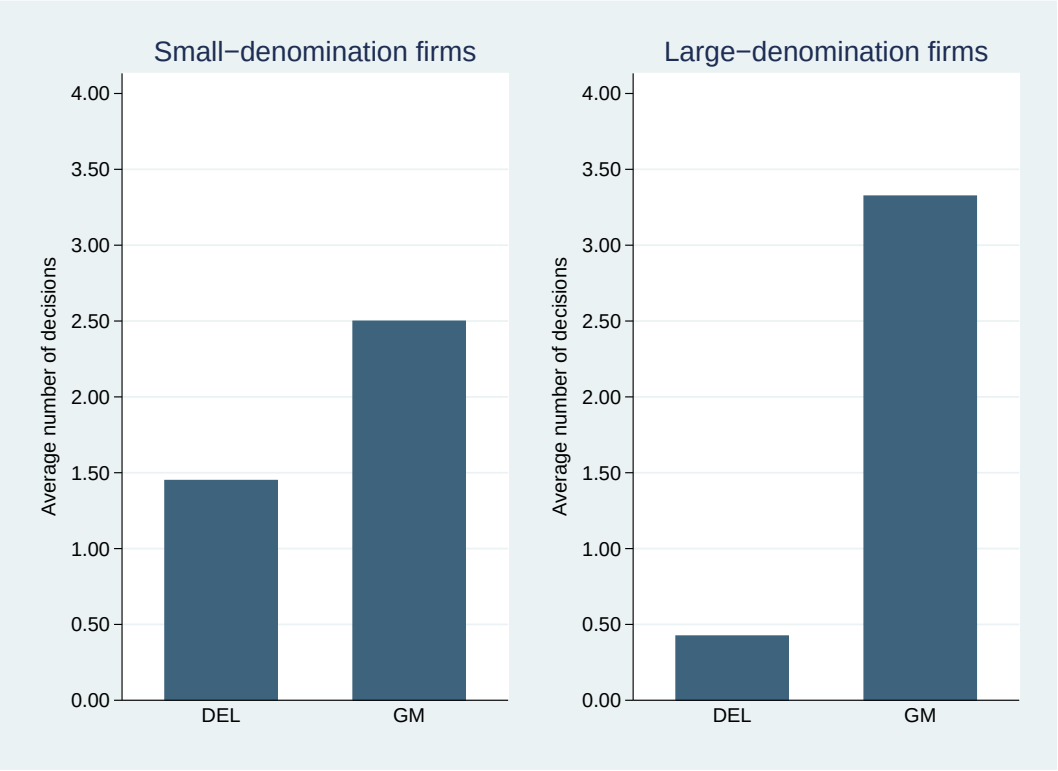
This figure shows the frequency distribution of the voting caps for the small-denomination (left) and large-denomination (right) firms. Vote capping at $\alpha\%$ implies that the voting rights of shares held in excess of $\alpha\%$ of a firm's paid-in equity cannot be exercised.

Figure 5: **Industry Composition by Share Denomination**



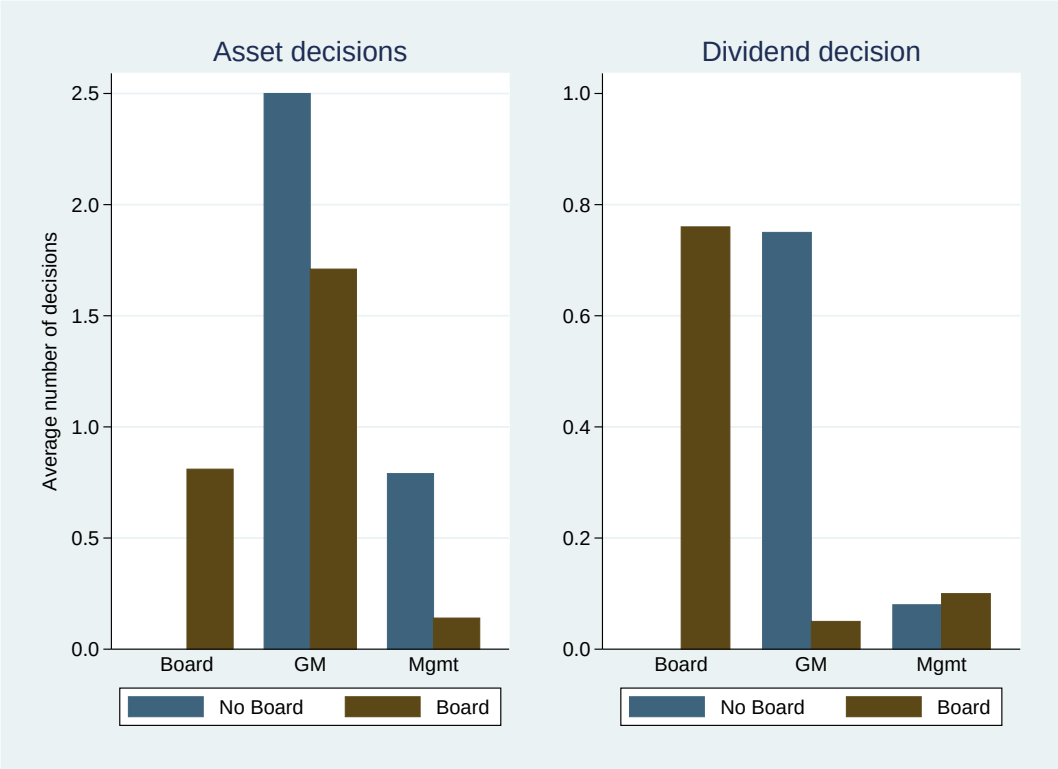
This figure shows the industry composition according to the NACE-industry classification code for the 40 small- (top) and 40 large-denomination (bottom) firms.

