

Does Board Diversity Really Matter? Gender does not, but citizenship does

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Abstract

We study the impact of female board representation as well as citizenship on corporate performance based on a sample of the largest listed firms in the Nordic countries as well as Germany. We also seek to determine the variation of board structures using factor analysis. We find no support for any performance impact relating to female board representation. However, we find an impact of board citizenship on performance showing that board members with a background from common law have a significant positive influence on corporate performance measured as ROA, ROE and ROCE. Consistent with other studies we also document that large boards impact corporate performance negatively. Moreover we also show that data set on boards can be explained by four underlying factors. This article adds insight to board determinants of corporate performance as well as the classification of board variation. Specifically, our results support the view that increasing the proportion of board members from common law countries would be beneficial for the largest German and Nordic listed companies.

Keywords: corporate governance, board diversity, gender, citizenship as well as international management

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1 INTRODUCTION

The issue of board diversity, especially regarding the impact of increasing the proportion of women as well as non-nationals in corporate boards has gained much attention, not only among policy makers, but also among academics and the financial media. The reason is that women and non-nationals are relatively seldom appointed as board members. For example, despite of the fact that the average number of board women in European corporations has increased from 5 to 8.4 percent from 2001-07 the low level is still a challenge; see Heidrick and Struggles (2007). Even though most people agree that current female proportions of corporate boards are far too low, there is little agreement on how this proportion is increased.

Several countries have initiated quota rules in order to promote female board representation in listed companies. Norway requires that 40 per cent of the directors of a listed company (ASA) are women and similar initiatives have been launched e.g. in Spain, see Adams & Ferreira (2009) for an overview. Different countries have formulated different models. For instance, in France the aim is also 40 percent female board representation, but this rule applies not only listed companies, but also to large and publicly owned companies. In Norway, the ultimate sanction is dissolution of a company through court if a company does not comply with the quota required. Sanctions have not yet been determined in France. Instead, in a French context, a decision to appoint a male for the board may be deemed unlawfully. In order to avoid that companies reincorporate by altering its articles of incorporation so that a company is not bound by the rules, some countries such as Spain require all companies to comply with the quota rules no matter their legal statues where the rules are to be fully implemented over a transition period of eight years. In other countries e.g. Finland and Denmark, the issue of board diversity has been addressed explicitly in the national Corporate Governance codes i.e. as soft law.

One may argue that granting women a certain proportion of the seats of the board can be equivalent to an affirmative action that may violate basic principles of proportionality, i.e. the aim could be reached with less intrusive interventions, which is a basic principle e.g. in the EC treaty (article 157, No. 4).

From a democratic perspective one may advocate for a more equal distribution of board seats, as the corporate board is the highest-ranking decision body in companies. However, more importantly, one may justify increased demands on diversity if corporations hereby can influence performance positively, i.e. if there is a positive bottom line effect. This article contributes to this debate. Furthermore, we also explicitly analyze the performance impact based on citizenship as well as other factors such as size of the board.

Imposing quota rules stands in contrast with the fundamental premise of property rights since it is the owners who bear the entire risk of the company if it goes into financial distress, hence shareholders should have the prerogative to decide for themselves, see Demsetz and Lehn (1985).

2 LITERATURE REVIEW

Board diversity has been explored in a number of studies. Recently, Carter et al. (2010) examine not only the impact of increasing the proportion of women but also the effect of ethnic minority directors on boards. The authors conduct a comprehensive study based on 2.563 companies covering a five-year period of the S&P-index firms. Performance is measured by ROA as well as Tobins Q. Besides dealing with the issue of causality using the traditional Hausman test of endogeneity, the authors include a number of corporate governance variables such as meeting attendance, average age, CEO-Chair duality etc. However, Carter et al (2010) does not find a significant link between firm performance (bottom line effect) and gender or ethnic background.

Overall, the results that link gender to financial performance have been mixed. Campbell and Minguez-Vera (2008) conduct a study based on Spanish companies from 1995-2000 covering non-financial firms at the Madrid stock exchange. Firm performance is measured by Tobins Q, which focuses on expectations of future performance as well as ROA. Using 2SLS Campbell and Minquez-Vera find a significant positive relation between corporate performance and the proportion of Spanish female board members. As a natural consequence, they argue that increased gender diversity can be achieved without destroying shareholder value, which supports Spain's Unified Good Governance Code 2006 that recommends positive discrimination in favor of female boardroom appointment.

