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HOW DIVERSE CAN YOU GET?

GENDER QUOTAS AND THE DIVERSITY OF NORDIC BOARDS

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Abstract

This paper studies female board representation in 534 public corporations in four Nordic countries during 2001-2008. We explore how the heterogeneity of male directors correlates with the appointments of female directors. Considering the diversity dimensions of age, gender and nationality, our results indicate that Nordic corporations choose to "minimize" overall board diversity. We find a "crowding–out" effect between different dimensions of diversity. We argue that this effect partly explains the low proportion of female directors in Nordic firms, and that the mandatory gender quota in Norway may come at the price of lower diversity in other respects.

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INTRODUCTION

Politicians and legislators in many countries have become increasingly interested in corporate diversity issues in recent years. Norway is a pilot case. In June 2003, after a period of intense public debate and initiatives aimed at motivating female appointments to company boards, the Norwegian government issued a proposal for a new legislation: the quota law. This legislation requires a minimum 40 percent representation of each gender on the boards of public enterprises. Initially, the proposal was of a voluntary nature; the requirement would become mandatory only if 40 percent female representation was not reached by July 2005. However, most of the firms failed to comply voluntarily. The quota law became effective in January 2006, assigning the public companies two years to meet the terms of the new requirements.

Spain, France, and Italy have recently been contemplating similar measures, and many other countries may take the same path in the future. This raises a number of queries. Is gender quota the only way of substantially increasing the presence of females in the boardroom? What are the reasons for the lack of female directors in countries without a quota law? In the past, the low presence of women in top corporate positions has been associated with a lack of female human and social capital, family barriers or the perception of the existence of such barriers (Bilimoria and Piderit, 1994; Hoobler, Wayne and Lemmon, 2009). Other important influences to which the (lack of) female directorships has been attributed are socio-political beliefs and attitudes towards women, work and families, to women's historical role in politics and society, to cultural and legal institutions (Grosvold and Brammer, 2010; Terjesen and Singh, 2008), and to a number of organizational factors (Farrell and Hersch, 2005; Hillman and Canella, 2007).

Our study joins the strand of literature exploring the organizational antecedents of female representation on the board of directors. By analyzing the composition of the boards in four Nordic countries, we document the impact of regulatory pressure on female appointments to boards. We go beyond institutional pressure and, in addition, explore the second-order factors contributing to a higher female presence on the board of directors. In particular, we investigate how the composition of a board of directors, namely the degree of heterogeneity (age, nationality) of the male directors, influences the progress of females to corporate boards.

The concern for gender equality in the boardroom is in fact only one of many factors that have called for a reshuffling of the boards of directors of large public corporations over the last few years. The pressure for changes in board composition has been fuelled by codes of good governance requiring the firms to appoint independent, qualified board members, or to replace the directors with a disproportionate amount of other board positions. These demands are further supported by recent distrust in the performance of homogeneous boards; there is growing academic evidence that questions the effectiveness of boards composed exclusively of middle- to old-aged male directors with executive experience (e.g. Carter, Simkins and Simpson, 2003).[1] Finally, the last decade's increasing globalization of most firms' activities requires new expertise and knowledge of foreign markets, i.e. the internationalization of corporate boards (e.g. Oxelheim, Gregorič, Randøy and Thomsen, 2010). Studies on gender board diversity often ignore these other demands affecting board selection, and the fact that a firm's need to adjust the board in other dimensions (i.e. independence and internationalization) might take priority over the gender diversification of the board room, and result in a lower preference for female appointments in these firms.

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[1] The efficiency of the board is influenced by the perceptions, thoughts and behavior of the board members which are in turn governed by emotions, norms adherence, values and cognitive biases (Jensen and Zajac, 2004). Values, emotions and perceptions are not randomly distributed in the population, but vary with each individual's background, education, age, gender and other demographic characteristics (Jensen and Zajac, 2004; Robinson and Dechant, 1997). In this regard, more diverse groups operate better because the differences in their views, perceptions and norms make them more creative. This creativity should result in more efficient decision making and higher firm performance (e.g. Miller and Triana, 2009; Pelled, Eisenhardt and Xin, 1999).

One reason we could expect "crowding-out" of board diversity is that there are limits on how quickly the whole board can be restructured, i.e. how many directors can be replaced or newly appointed at the same time. A further reason can be found in the socio-psychological literature on the behavior of social groups (e.g. Tajfel, 1974). These studies argue that diversity in age, gender and ethnicity can lead to sub-categorization and communication breakdowns, lower trust and cooperation among the group members, an increase in group turnover and absenteeism (e.g. Alexander, Nuchols, Bloom and Lee, 1995; Kanter, 1977; O'Reilly, Caldwell and Barnett, 1989). Most importantly, these negative effects are shown to increase linearly with the extent of group heterogeneity (Alexander et al., 1995), and to be stronger when a group is heterogeneous in various dimensions of diversity (e.g. Alexander et al., 1995; Jackson and Joshi, 2004; Homan, van Knippenberg, van Kleef and De Breu, 2006).

Based on this evidence and viewing the board as a social group, we could expect that corporations might be inclined to limit the total extent to which they diversify their board of directors. Such an assumption is also in line with a more conservative view: even if we assume that there are no socio-economic effects of diversity and that firms only diversify their boards to respond to increasing social expectations, introducing heterogeneity in one dimension will reduce the need to diversify the rest of the board. In short, we conjecture that the heterogeneity of the existing board members not only impacts board processes but also the selection of future board members.

We analyze the interactions among dimensions of diversity by exploring the composition of the boards of directors[2] of public corporations in the Nordic countries. These countries represent a particularly interesting "laboratory for diversity": their history of diversified boards starts in the seventies, when employees obtained the right to appoint their own representatives on the board of directors. In Denmark, workers in public or private limited corporations (with more than 35 employees) may elect members to the board of directors on equal terms with the directors elected by the shareholders. In Norway (as a general rule) employees in firms that employ more than 200 people can appoint two or more employee directors, or at least one third of the board. The Swedish Co-determination Act (1976) gives employees the right to choose two members and two substitutes on the boards of companies with at least 25 employees, and three members in companies with at least 1000 employees. Although it is not general practice, employees also have the right to appoint members on Finnish boards[3]. These representatives bring heterogeneity of education, experience, norms and (often) objectives to the board. Apart from the employee directors, the last two decades have been marked by an increasing internationalization of corporate boards in the Nordic countries (Oxelheim et al., 2010) and (more recently) considerable public pressure for gender equality and higher female representation on the board of directors.

This study makes a number of contributions to the literature. First, by exploring "crowding-out" effects between diversity dimensions, we advance the few studies that have so far adopted the so-called "alternative" view of diversity and address questions related to the interaction between the different dimensions of diversity (Jackson, Joshi and Erhardt, 2003; Jackson and Joshi, 2004).[4] The value of considering various aspects of diversity rather than one single aspect is important considering that social processes and their outcomes are influenced by the complex confluence of diversity dimensions, not isolated dimensions of diversity (Alexander et al., 1995; Jackson and Joshi, 2004; Jackson et al., 2003; Thatcher, Jehn and Zanutto, 2003). Second, by analyzing the boards in the Nordic countries, we describe the effects of the first gender quota rule (see also Ahern and Dittmar, 2010; and Hoel, 2010), and provide new European evidence which adds to the existing research on the organizational determinants of female board representation (e.g. Farrell and Hersch, 2005; Hilman and Cannella, 2007).

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[2] Public corporations in the Nordic countries engage a two-tier board system, or a semi-two-tier board system, with a clear separation between the CEO (management) and the board of directors. For more, see for example Hansen (2003).

[3] For more on employee representation in the Nordic countries, see Hansen (2003).

[4] Only about 5 percent of the existing studies adopt the alternative view of diversity. The other studies follow the so-called "additive model" of diversity and evaluate the effects of each diversity dimension independently from the other dimensions (Jackson and Joshi, 2004).