Figure 6: **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 7: **Authority Allocation in Firms with and without a Board**

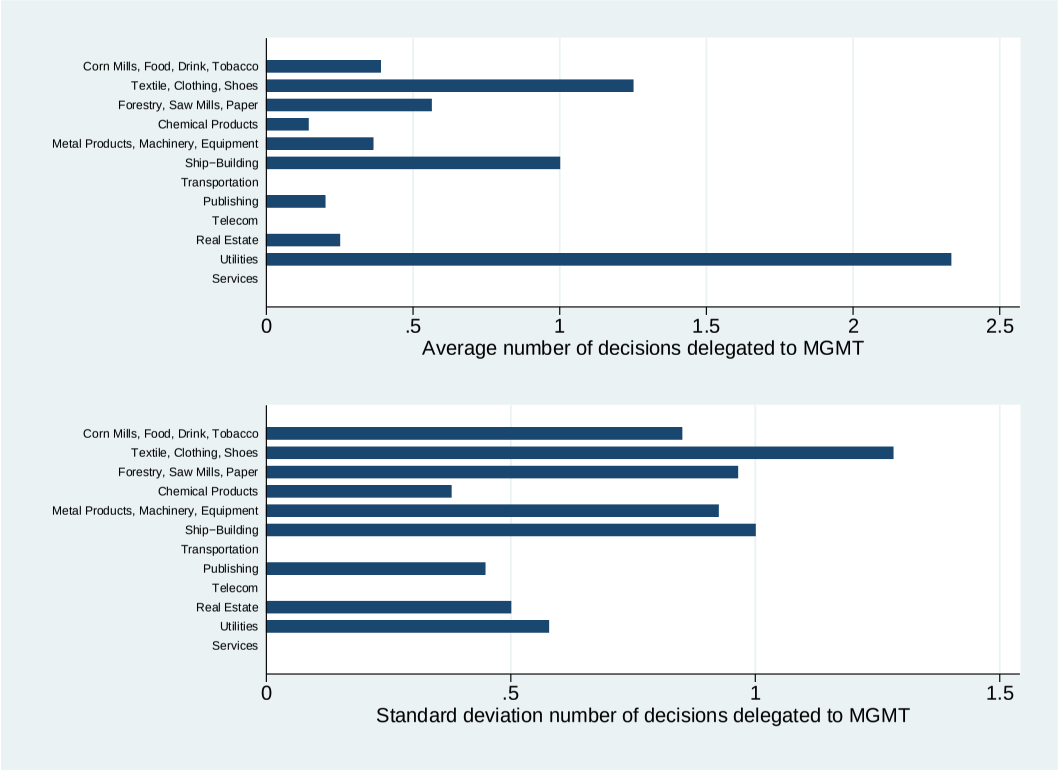


This figure shows the number of asset and dividend decisions controlled by the board, the GM, and management, in non-large-denomination firms with (22 firms) and without (24 firms) a board.