The time dimension of our dataset further distinguishes this study. As stated above, the period of our analysis (2001-2008) is characterized by an increasing public pressure for gender diversity in boards of directors. In Norway, as mentioned earlier in the introduction, the debate materialized into the adoption of a quota rule[5]. It has been estimated that about 30 percent of all board members would have to be replaced in order for all firms to satisfy this quota (Ahern and Dittmar, 2010). Spill-over effects from the quota discussion in Norway can also be observed in other Nordic countries, Sweden and Finland in particular. This provides us with a time series variation in female directorships that is substantially larger than that reported in other studies, which allows us to better address endogeneity issues and to employ more efficient estimators. For example, the average percentage of female directors among the shareholder-elected directors in Nordic listed firms increased from 4.92 percent in 2001 to 18.62 percent in 2008. This is quite large in comparison (for example) to Fortune 1000 firms for which Farrell and Hersch (2005) report an increase from 5.6 percent to 12.26 percent over a longer (10 year) period. The increase in the average percentage of female directors on boards in our sample is accompanied by a substantial reduction in the number of firms with no female director. In 2001 more than 60 percent of firms had no female directors among the shareholder-elected directors; by 2008 this share had decreased to less than 30 percent.

The remainder of the paper is structured as follows. In the next section, we discuss the literature on female progress to the boardroom, and present the theoretical background together with our hypotheses. Following this, sample characteristics, variables and methods are presented. In the fourth section, we present the empirical results. We end the paper with concluding remarks and policy implications.

THEORETICAL BACKGROUND AND HYPOTHESES

Women currently make up the majority of university graduates in the OECD countries and the majority of professional workers in several rich countries. However, they are still under-represented in top corporate positions. Only two percent of CEOs of the largest US companies and five percent of their peers in Britain are women. In 2009, females held a mere 15 percent of board seats in Fortune 500 firms, 12 percent of the directorships in the largest British firms, and 10 percent of directorships in Spain, Italy, France and Germany (Economist, 2009; 2010). At the current rate of progress, it will take 60 years for women to gain equal representation on the boards of FTSE100 companies (Britain's Equality and Human Rights Commission data).[6]

The low level of female representation at the top levels of business organizations has generated a lot of public scrutiny in recent years. An increasing number of public debates, initiatives and legislative proposals have all aimed at increasing firms' internal appetites for female directors. Researchers have tried to understand what factors influence women's progression in their careers, and facilitate female appointments at the top level of organizations (see overview by Terjesen, Sealy and Singh, 2009). The first strand of literature explores how female human and social capital, age and family factors determine female career advancement (e.g. Bilimoria and Piderit, 1994). The second strand of literature, focusing on firm demand for female directors, underlines the role of the country's socio-political beliefs and attitudes towards women, work and families, the historical role of gender in politics, and of the high-level national institutions (Grosvold and Brammer, 2010; Terjesen and

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[5] More specifically, starting from January 2008 the composition of the boards of Norwegian public enterprises should satisfy the following criteria (Hoel, 2008):
on boards with two to three members, both genders are to be represented;
on boards with four to five members, each gender is to be represented by at least two members;
on boards with six to eight members, each gender is to be represented by at least three members; and
on boards with nine members, each gender is to be represented by at least four members, and
on boards with more than nine members, at least a 40% representation of each gender is required.
Special rules for how employee representatives on boards are to be elected were also introduced. In cases where two or more employee representatives are to be elected, both genders must be represented. This rule does not apply in companies where a gender represents less than 20% of the total number of employees at the time of the election.

[6] Economist, December 30th, 2009 and May 6th, 2010.

Singh, 2008). The third strand of literature directly addresses firm-specific determinants of female appointments on the board of directors (e.g. Carter et al., 2003; Hillman and Canella, 2007).[7]

Given that females bring diversity to the board, adding women should actually be beneficial: according to socio-psychological studies, the increased heterogeneity following the addition of females to the board will improve its functioning since, in principle, more diversified groups are more creative, innovative and have higher positive task conflict than homogeneous groups[8] (Kearney, Gebert and Voelpel, 2009; Pelled et al., 1999). This so-called information or decision-making perspective on diversity leads to the argument that heterogeneous directors adopt decisions of a higher quality, have fewer pressures towards conformity and consensus, and are less susceptible to group thinking (Miller et al., 1998). Diversity increases creativity and innovation, leads to more effective problem solving, improves and widens the perspective of the decision makers and results in a better understanding of the environment and more astute decisions (Carter et al., 2003). The positive effects are particularly strong when the group's need for cognition is high, and when the tasks require creativity and innovation (Jackson et al., 2003; Kearney et al., 2009).

Notwithstanding these positive effects, empirical studies indicate a glass-ceiling connotation with regards to female career progress. For example, Farrell and Hersch (2005) investigate Fortune 500 and Service 500 firms in the nineties. They find that female nominations are largely influenced by the firm's need to preserve legitimacy[9], namely to comply with the increasing public pressure for female appointments on boards. In support of this conclusion, the likelihood of female appointments is higher in better performing firms and in firms with a higher percentage of institutional investors' ownership. All in all, the decision to appoint a female on a board seems to derive mostly from outside pressure rather than the firm's internal preference for diversity (e.g. Farrell and Hersch, 2005; Terjesen and Singh, 2008). In line with this, a number of interviews with board members that we conducted in the Nordic countries show that firms rarely seek female directors explicitly; in many cases gender considerations have either no role at all in the appointment decisions or bias them in favor of male directors (with executive experience).

Why is there such a limited number of appointments of female directors? A possible explanation can be borrowed from the social-psychology literature on group behavior. As pointed out by Tajfel and Turner (1986) people have strong preferences for groups based on age, gender, race, and status, and chose to interact more with members who have similar attitudes. These attitudes are in turn related to their demographic characteristics (Byrne, 1971; Stephan, 1978; Tsui, Egan and O'Reilly, 1992). Thus, the boards might be reluctant to accept female directors since this heterogeneity could reduce the identification of the other (existing) group members with the group, and motivate them to act more individually rather than as part of the group. The homogeneous group members may adopt certain behavior to preserve their distinctiveness, such as for example isolating the "different" members from the main group discussion or adopting actions to "drive out" diverse members

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[7] For 1000 publicly traded US firms during 1990-2003 Hillman and Canella (2007) observe a higher female representation in the firms with larger boards. The likelihood of having females on the board also increases with the presence of female directors in connected firms (network effect) and with organizational age. For a sample of non-listed Spanish firms, Campbell and Minguez-Vera (2008) also find that the probability of having a woman on the board is higher for larger boards. A positive size effect is also observed in Carter et al. (2003). Carter et al. (2003) furthermore find fewer females on US boards with otherwise older directors, a higher number of insider directors, and a lower percentage of racial/ethnic minorities on the board. For a complete overview of previous research on female directors, see Terjesen et al. (2009).

[8] Boards of directors have formal rules and norms. The leadership of the board is held by the chair of the board rather than being shared by its members. These characteristics suggest that the board operates as a group rather than as a team; teams are generally smaller, interact more regularly and share the leadership (Katzenbach and Smith, 1993).

[9] In line with the resource dependence theory, a firm may benefit from a board member in three ways: 1) advice and counsel, 2) legitimacy, 3) channels of communication to external entities, gaining influence and support from important elements or access to important resources outside the firm. Consequently, the characteristics of administrators should be related to the context of the organization, because those members who are in power and who have the greatest influence over selection are those who have the characteristics that are most useful for coping with the organization's context and contingencies (Pfeffer and Salancik, 1978).

(Milliken and Martins, 1996). These views find support in social identity theory, according to which part of an individual's self-concept is derived from his knowledge of his membership of a social group (or groups) together with the emotional significance attached to that membership (Tajfel, 1974 and 1982).

In a similar vein, the social categorization paradigm posits that dissimilarities across members may give rise to adverse social processes that impair the functioning of the group and the interaction between different group members (Kearney et al., 2009; Tajfel, 1974). Diversity may also impair the cognitive task performance of work groups by reducing information exchange, cognitive interference, and the positive benefits of task conflict (Jehn, Northcraft and Neale, 1999; Pelled et al., 1999). Most importantly, these adverse effects are stronger when a group is diverse in different dimensions, e.g. gender and age. For example, Alexander et al. (1995) show that gender diversity stimulates emotional conflicts, particularly when combined with age diversity among the other group members, which implies that the negative effects of diversity are higher when groups are diverse both in gender and age. In a similar vein, Jackson and Joshi (2004) observe that group performance is worse when gender diversity, age and tenure diversity are all relatively high. Applying this to directors, a board that is more diversified in other dimensions might be less willing to open the doors to a female director, in order to prevent the escalation of the "emotional" conflicts associated with the confluence of various diversity dimensions.