Figure 8: **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 9: **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: **Characteristics of Large- versus Small-Denomination Firms**

	Large-denomination firms	Small-denomination firms	Difference in means	p-Value
Size ('000,000)	0.912 (0.160)	0.574 (0.075)	0.338*	0.061
Number of Shares ('000)	0.556 (0.106)	1.610 (0.290)	-1.095***	0.001
Firm age in 1900 (found.)	23.775 (3.464)	15.600 (2.569)	8.175*	0.062
Firm age in 1900 (incorp.)	12.825 (2.015)	10.450 (1.934)	2.375	0.398
Fixed Assets Ratio	0.594 (0.049)	0.675 (0.037)	-0.081	0.196

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). The variables are defined in Appendix A.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 2: **Determinants of the GM's Retention of Authority**

	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	-0.04	-0.04
	(0.35)	(0.16)	(0.19)
Firm age in 1900	0.01	0.02	0.01
	(0.59)	(0.43)	(0.61)
Fixed Assets Ratio	0.00	0.02	0.02
	(0.84)	(0.37)	(0.40)
Constant1	-2.89***	-3.47***	-2.07*
	(0.00)	(0.00)	(0.05)
Constant2	-1.26	-1.76**	-0.37
	(0.16)	(0.02)	(0.70)
Constant3	0.13	-0.29	1.11
	(0.88)	(0.68)	(0.25)
Constant4	1.01	0.60	2.01**
	(0.26)	(0.40)	(0.04)
Constant5	2.32**	1.97***	3.36***
	(0.01)	(0.01)	(0.00)
Obs.	85	85	85
p-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 3: **Determinants of Board Existence**

	(1)	(2)
Share Denomination ('000)	-0.40***	
	(0.00)	
Small-Denomination Dummy		0.33***
		(0.00)
Size (log)	0.16***	0.13***
	(0.00)	(0.00)
Firm age in 1900	-0.05+	-0.06+
	(0.15)	(0.15)
Fixed Assets Ratio	0.02	0.04
	(0.67)	(0.29)
Constant	-4.88***	2.58**
	(0.01)	(0.02)
Obs.	85	85
p-Value	0.00	0.00
Pseudo R-squared	0.42	0.27

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-denomination shares. 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 4: **Characteristics of Firms with a Board**

	Average in firms with a board	Average in firms without a board	Difference in means	p-Value
		All Firms		
Number of Shares ('000)	2.372	0.654	1.717***	0.001
	(0.456)	(0.087)		
Size ('000,000)	0.861	0.699	0.163	0.307
	(0.115)	(0.107)		
GM or Board Appoints Auditor	1.000	0.873	0.127***	0.003
	(0.000)	(0.042)		
		Non-Large-Denomination Firms		
Number of Shares ('000)	2.390	0.874	1.516***	0.005
	(0.477)	(0.148)		
Size ('000,000)	0.807	0.398	0.409***	0.003
	(0.107)	(0.074)		
GM or Board Appoints Auditor	1.000	0.875	0.125*	0.083
	(0.000)	(0.069)		

This table presents two-sided t-Tests with unequal variances of the difference between the sample means of firms with a board (22 firms) and firms without a board (63 firms). In the group of nonlarge-denomination firms, 21 firms have a board and 24 firms do not. The standard errors of the sample means and the p-Values for the tests are reported in parentheses. Statistical significance is reported at the 15% ($^{+}$), 10% (*), 5% (**), and 1% (***) levels.

Table 5: **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	p-Value
Authority of Managers				
over asset decisions	0.143	0.792	-0.649**	0.013
	(0.104)	(0.225)		
over dividend decision	0.095	0.083	0.012	0.892
	(0.066)	(0.058)		
Authority of GM				
over asset decisions	1.714	2.500	-0.786**	0.039
	(0.286)	(0.233)		
over dividend decision	0.048	0.750	-0.702***	0.000
	(0.048)	(0.090)		

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 6: **Board Tasks and Allocation of Authority**

	Info Index Board approves Board inspects Mgmt. reports	**Advice Index** Board advises Mgmt. sit on board Mgmt. vote in board	**Career Index** Board elects mgmt. Board sets salary
	(1)	(2)	(3)
Board authority on assets and possibly dividends (index)	0.49**	0.20	0.29
	(0.02)	(0.49)	(0.18)
Board authority on dividends only (dummy)	-0.32	-0.07	0.08
	(0.50)	(0.90)	(0.83)
Management authority index	-0.16	0.78**	-0.01
	(0.55)	(0.01)	(0.94)
Size (log)	0.06	0.09	0.20
	(0.81)	(0.74)	(0.35)
Constant	1.16**	1.22*	1.13**
	(0.04)	(0.05)	(0.03)
Obs.	22	22	22
p-Value	0.01	0.09	0.18
R-squared	0.35	0.18	0.21