An alternative explanation for the limited demand for female directors is that firms simply do not consider board diversity as an asset, and diversify their boards only when subject to outside pressure: when this is the case, we would probably observe that boards diversify to the minimum extent – just enough to preserve legitimacy or signal compliance with what the public considers a "good" board. Boundaries to diversification in gender may furthermore be due to the "maximum" speed of board reshuffling: there are a number of reasons (e.g. search costs, the value of having experienced directors on a board, the risk of a negative market perception of major changes in the board composition, etc.) why only part of a board can be replaced in any given period. To sum up, if appointing a female is considered as an increase in one of the dimensions of board diversity, we could expect that the decision to appoint a female will depend on the existing level of diversity of the board, or ongoing changes in other dimensions of board diversity. This leads to the following hypotheses:

> *Hypothesis 1: The number of females on the board of directors is negatively related to the extent of diversity among other (male) board members.*

> *Hypothesis 2: Firms that are increasing their board diversity (outside of gender diversity) are less likely to increase the number of female directors on their board.*

Empirical studies show that gender, ethnic and age diversity will more likely cause the adverse effects stated above than, for example, job-related diversity. This suggests that "crowding-out" is probably relevant for these three diversity dimensions but not for others (Jackson et al., 2003; Jehn, 1994; Murnighan and Conlon, 1991; Tajfel, 1974; Williams and O'Reilly, 1998).[10] Thus, our analysis focus on these attributes. However, we account for an additional important functional dimension of diversity, the employee representation on the board of directors, which is (as discussed in the introduction) a common feature of Nordic boards.

Two things need to be considered when formulating the hypothesis of how the presence of employee directors might impact the firm's choice (formally, by the General Assembly of the

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[10] Empirical studies attribute distinctive effects to different dimensions of diversity. Pelled et al. (1999) find that emotional conflict increases with dissimilarities in race and tenure. In other studies (Keny and McGrath, 1969, Murnighan and Conlon, 1991) these negative effects have also been attributed to gender diversity. Age, gender and race (ethnicity) are on the other hand only weakly associated with intra-group task conflicts, which is beneficial for group performance. This task conflict is, however, strongly related to functional or job-related diversity; studies show that diversity in job-related attributes stimulates group cognitive task performance, group creativity, and exchange of ideas, and improves the quality of group decisions with a subsequent positive effect on group behavior (Amason, 1996).

owners) of female directors. Firstly, employee directors are selected from the people employed by the company or union representatives. Given that today females represent a large share of the total labor force, they constitute a large share of the candidates from which employee directors are selected. Consequently, we should expect to observe a positive association between the number of employee directors and the total number of females on the board. On the other hand, the presence of employee directors (regardless of their gender) introduces a new dimension of diversity with potentially negative consequences for female appointments by shareholders; employee directors bring to the board different perspectives and information but also different objectives, particularly when elected by the unions (i.e. political interests).[11] Jackson and Joshi (2004) find that when the objectives of the members diverge, the members of the group are less motivated to learn how to leverage their diversity in order to achieve their common objective, and are more likely to follow their own interests rather than work for the interests of the group. Thus, they might also be less inclined to leverage diversity in other dimensions. Keeping this in mind, we expect that:

> *Hypothesis 3(a): Firms with a higher number of employee directors have a higher number of females on their board.*

> *Hypothesis 3(b): The presence of employee directors reduces the number of female board appointments (by shareholders).*

A note is in order here. In postulating the hypotheses we implicitly assume that the composition of the current board of directors has an important influence on new female appointments. This is based on two main considerations. First, the evidence from our case studies shows that, when it comes to female appointments to boards, the conventional recruitment channels (i.e. headhunting firms) are inadequate in locating suitable candidates. In the case of the Danish company Danisco, for example, the hiring of the female director Kirsten Drejer was based on the explicit decision of the board to actively search for a female director, and achieved through an active search by the chairman of the board through his personal network. The importance of the networks of the existing board members (or members of the nomination committee) is confirmed in Hillman and Canella (2007). In support of the network effect, we observe a positive correlation between the number of women on the nomination committee and the number of female board members in our Norwegian and Swedish firms (see below). Note that in these two countries – as opposed to Denmark and Finland – the nomination committee is not a mere subset of the board. Second, as argued by Stafsudd (2006), even when standard recruitment procedures are used, the recruiters will tend to select individuals who are similar to the existing board members, in order to gain a positive appraisal of the recruitment decision (p. 179).

SAMPLE, DATA COLLECTION AND METHODS

Diversity on Nordic Boards

Our sample is based on the population of all publicly traded firms (excluding banks and other financial institutions) headquartered in Denmark, Finland, Norway or Sweden, during 2001-2008. For these companies, we collected data on a number of board and CEO variables, such as the names and surnames of the CEO and the directors, their gender, year of birth, first appointment to the board, and nationality. These provided us with complete information for the CEO and the board for a sample consisting of 979 firm-year observations for Denmark, 900 firm-year observations for Finland, 799 firm-year observations for Norway and 1,967 firm-year observations for Sweden, corresponding to an 8-year period between the years 2001-2008.[12] In order to correctly identify

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[11] For example, Adams, Licht and Sagiv (2008) find that employee directors in Sweden are generally more considerate towards other stakeholders in comparison to shareholder-elected directors.

[12] Not all firms have been listed on the stock exchange since 2001, and were thus included in the sample only for the years for which they have been listed. The same applies to firms that delisted during the period of the analysis. Furthermore, information on directors was not equally rich across all the years of our analysis, which means that we operate with an unbalanced panel. About 15 percent of the companies were excluded

directors' nationalities, all information was collected by researchers who were nationals of each respective country in which the firm was headquartered. The main source of this information was the annual reports. However, data regarding the nationality of board members and their mandates were not always available from these. A number of alternative data sources (such as the internet, lists of important individuals, Business Week, telephone surveys, etc.) were used when the identification of nationality was not straightforward. We performed a final control of the data by comparing the information for the same board member over different years, and by re-checking the collected information for a selected number of firms. Due to time and source constraints, a few pieces of more detailed information were collected for a cross-section of firms (year 2007). This included information on each director's international work, their board experience, and their studies abroad. We also collected data on board committees in terms of gender and nationality. The collected board information was then merged with financial data and ownership data. Financial data were collected from the Worldscope/Thomson Financial Database, whereas ownership data were taken from the Thomson Ownership database.

The evolution of female board representation over the years of our analysis is presented in Tables 1-3. For the sake of comparison, we present the numbers for a balanced sample of firms, where the percentages refer to the 409 firms in the sample that were listed throughout the entire period 2001-2008. Thus, the trend in the percentages represents the effective increase in female representation in these firms. Given that in Norway, Sweden and Denmark, the employees have the right to nominate some of the board representatives, the percentages of females are also presented separately for female shareholder-elected directors and female employee-elected directors. Table 2 complements Table 1 by showing the percentage of firms with no females on their board during 2001-2008. Finally, the number of total board positions occupied by male and female directors over the period 2001-2008 is presented in Table 3.

Table 1 Percentage of females on board (409 Nordic firms)

Percentage of female directors								
	2001	2002	2003	2004	2005	2006	2007	2008
Denmark	6.78	7.60	7.45	6.96	6.23	5.87	6.82	7.06
Finland	4.88	4.51	6.30	7.69	8.57	9.47	10.85	10.22
Norway	7.87	10.32	14.01	15.40	21.91	28.50	36.78	37.84
Sweden	6.16	6.48	9.96	14.30	15.20	17.72	19.08	20.17
Percentage of females among the shareholder-elected directors								
	2001	2002	2003	2004	2005	2006	2007	2008
Denmark	3.05	4.09	3.89	4.02	3.76	3.69	4.02	4.42
Finland	4.88	4.51	6.33	7.74	8.64	9.50	10.88	10.25
Norway	6.54	9.74	13.22	15.22	22.83	30.85	40.24	40.00
Sweden	5.46	5.86	9.53	14.05	14.74	17.34	18.69	19.72
Percentage of females among the employee-elected directors								
	2001	2002	2003	2004	2005	2006	2007	2008
Denmark	20.45	20.64	21.09	21.31	18.05	16.67	19.34	19.50
Norway	20.23	18.39	23.70	22.65	24.28	22.06	22.85	22.06
Sweden	15.11	13.33	16.20	18.24	20.55	25.00	26.06	29.09

from the sample due to unavailability of data on their corporate boards. No systematic pattern was revealed for the excluded companies.

Table 2 Percentage of firms with no female on the board of directors (409 Nordic firms)

	2001	2002	2003	2004	2005	2006	2007	2008
Denmark	63.44	58.06	62.37	66.30	65.59	64.79	60.22	58.06
Finland	71.91	73.03	64.77	61.36	58.43	53.30	50.56	50.56
Norway	65.57	55.74	43.33	37.70	19.67	8.33	4.92	1.64
Sweden	60.84	59.76	45.12	26.22	25.30	16.27	15.66	18.66
All countries	64.55	61.67	53.09	44.69	40.83	35.29	31.78	32.52

As evidenced in Table 1, the percentage of females on boards has increased in all four countries. We observe a very moderate increase in Denmark more recently, a larger increase in Finland, and quite substantial increases in the percentages of females on the boards of Swedish and even more so Norwegian firms. This trend is confirmed when looking at the number of firms with at least one female representative on their board. As we would anticipate (considering the quota law), in 2008 there was no Norwegian listed firm with no female directors on its board. The percentage of firms that have recruited females to their board is also relatively high in Sweden (81.34 in 2008). Finland and particularly Denmark are lagging behind with 49.44 and 41.50 percent of gender-diversified boards.

To legitimize our sample, we compare these numbers with those available from other studies[13]. Ahern and Dittmar (2010) study 166 Norwegian firms during 2001-2008. The percentage of shareholder-elected female directors in their sample is very similar to the percentage of shareholder-elected females in the Norwegian firms in our empirical analysis. For example, they report a figure of 8.05 percent for the year 2001 in comparison to our figure of 7.74, 11.49 for the year 2003 (in comparison to our 11.11 percent), 27.52 for the year 2006 (in comparison to our 26.47), and 37.61 for the year 2008 (our figure is 36.8). Bøhren and Strøm (2010) study Norwegian non-financial publicly traded firms during 1998-2002. For this sample, they report an average board size of 6.5 members, of which 15 percent are employee directorships, and 4.9 (3.2) percent are female directors (female shareholder-elected directors). This is again in line with our data. The mean size of the Norwegian boards in our sample in the years 2001-2002 is 6.64. Of these, 14.3 percent of the seats are held by employee representatives; the average number of employee representatives equals 1.08 (in comparison to 1.18 in Bøhren and Strøm's study), and half of the firms have no employee representative on their board. The number of female directors we observe is higher than the number reported in their study (11 percent versus 4.9 percent), which is expected given that our averages do not include years before 2001, when female representation was very low.

When we compare the representation of females among employee- and shareholder-elected board representatives[14], we find – as evidenced in Table 1 – that females are more common among the employee directors (around 20 percent), a percentage that is stable across the years. The only exception is Sweden, where public pressure for stronger female representation seems to be reflected in an increase in the number of employee-elected female directors. The trend towards higher female representation on company boards is confirmed in Table 3. With the exception of the year 2008, we observe an increase in the total number of board seats, mostly to the benefit of female representation. Most likely, (at least in some of the firms outside Norway) female directors are being added to the board rather than appointed as replacements for existing directors.

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[13] Differently from ours, the studies are primarily concerned with the impact of female directorship on firm value, i.e. the appraisal of the (expected) economic effects of the gender quota in Norway.

[14] For employee directors we only present data for Denmark, Norway and Sweden, since in Finland there are only a few employee-elected directors, and they are all male.

Table 3 Number of female and male board positions 2001-2008 (490 Nordic firms)

	2001	2002	2003	2004	2005	2006	2007	2008
Male directors	2785	2775	2687	3025	2654	2696	2640	2420
Female directors	212	231	303	377	426	514	603	551
Total directorships	2997	3006	2990	3025	3080	3210	3243	2971

These descriptive statistics indicate a positive trend in female board representation in the Nordic countries. The trend is most pronounced in Norway and Sweden[15] – the two countries with the strongest public pressure for the equal representation of both genders on company boards. The other two countries – Denmark and Finland – have been much slower to promote women to their boards, particularly when we consider that nearly half of the publicly listed firms still have no female board directors. It must be noted also that in Norway and Sweden the boards have become diversified in stages; in Norway, for example, a large share of firms waited to make female appointments until shortly before the quota deadline (end of 2007). Apart from the dissimilarity in their paths to the boardroom, other differences can be observed between male and female directors. Female board members are on average about 6 years younger than male members. Men hold their positions for a longer period; the difference persists when Norwegian women appointed under the quota law, who consequently have had a very short tenure, are excluded.

Table 4 Characteristics of male and female directors (all board members in year 2007)

	Male directors	Female directors	t-test for the difference in means
Directors' age	54.57(9.04)	49.02 (8.28)	16.81***
Directors' tenure	6.40(5.94)	3.68(3.53)	12.56***
Directors' tenure (Norway excluded)	6.62 (5.98)	4.32(3.59)	17.49***
Percentage of foreign directors	11.79	11.05	8.49***
	Male directors	Female directors	Test for the difference in distribution
Percentage of members with no higher education (2007)	12.60	11.33	
Percentage of members with law and economics education	55.54	53.32	3.69
Percentage of members with technical education	23.27	16.89	

*Notes: The test for the difference in the distribution is the Epps-Singleton Two-Sample Empirical Characteristic Function test. ***,** and * denote statistical significance at 1, 5 and 10 percent, respectively.*

Before we proceed with the empirical analysis, we now look at the characteristics of the female directors who were appointed under the pressure of the gender quota, namely in year 2006 or later. Unfortunately, we have only limited information on their education and expertise (for more, see Ahern and Dittmar, 2010). In year 2008, the 128 recently appointed Norwegian female directors were on average 47 years old; half of them were younger than 46. About half of these women were educated in law, economics or business, and 10 percent did not have any university education.

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[15] Minister Margaretha Windberg initiated the debate in Sweden in 1999. In 2002, as deputy prime minister of a social democrat government, she threatened Swedish companies with binding regulations if they failed to increase the female representation on their boards from an average of 6% to 25% within five years. As a first step, in 2004 it became mandatory to disclose the gender distribution of boards. Changes in the Company Act were presented in 2005 with the aim of paving the way for an equal gender distribution. The regime shift in 2006 reduced the focus on the issue. However, in 2009, the Minister of Labor Sven-Otto Littorin – from the Conservative party- brought up the issue again. When he was forced to resign in the summer of 2010, the gender issue was taken off the government's agenda.

These last two percentages do not differ significantly from those from the other Nordic countries. On the other hand, the Norwegian female directors were younger than those from the other countries (see Table 4).

In Norway, about 78[16] percent of the recently appointed female directors held Norwegian nationality, while most of the remaining directors came from Sweden (nearly 7 percent). For comparison, in the year 2005, Norwegian directors represented around 90 percent of all female directors. Given the increasing presence of foreigners among the female directors, one might argue that this is a sign of a lack of supply of appropriate female candidates – the firms had to search for candidates outside the country's borders[17]. Still, even under the pressure of the quota law, the percentage of foreign females remains moderate, suggesting that other factors than the lack of supply of suitable candidates might be more important in limiting female advancement to boards. We analyze some of these factors next.

Empirical Analysis

This part presents the main variables and estimators used in our empirical analysis. The discussion of the empirical results follows in the next section.

Dependent variables

Female board representation. The dependent variable in our basic specification is the number of women on the board of directors (*N_FEMALES*). Given that the attitude towards female directors may differ depending on who appoints them (i.e. employees or shareholders[18]), we distinguish shareholder-elected female directors (*N_FEMALES^{shareholder}*) from employee-elected directors. In an alternative specification, we look at the changes in the number of women on the board. Consequently, we construct a multi-category variable ($\Delta FEMALES$ or $\Delta FEMALES^{shareholder}$), which is coded 1 when the firm reduces the number of females (shareholder-elected females) on the board in a given year, 2 when there is no change in the number of females (shareholder-elected females) and finally, 3 when the firm increases the number of females (shareholder-elected females) on the board.