This table presents the OLS regressions of board task indices on asset and dividend authority indices. The three task indices are defined in the variable appendix. 'Board authority on assets and possibly dividends' counts the number of asset and dividend decisions that the board controls contingent on controlling at least one asset decision. 'Board authority on dividends only' takes the value of one for firms where the board controls the dividend decision but no asset decisions. The 'management authority index' counts the number of asset and dividend decisions delegated to management. The sample comprises the 22 firms with a board. The p-Values for the coefficients' estimates, 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 7: **Board Existence and Vote Capping**

	(1)	(2)	(3)	(4)
Share Denomination ('000)	-0.39***	-0.38***	-0.39***	-0.40***
	(0.00)	(0.00)	(0.00)	(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**	4.64**	4.42**	4.32**
	(0.02)	(0.02)	(0.03)	(0.04)
Obs.	85	85	85	85
p-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: **Determinants of Formal Delegation of Authority to Management**

	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	
	(1)	(2)	(3)	(4)	(5)	(6)
Share Denomination ('000)	-0.19**		-0.19**		-0.04*	
	(0.04)		(0.02)		(0.10)	
Small-Denomination Dummy		0.22***		0.22**		-0.01
		(0.03)		(0.04)		(0.94)
Named Person	0.19*	0.22**				
	(0.06)	(0.04)				
Founder in management			0.12	0.15	-0.06	-0.08
			(0.24)	(0.17)	(0.56)	(0.47)
Size (log)	0.04	0.06	0.04	0.03	0.00	0.01
	(0.40)	(0.36)	(0.42)	(0.48)	(0.89)	(0.65)
Firm age in 1900	-0.00	-0.01	-0.00	-0.02	-0.02	-0.01
	(0.97)	(0.81)	(0.96)	(0.67)	(0.61)	(0.72)
Fixed Assets Ratio	-0.07	-0.06	-0.07	-0.08+	-0.02	-0.00
	(0.17)	(0.23)	(0.16)	(0.11)	(0.61)	(0.65)
Obs.	85	85	85	85	85	85
p-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 9: **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***	-0.18***
	(0.00)	(0.03)
Controls	yes	yes
Constant	6.89**	3.60**
	(0.02)	(0.00)
Obs.	85	85
p-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.

Table 10: **Authority Allocation and the Requirement That Managers Must Be Shareholders**

	Change in the probability that the GM holds authority over all asset decisions		Change in the probability that management holds authority over one or more asset decisions		Change in the probability that authority is unspecified for one or more asset decisions	
	(1)	(2)	(3)	(4)	(5)	(6)
Share Denomination ('000)	0.05*		-0.19**		0.10**	
	(0.06)		(0.02)		(0.02)	
Small-Denomination Dummy		-0.18*		0.22**		-0.12
		(0.03)		(0.04)		(0.29)
Managers Must be Shareholders	-0.21**	-0.21***	-0.06	-0.05	0.41***	0.41***
	(0.02)	(0.01)	(0.59)	(0.64)	(0.00)	(0.00)
Obs.	85	85	85	85	85	85
p-Value	0.04	0.06	0.28	0.42	0.00	0.00
Pseudo R-squared	0.04	0.05	0.06	0.05	0.12	0.10

This table presents the average marginal effects of firm characteristics on the probability that, respectively, the GM retains all asset decisions (columns (1) and (2)), at least one asset decision is delegated to management (columns (3) and (4)), and authority over at least one asset decision is left unspecified (columns (5) and (6)). Marginal effects are estimated from ordered logit regressions of asset and dividend authority delegation indices on firm characteristics: share denomination, a dummy for small-denomination firms, a dummy that takes a value of one if the statute requires managers to be shareholders, 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, the reported marginal effect is the increase in the probability of board existence from a one standard deviation increase around its mean. For the small-denomination dummy and managers having to be shareholders, 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 Variables and descriptive statistics

A.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 α% 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 α% of paid-in equity. That is, when a shareholder has acquired a stake of α%, the shareholder's votes are exhausted.

A.2 Descriptive statistics

In Table A1 we present the descriptive statistics for the variables used in the empirical analysis. Table A2 contains a breakdown of the 85 sample firms by industry.

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
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 A.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. 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 todays real estate investment trusts, earning revenue through the rents generated from land and building holdings.

Appendix B Excerpts from statutes

Example of management group duties (board of directors):

Union mineral water producer, (§10): 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.

Examples of board duties (board of representatives):

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 firms 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.

Christiania 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.

Christiania 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.

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