Explanatory variables:

Employee representation. We measure employee board representation by the number of seats occupied by employee-elected directors, and differentiate between employee-elected male and female directors (*Employee ^{female}* and *Employee ^{male}*). We also define the variable $\Delta Employee$ for the change in the number of employee-elected directors. *Foreigners.* The variables *Foreigners^{male}* and $\Delta Foreigners^{male}$ refer to the number of male foreigners on the board and the change in the number of male foreigners on the board, respectively. For the purpose of this study, all non-nationals are labeled as foreigners, including directors from other Nordic countries. *Directors' age and tenure.* We measure the age diversity of the (male) directors by the standard deviation of the directors' ages (*SdAge ^{male}*) and, alternatively, by the coefficient of variation (*CVAge ^{male}*), defined as the standard deviation of the directors' ages, divided by their average age. To track changes in the age diversity, we define the variables $\Delta SdAge^{male}$ and $\Delta CVAge^{male}$, which measure changes in the standard deviation (or the coefficient of variation) of the directors' ages. Finally, we look at whether the existence of female directors on a board leads to more female appointments: we explore this by controlling for the impact of the existing number of women on the increase in the number of women on the board, and by exploring the correlations between the existence of a female chairman (*Female chair*) or a female CEO (*Female CEO*) and the number of other females on the board.

Control variables

The choice of control variables is determined by the existing empirical and theoretical findings on the environmental and organizational antecedents of board structure (DiMaggio and Powel, 1986; Farrell and Hersch, 2005; Hillman and Canella, 2007). *Board size* is measured by the total number

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[16] A similar figure (76 percent) is reported in Ahern and Dittmar (2010).

[17] As quoted by a senior executive of a Norwegian firm (Economist, March 11, 2010): "*If we hadn't had the Swedish pool to draw from, the law would have been far more difficult for us*".

[18] See Hypothesis 3(a).

of board members, and is included to scale the female representation on the board. We include a number of variables measuring firm performance and risk. ***Firm market performance*** is measured by Tobin's Q (and labeled as *Tobin's Q*), and the firm operational performance is proxied by the return on assets – *ROA* (defined as *EBIT/total firm assets*). ***Firm leverage*** is defined as the ratio of debt to total assets (*leverage*) and ***firm size*** is measured by the logarithm of total firm sales (in Million Euros). ***Firm risk*** is proxied by the Worldscope price volatility indicator, which measures the stock's annual price movement to a high and low, around a mean price for each year. For example, a stock price volatility of 20 percent indicates that the stock's annual high and low price has shown a historical variation of 20 percent above to 20 percent below its annual average price.

Among the control variables, we also measure ***ownership concentration,*** which is the size of the ownership share held by the largest shareholder. Since detailed data on control enhancing mechanisms and the resulting differences between voting and ownership rights are not available, full control (i.e. an ownership share higher than 50 percent) is assumed for those firms which deviate from the one-share-one-vote structure. The ***size of institutional ownership*** is measured by the percentage of shares owned by the institutional investors in the total percentage of shares owned by the first five largest blockholders. All the regressions include ***industry dummies*** based on the two-digit SIC industry categories. Finally, we include ***country*** and ***time dummies*** to measure changes in institutional pressure for female representation on boards of directors. The country dummies account for inter-country differences in the pressure, while the time dummies capture changes in these pressures or any other factors across time. The descriptive statistics for the main variables used in the regression analysis are presented in Table 5. The descriptive statistics refer to the 534 firms (3,111 firm-year observations) used in the baseline regression in Table 6, Model (1). Given that some of our financial variables have extreme observations on both tails, these data were Winsorized at 1% of each tail.

Table 5 Descriptive statistics (3,111 observations used in the regression analysis)

	Mean (Sd)	Median	Min	Max
N_FEMALES	0.96(1.09)	1	0	6
N_FEMALES [shareholder]	0.78(0.92)	1	0	4
Board size	6.78(2.13)	7	3	13
Employees	0.96(1.26)	0	0	5
Foreigners	0.67(1.20)	0	0	8
Male foreign directors	0.57(1.07)	0	0	8
SdAge[male]	7.79(3.13)	7.64	0	26.87
Average age of male directors	54.62(4.65)	55	31	75
Number of diverse directors	2.29(2.01)	2	0	10
TobinQ	1.66(1.15)	1.30	0.43	13.33
ROA	4.77(17.65)	7.19	-262.30	53.31
Firm sales (in Million Euro)	1018.31(2571.54)	134.31	0.01	19136.93
Firm risk	31.83 (16.81)	28.62	8.32	76.18
Leverage	18.61 (16.81)	14.92	0	73.91
Ownership concentration	26.81(18.51)	21.49	0.01	96.44
Institutional ownership	15.64(13.68)	13.22	0	95.72

Abbreviations: N_FEMALES is the number of women on the board of directors; N_FEMALES[shareholder] is the number of shareholder-elected female directors on board. Board size stands for the total number of directors. SDAge[male] is the standard deviation of male directors' age, Foreigners is the number of foreign directors on board, Employees is the number of employee-elected directors. Diverse director is a female director, a foreign director, or an employee-elected director. Tobin's Q is calculated as the market value of firm equity plus book value of assets minus book value of firm equity, divided by the book value of firm assets. ROA is EBIT over total assets. Leverage is debt over total assets. Firm size is the total value of firm sales (in Million Euro). Firm risk is proxied by Worldscope price

volatility indicator. Ownership concentration is the share of the largest owner, while institutional ownership stands for the total share of blocks owned by institutional investors. All financial data are Winsorized at 1% of each tail.

Methodology

We model the appointments of women to boards of directors as a Poisson process, where the probability of a firm having "y" female directors equals $P(Y=y)=e^{-\mu}\mu^{y}/y!$, y = 0, 1, 2 etc. The use of a Poisson estimator is appropriate in cases where the dependent variable is discrete, and takes only non-negative values. Our dependent variable (the number of female directors) corresponds to these characteristics – the distribution is strongly skewed to the right and thus not normally distributed. The standard linear regression cannot properly account for such a distribution. While the Poisson estimator addresses this issue, some problems remain. The Poisson estimator is based on the assumption of variance-mean equality. It assumes that the mean and the variance of the dependent variable are both given by μ, which is a parameter specific to the firm and a deterministic function of a number of observable firm characteristics x_k. This equality is, however, hardly satisfied in practice. Following Cameron and Trivedi (2005), we check for this by computing a simple over-dispersion test statistic: the outcome indicates the presence of over-dispersion since the null of no over-dispersion can be rejected at 0.01 percent. A solution to the over-dispersion problem is to maintain the Poisson maximum likelihood estimator but relax the equivariance assumption to obtain a robust estimate of the variance-covariance matrix of the estimator (Cameron and Trivedi, 2005).

We start by presenting the results of the pooled Poisson regression in Model (1) and Model (2) in Table 6. The standard errors are clustered by firm in order to account for both the over-dispersion and the serial correlation in the error term (Cameron and Trivedi, 2005). Since our sample is spread over a number of years, we also apply panel estimators. Panel estimators have the same robustness properties as cross-sectional (pooled) estimators, while at the same time allow us to capture both cross-sectional and time variations in the dependent variable and the regressors, improving the efficiency of our estimates. Since many of the firms in our sample did not have any female directors during the whole period, we cannot apply fixed effects (FE) estimators[19]. Thus, the remaining models in Tables 6 and 7 present the results for random effects Poisson regressions (with cluster-robust or bootstrap standard errors).

The dependent variable in Table 8 is our three-choice variable (decrease, no change, or increase in the number of women on the board). We use multinomial logistic regressions (with robust standard errors) to predict the probability of a given outcome (i.e. an increase or a decrease in the number of women) over the probability of the reference outcome (i.e. no change in the number of women). By differentiating the dependent variable, we partly account for the inertia in the board structure due to the longevity of director tenure. It also allows us to control for unobserved factors that could be correlated with our dependent variable and our explanatory variables, and hence to derive some conclusions about the direction of causality between the variables of interest (see Dittmann, Maug and Schneider, 2008; Farrell and Hersch, 2005).

For the sake of consistency with previous research, we also perform all the reported estimations separately using a reduced sample of non-regulated firms. In this case, real estate firms, along with insurance companies (SIC 6000-6799), and electric, gas and other utilities within the SIC code 4900, were eliminated from the sample. This restriction reduced our sample by approximately 15 percent. The results are qualitatively the same as those presented below and are, thus, not reported. Finally, we address multicollinearity problems by calculating the variance inflation factors for all the variables included in our models. The variance inflation factors do not exceed 2.6, which is well below the critical level of 10, and allows us to reject collinearity concerns.

With regards to our empirical analysis and choice of estimators, some additional information may be of interest. The number of females equals 0 in 42.37 percent of our firm-year observations; in

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[19] The Poisson FE estimator only uses observations for which the dependent variable is non-zero in at least one year during the period of analysis. In our case, this would imply a substantial loss in the number of observations (for more, see Cameron and Trivedi, 2005).

about 32.59 percent the number of females equals 1, in 15.56 percent it equals 2, in 6.65 percent it is equal to 3, while in the remaining 2.39 percent of the observations, the number of females is higher than 3 (the maximum number being 6). The distribution of the change in the number of female directors is as follows: there is no change in 79.31 percent of observations, a reduction in the number of women in 5.25 percent and an increase in the number of women in the remaining 15.47 percent. The number of shareholder-elected female directors decreases in 4 percent of the cases, and increases in nearly 15 percent. In more than 28 percent of the observations, one or more foreign women have been appointed to the board. This effect is probably driven by the Norwegian quota (see below). We observe a change in the number of foreign male board members in about 13.87 percent of cases, and in nearly 6 percent the number of foreign male board members has decreased since the previous year. The number of employee directors on the board changes in 8 percent of the observations, while a change in the board size is observed in 38 percent (in 20 percent of the observations the board size increases).

DISCUSSION OF THE EMPIRICAL RESULTS

Main results

As evidenced by the basic firm-specific characteristics in Table 6, Model (1), a higher number of female directors is observed in larger firms, in firms with larger boards and in firms with higher market value (measured by Tobin's Q). The effect of Tobin's Q is, however, not very strong, particularly in comparison to the effects of firm (board) size: for example, an increase in the Tobin's Q by 1 is associated with a 6.3 percent increase in the number of female directors, while an increase in the board size by 1 member results in a 20 percent increase in the number of female directors. Females hold fewer seats in the more indebted firms. This result is in line with other studies that find a lower number of females in more risky firms (Hillman and Canella, 2007).

Female representation varies significantly across different industries (industry dummies are not reported for the sake of space). Females are represented to a smaller extent in the manufacturing and construction industries. Last but not least, our regression results reflect the escalation of the external pressure for higher female representation at the top layers of business corporations. The number of female representatives significantly increases after the year 2003, which marks the start of more intense public debate about mandatory female representation in Norway. The importance of the outside pressure is confirmed by the coefficients of the country dummies. In comparison to Denmark, where the debate on board diversity started only recently, the number of female directors is significantly higher in Norway, Sweden, and Finland.

In Model (2) we additionally control for the impact of firm ownership structure: given the public pressure for board diversity, we could expect a higher number of females in the firms with a higher share of institutional investor ownership, since these investors might be more prone to promote good board practice. On the other hand, this may be less of the case in firms with very concentrated ownership. However, no significant effects are observed with regards to ownership: neither the impact of institutional investors nor of the share of the largest owner is statistically significant. The results do not change when we add random effects (see Model 2a), when we restrict our attention to females appointed by shareholders, or when we exclude regulated industries (results not reported).

To test *Hypotheses 1- 3*, in Model (3) shown in Table 6 we include other dimensions of diversity: the number of male foreign directors, the coefficient of variation of the male directors' ages, and the number of employee directors. In line with *Hypothesis 1*, we observe a higher female representation in the firms with a lower number of foreigners on their boards, and in the firms with a lower coefficient of variation of the male directors' ages. These results indicate that female directors might progress to the board room more easily when the demographic heterogeneity of the remaining board is lower, i.e. when the remaining directors are nationals with relatively similar ages. The impact becomes more pronounced when we isolate the effect of public pressure in Norway by including the interaction term between the main board variables and the dummy delineating those firms that are subject to the quota: comparing the coefficients of $CSDAge^{male}$ and $Foreigners^{male}$ from Models (3) and (4), we see that the "crowding-out" effect is stronger in the firms that are not

subject to the quota law. Note that in Model (4), the dummy variable *Quota* takes the value one for Norwegian firms in years 2006-2008, and zero otherwise. All in all, these results suggest that there is a limit to how much a board can be diversified overall across different dimensions. The significant impact of the Swedish and Norwegian dummies, combined with the positive effect of firm size on female appointments, also suggests that the first to appoint female directors are those firms that are more exposed to the public eye.

Table 6 Number of females on the Nordic boards

Dependent variable: N_FEMALES	Pooled Poisson	Pooled Poisson	RE Poisson	RE Poisson	RE Poisson
	Model (1)	Model (2)	Model (2a)	Model (3)	Model (4)
BOARD VARIABLES					
Board size	0.184***	0.178***	0.189***	0.210***	0.227***
	[9.490]	[9.154]	[9.036]	[9.499]	[10.27]
CVAge^{male}				-1.182***	-1.221*
				[-2.727]	[-1.95]
Foreigners^{male}				-0.123***	-0.139***
				[-4.637]	[-4.23]
Employees				0.024	0.021
				[0.589]	[0.62]
Board size*Quota					-0.082*
					[-1.75]
CSDAge^{male}*Quota					0.747**
					[1.06]
Foreigners^{male}*Quota					0.024
					[0.58]
Employees*Quota					-0.08
					[-1.20]
Quota					1.378***
					[5.10]
FIRM VARIABLES					
Tobin's Q	0.063**	0.059**	0.030	0.025	0.023
	[2.436]	[2.241]	[1.145]	[0.888]	[0.97]
ROA	-0.000	-0.000	-0.002	-0.002	-0.002**
	[-0.091]	[-0.093]	[-1.121]	[-1.497]	[-2.08]
Leverage	-0.005***	-0.005***	-0.004**	-0.004**	-0.003**
	[-2.908]	[-2.854]	[-2.492]	[-2.417]	[-2.00]
Firm size	0.060***	0.057***	0.067***	0.068***	0.075***
	[2.810]	[2.626]	[2.653]	[2.826]	[3.38]
Firm risk	-0.002	-0.002	-0.004	-0.002	0.003
	[-0.772]	[-0.608]	[-1.052]	[-0.402]	[1.04]
Ownership concentration		-0.001	0.000	0.001	0.001
		[-0.391]	[0.087]	[0.750]	[069]
Institutional ownership		-0.002	-0.000	-0.001	0.001
		[-0.853]	[-0.161]	[-0.345]	[0.21]
Constant	-2.530***	-2.296***	-1.228***	-1.246***	-1.949***
	[-11.397]	[-10.132]	[-4.746]	[-4.271]	[-8.43]
SPECIFICATION					
R^2	0.46	0.46	0.44	0.45	0.38
Log-likelihood	-3372.3	-3140.4	-2974.52	-2929.6	-2939.1
Observations	3,111	2,861	2,861	2,818	2,818

Notes: The R^2 stands for squared coefficient of correlation between the fitted and observed values of the dependent variable. The standard errors are adjusted for 534 clusters. All regressions include country dummies, and common

Table 7 supplements Table 6 and presents RE Poisson estimates separately for the number of domestic females on the board (Model (1); *N_DOMESTIC FEMALES*), the number of domestic females elected by the shareholders (Model (2); *N_DOMESTIC FEMALES*[shareholder]), and the number of female directors excluding the CEO or chairman of the board. The results from Model (1) confirm *Hypothesis 1*: the number of domestic females on the board is negatively associated with the presence of other dimensions of diversity; the results hold when we control for the number of foreign female directors (results not reported). In Model (2) we look at shareholder-elected domestic females, and differentiate between female and male employee directors. We find a significant negative association between the number of employee directors (both male and female) and the number of shareholder-elected females on the board. This finding is in line with *Hypothesis 3(b)*. While employee-elected directors might in principle be more inclined to elect females (see the positive but insignificant coefficient of the *Employees* variable in the models presented in Table 6), their presence does not motivate nominations of female directors by shareholders, on the contrary.

Finally, in Model (3) we look at the association between the gender of the firm's CEO or chairman, and the number of other female directors. The underlying hypothesis here is that a female chairman (or CEO) motivates new female appointments to the board. We refrain from stating this hypothesis among our main hypotheses, since any conclusion in this regard is limited by the small percentage of chairwomen and female CEOs in our sample. In 2008, for example, a chairwoman was present in 12 firms constituting 2.65 percent of the sample, while a female CEO was leading 13 firms. While no significant effect is observed with regards to the gender of the CEO, we find a positive association between the presence of a chairwoman and the number of females on the board (see the positive and significant coefficient of *Female chair* in Model (3), Table 7).

Note that it is not our intention to imply anything about causality here: while the presence of a female chair could motivate more female appointments to the board, it may well be that the causation in the other direction, i.e. the presence of more women on the board makes it more likely that a female chair will be elected. We suggest that it is the presence of a chairwoman that leads to more female appointments since female appointments often derive from the decision of the board (shareholders) to actively search for a female director, and rely on the personal network of the chairman or other board members (as stated above). In support of this conjecture we observe a positive relation between the number of females on the board nomination committees in Sweden and Norway, and the number of female directors on those boards (results not reported).[20]

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[20] Note that members of the nomination committee in Sweden and Norway are not part of the board. Unfortunately, due to difficulties in collecting information on board committees, this estimation of the correlation between the composition of the nomination committee and of the board of directors is based on a cross-section of firms in 2007. In these firms, women held 12 percent of the seats on these committees. For comparison, Dalton and Dalton (2010) report a 20 percent female representation on Fortune 500 board nominating committees in the year 2009.

Table 7 Determinants of female directors on boards (RE Poisson regressions)

Dependent variable:	N_DOMESTIC FEMALES	N_DOMESTIC FEMALES[shareholder]	N_FEMALES (CEO and chair excluded)
	Model (1)	Model (2)	Model (3)
BOARD VARIABLES			
Board size	0.214***	0.248***	0.217***
	[10.114]	[8.802]	[13.929]
CVAge[male]	-1.129**	-0.405	-1.102*
	[-2.485]	[-0.706]	[-1.879]
Foreigners[male]	-0.170***	-0.203***	-0.129***
	[-5.824]	[-6.199]	[-5.037]
Employees	0.064		0.026
	[1.522]		[0.775]
Employees[female]		-0.148*	
		[-1.806]	
Employees[male]		-0.137**	
		[-2.535]	
Female CEO			0.084
			[0.446]
Female chair			0.592***
			[3.958]
FIRM VARIABLES			
Tobin's Q	-0.002	-0.001	0.022
	[-0.098]	[-0.036]	[0.926]
ROA	-0.001	-0.002	-0.002
	[-0.661]	[-0.897]	[-1.609]
Leverage	-0.003*	-0.003	-0.003**
	[-1.783]	[-1.292]	[-2.005]
Firm size	0.048**	0.050*	0.076***
	[2.080]	[1.786]	[3.267]
Firm risk	-0.002	-0.004	-0.000
	[-0.421]	[-0.809]	[-0.063]
Ownership concentration	0.002	0.002	0.001
	[0.933]	[1.199]	[0.705]
Institutional ownership	-0.001	-0.002	-0.001
	[-0.554]	[-0.853]	[-0.423]
Constant	-1.293***	-1.524***	-1.039***
	[-4.853]	[-3.700]	[-6.309]
SPECIFICATION			
R^2	0.42	0.39	0.44
Log-likelihood	-2776.5	-2423.1	-2900.1
Observations	2,818	2,818	2,777

*Notes: The table presents the results of the Random effects Poisson regressions. R^2 stands for the squared coefficient of correlation between the fitted and observed values of the dependent variable. The standard errors are adjusted for 534 clusters. All regressions include country dummies, and common time and industry effects. Cluster robust Z-statistics are reported in brackets. ***,** and * denote statistical significance at 1, 5 and 10 percent, respectively.*

Abbreviations: The dependent variables are the number of domestic women on the board of directors (N_DOMESTIC FEMALES), the number of domestic shareholder-elected females (N_DOMESTIC FEMALES[shareholders]), and the number of females on the board, excluding the chairman and CEO. Board size stands for the total number of directors. CVAge[male] is the coefficient of variation in male directors' age, Foreigners[male] is the number of male foreign directors on the board, Employees is the number of employee-elected directors. We distinguish between male and female elected employee directors (Employees[male]; Employees[female]). Female chair is a dummy variable that takes the value 1 when the chair of the board is female and 0 otherwise. The same applies to the Female CEO variable. Tobin's Q is calculated as the market value of firm equity plus book value of assets minus book value of firm equity, divided by the book value of firm assets. ROA is EBIT over total assets. Leverage is debt over total assets. Firm size is the total value of firm sales (in Euros and expressed in logarithms). Firm risk is proxied by the Worldscope price volatility indicator. Ownership concentration is the share of the largest owner, while institutional ownership stands for the total share of blocks owned by institutional investors. All financial data are Winsorized at 1% of each tail.

In order to gain a deeper insight into the factors that constrain/motivate new female appointments, and to account for any unobservable factors that could be driving the correlations observed in Tables 6 and 7, we continue by analyzing the changes in the number of females on the boards – estimating the likelihood of an increase or decrease in the number of female directors in a given year. Table 8 presents the results for separate multinomial logit regressions, for all female directors (*N_FEMALES*), and for shareholder-elected directors (*N_FEMALES*[shareholder]).

Table 8 Determinants of female directors on boards (multinomial logit regression)

Dependent variable:	N_FEMALES		N_FEMALES[shareholder]		N_DIVERSE	
	decrease	increase	decrease	increase	decrease	increase
	Model (1)		Model (2)		Model (3)	
BOARD VARIABLES						
N_DIVERSE					0.693***	-0.221***
					[10.21]	[-4.42]
ΔBoard size	-1.058***	0.916***	-1.051***	1.085***	-1.516***	1.272***
	[-6.949]	[8.535]	[-6.272]	[9.373]	[-11.62]	[12.22]
Board size	-0.181*	0.279***	-0.121	0.259***	-0.343***	0.201***
	[-1.886]	[4.553]	[-1.170]	[4.065]	[-4.46]	[4.20]
Δ Employee	0.179	-0.154	0.468	-1.075***		
	[0.562]	[-0.717]	[1.145]	[-3.806]		
Employee	0.271*	0.002	-0.078	-0.147*		
	[1.846]	[0.024]	[-0.502]	[-1.565]		
Δ Foreigners[male]	0.763***	-0.520***	0.971***	-0.625***		
	[4.414]	[-3.553]	[5.004]	[-3.861]		
Foreigners[male]	0.145	-0.086	0.238**	-0.069		
	[1.299]	[-1.311]	[2.150]	[-1.040]		
ΔSdAge[male]	0.172***	-0.031	0.119**	-0.008		
	[3.302]	[-0.758]	[1.993]	[-0.209]		
SdAge[male]	0.071**	-0.010	0.057*	0.006		
	[2.057]	[-0.435]	[1.56]	[0.253]		
N_FEMALES	1.084***	-0.594***	1.081***	-0.530***		
	[9.456]	[-6.905]	[8.273]	[-5.805]		
FIRM VARIABLES						
Tobin's Q	-0.144	0.148***	-0.164	0.123**	-0.033	0.119***
	[-1.379]	[2.915]	[-1.581]	[2.371]	[-0.33]	[2.71]
Leverage	-0.006	-0.002	-0.002	-0.002	0.002	0.001
	[-0.767]	[-0.462]	[-0.271]	[-0.530]	[0.30]	[0.35]
ROA	0.003	-0.008*	0.004	-0.009*	-0.005	-0.010***
	[0.425]	[-1.928]	[0.513]	[-1.868]	[-0.86]	[-2.39]
Firm risk	0.028**	0.002	0.008	-0.001	0.022***	0.011*
	[2.481]	[0.339]	[0.655]	[-0.202]	[2.53]	[1.79]
Firm size	-0.054	0.136***	-0.143*	0.153***	-0.016	0.189***
	[-0.666]	**[2.640]**	**[-1.697]**	**[2.845]**	**[-0.26]**	[3.99]
Institutional ownership	-0.004	-0.005	0.002	-0.003	0.005	-0.004
	[-0.448]	[-1.016]	[0.142]	[-0.622]	[0.72]	[-1.01]
Ownership concentration	-0.007	-0.003	-0.006	-0.005	-0.011	-0.003
	[-0.448]	[-1.016]	[0.142]	[-0.622]	[-2.51]	[-1.14]
Constant	-3.268***	-5.228***	-3.062***	-5.121***	-2.225***	-4.631***
	[-3.394]	[-8.890]	[-2.787]	[-8.357]	[-2.99]	[-9.45]
SPECIFICATION						
R²	0.21		0.22		0.24	
Log-likelihood	-1181.18		-1052.40		-1461.93	
Observations	2,350		2,349		2377	

All level variables in Table 8 are lagged for one year (t-1). Change variables (Δ) refer to increases over the period (t-1) to (t). With these variables we want to capture changes in other dimensions of diversity; i.e. appointments of foreigners for example. As evidenced in the first columns of Models (1-3) in Table 8, a higher number of females currently present on a board increases the likelihood that this number will decrease in the following year (see the positive and significant coefficient of *N_FEMALES* in the first ("decrease") columns of Models (1) and (2)). Combining this result with the negative effect of *N_FEMALES* on the increase in the number of women (see the second columns in Models (1) and (2)), we conclude that gender considerations do have a role in board appointments. This result is in line with Farrell and Hersch's (2005) findings for US firms. We also see that the likelihood of a firm reducing the number of female directors on its board is higher for firms in which other diversity aspects are present, i.e. firms with a higher number of foreigners on their boards, or a higher diversification in the male directors' ages (see the coefficient of *Foreigners^{male}* in Model (1) and of *SdAGE^{male}* in both models). These results confirm *Hypothesis 1*.

The likelihood of a decrease in the number of females on the board is found to be higher in firms with ongoing increases in the age diversity of the male directors (i.e. firms that have appointed a younger male to their board during the last year), and in firms that have increased the number of male foreigners on their board. These results confirm *Hypothesis 2*. The conclusions hold if we combine the main explanatory variables with a dummy variable for Norway, or if we estimate separate regressions for Norway and other countries (results not reported).

Given the insignificant coefficients of the change in the number of employee directors *(ΔEmployees)* in Model (1), no conclusion can be made about whether a higher number of employee directors leads to a higher number of female directors *(Hypothesis 3(a))*. We do however obtain some support for *Hypothesis 3(b)*: a higher number of employee representatives reduces the likelihood of an increase in the number of shareholder-elected female directors (see the second column for Model (2), Table 8). Controlling for the number of women on the board, a higher number of employee directors also implies a higher likelihood of a decrease in the number of female directors. Finally, in line with the empirical results from Tables 6 and 7, the number of females on the board is more likely to increase (in comparison to there being no change) in larger and better performing firms (see the positive effect of board and firm size and the Tobin's Q in the second columns of both models). The positive effect of a change in board size indicates that some of the female appointments are realized through increases in board size, which is in line with Farrell and Hersch (2005).

All in all, our results suggest that different aspects of diversity tend to be substituted for each other, rather than complementing or motivating each other. To provide further evidence for this conclusion, we define the variable *N_DIVERSE* to be the number of diverse directors, and look at the likelihood of an increase or decrease in this (versus no change). Here, a diverse director is either a female director, a non-national (foreign) director, or an employee-elected director. The results are presented in Model (3), Table 8. As indicated in the table, larger firms, firms with larger boards and firms with a higher market value are more likely to increase the number of diverse board members. The higher the number of diverse board members, the less likely it is that this number will increase,

which is in line with *Hypotheses 1-3*. Again, our results show that increases in the number of diverse members on the board partly occur through increases in board size. To sum up, there is a limit to how much boards can diversify, and the diversity boundary is not only determined by the gender composition of the board, but depends also on the confluence of the different dimensions of diversity among the board members.

Robustness

We estimate a number of alternative specifications to ensure the robustness of our conclusions. We define our dependent variable as the percentage of females on the board and replicate Table 6 by estimating Tobit, linear fixed and random effect regressions. We run these estimations separately for all firms, for a smaller sample of non-regulated firms and for the set of countries excluding Norway. We estimate the same models using the financial variables with a one-year lag. We also run a fixed effects Poisson regression. With regards to the variables of interest to this study, these additional estimations support the results presented in Tables 6-8 (and are thus not reported).

CONCLUSION AND POLICY IMPLICATIONS

A number of countries have recently debated the introduction of regulatory action that would require firms to appoint a certain percentage of female directors to their boards (a "quota law"). The public demand for such interventions arises from concerns about the slow progress of women towards top corporate positions. While one might expect that the recruitment of female directors would be different in the Nordic countries, given the strong public support for gender equality and the substantial participation of women in the work force and politics, our results indicate that, in these countries too, fewer women than men enter the boardroom. The analysis of the composition and changes in the composition of the Nordic boards over the period 2001-2008 confirm that public pressure (including legal measures) is indeed the most important, and probably the only major factor, driving female appointments to boards of directors. While such intervention brings a number of social and (presumably) economic benefits, it also carries some costs. A concern that has been raised is that quotas will have a negative impact on the qualifications and expertise of boards. While we do not have enough data to document the expertise of the newly hired female directors, Ahern and Dittmar (2010) underline this issue. Our study, however, highlights yet another cost: the analysis of the changes in board composition (in the pre-quota period) indicates that board elections follow an objective of "minimum" diversity. Most importantly, the boundaries are defined by a number of different attributes, not only gender.

Simply put, different aspects of board diversity tend to substitute for, rather than complement or motivate each other. While newly appointed females are diverse in many dimensions, forcing firms to appoint women to their boards might come at a cost to other important dimensions of diversity, such as male directors' nationalities and ages, and consequently, have a negative effect in terms of the expertise and knowledge brought to the boardroom. References to a connection between the increasing gender diversity and the personal characteristics of the other (current) board members, can also be found in the anecdotal evidence. As was recently quoted in the Economist (2010), "*If you are youngish man who sits on a European corporate board, you should worry: the chances are that your chairman wants to give your seat to a woman*"[21]. Looking at the reshuffling of boards in Norway, Ahern and Dittmar (2010) note that firms do not randomly choose which directors will exit the board in order to provide room for females. Most importantly for our study, they note that the exiting directors are less likely to be Norwegian (and thus more likely to be foreign) compared to the directors that remain on the board.

Explanations for the "crowding-out" (of other dimensions of board diversity) can be linked to adverse social processes; people simply like or need to interact with others who are similar, and the emotional conflicts that incur from interactions with different individuals are stronger when a group is heterogeneous in many dimensions. Another explanation for this "crowding-out" could be that shareholders (and subsequently nomination committees) do not (yet) view board diversity as an important factor in better decision making, more professional working practices and, consequently,

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[21] Economist, May 6th, 2010.

better firm performance. Hence, more research is needed in order to understand, and consequently inform, how different dimensions of diversity influence board operations. Our results carry relevant implications in this regard. First, in line with Farrell and Hersch (2005), we show that increases in board diversity are partly realized through increases in board size. Second, our results suggest that increases in one dimension of diversity might be realized through decreases in others. Third, our results imply that analyses of female directors' impact on firm performance cannot be made in isolation of other changes in the size or structure of the board of directors.

Our work also carries some important policy implications. Given the possibility of a "crowding-out" between the different dimensions of diversity, countries opting for a "quota law" should ensure an adjustment period long enough to allow companies to search for qualified candidates and also to enable boards to learn how to leverage diversity and deal with the potentially adverse effects associated with introducing diverse members to the boardroom. Secondly, it is crucial for these countries to ensure there is high transparency in the nomination and replacement process. Transparent nomination procedures will reduce the likelihood that unqualified candidates are appointed to boards but also decrease the possibility of female appointments "crowding-out" other important dimensions of diversity.

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