Randøy et al. (2006) has analyzed board diversity from a Nordic perspective. They study board diversity and its impact on corporate performance in the largest 500 companies from Denmark, Norway and Sweden. They find no significant diversity effect of gender, age and nationality on stock market performance or ROA. Randøy et al. conclude that if increased diversity along these lines is attractive per se or as a matter of political preference, it can be achieved without shareholder value destruction. However, if board size increases due to the recruitment of more director diversity there will be an indirect cost in terms of value destruction.

Rose (2007) not only studies board diversity, but also educational background of board members. Based on a sample of all Danish listed companies he finds that educational background does not impact corporate performance, which is also the case for the proportion of female as well as non-nationals in Danish boards. He argues that board members with an unconventional background are socialized unconsciously and adopting the

ideas of the majority of conventional board members. This could entail that a potential performance effect does not materialize.

It seems fair to say that the present academic literature has been mixed whether diversity on boards leads to enhance corporate performance. Specifically, some authors argue, see Higgs (2003) and Page (2007) that diversity imposed by law change itself may increase company value, whereas others, see Westphal (1998), Helland and Sykuta (2004), Farrell and Hersch (2005) argue that if boards are merely window-dressing the forced change in board characteristics will have no impact on corporate value.

Board committees originally stems from the Anglo-American one tier board system i.e. board of directors where there has been a need for a more specialized focus on key issues e.g. audit, remuneration etc. However, board committees have also now become widespread in other countries including Denmark. Carter et al. (2010) conduct an interesting study where they analyze the impact of gender and ethnic diversity on board committees and financial performance (measured by ROA and Q). Their data consists of S&P 500 index during the years 1998-2002. Specifically, they do not find a relationship between diversity in board committees and financial performance, as they argue that gender and ethnic diversity and performance appear to be endogenous.

A recent study by Ahern and Dittmar (2010) addresses some rather political incorrect findings, namely that the Norwegian quota law has resulted in a significantly negative impact on company value, consistent with the idea that companies choose boards to maximize value. The authors address a key aspect as several chairmen have argued that this simply is a lack of female board candidates with sufficient international top business experience.

A recent study focuses not only on gender but also on the valuation effect of ethnicity. Specifically, Ntim (2013) uses a dataset consisting of 291 organizations in South Africa during the years 2003-2007. The valuation measures are Q, ROA and share return. The author finds a significant relation between board diversity and market valuation, which suggests that the SA stock market values ethnic and gender diversity within organization boards. The results are interesting as SA is a suitable case for a study that also includes ethnicity, which is virtually impossible in Northern Europe, since ethnicity (yet) plays an insignificant role due to the extreme low degree board members not being white Caucasian persons.

The impact of ethnicity has also been explored by the authors Brammer, Millington and Pavelin (2007) that use a large sample of UK firms focusing on both ethnic and gender diversity since they rely on the following categories; white, non-white, white male and other. They find that both gender and ethnic diversity to very limited and that diversity is less frequent among executive positions. Thus, they find significant cross-section variation with an above average prevalence of women in Retail, Utilities, Media and Banking, while ethnic diversity is very limited. The authors argue that a close proximity to final consumers plays a more significant role in shaping board diversity than does the female presence among industry's workforce.

The issue of ethnicity has also been studied in the US where the authors Erhardt, Werbel and Shrader (2003) analyze this issue using performance measure as return on assets and return on investment. They measure demographic diversity in Fortune magazine companies in two years i.e. 1997 and 1998 by relying on the Equal Employer Opportunity Commission (EEOC) categories. They find a positive correlation between demographic diversity and the two performance measures.

2.1 Hypotheses

Several theories have suggested that board diversity impacts corporate performance. To illustrate, resource dependence theory argues that boards serve to link the company with other external organizations in order to address environmental dependences such as creation of channels of communication with constituents of importance to the company as well as provision of commitments of support from important organizations or groups in the external environment, see Carter (2010) for a profound overview of different theories.

Van der Walt and Ingley (2003) argue that the theoretical basis for diversity and board dynamics rely on two main perspectives i.e. the agency perspective as well as the resource dependence view. The agency perspective relates to the impact from the board/supervisory board on organizational performance and leadership. Board members are elected at the general meeting and are to serve the interests of the shareholders. Specifically, this means in most cases that the board must contribute with formulating the strategy, except in Germany where the Aufsichtsrat only has a monitoring role. Increased diversity on the board implies that the quality of the board's strategic decisions increases which is also the theoretical underpinning in the resource dependent view.

There is reason to believe that increased board diversity may benefit companies in a number of ways that impact the financial performance positively. First, increased diversity e.g. regarding women and non-nationals may influence the competences of a board since it avoids that a number of qualified board candidates are not excluded when searching for new members. In addition to this, boards that exhibit a high degree of diversity may benefit from an increased variety of input to the decision process as less conventional mainstream decisions can be fostered. If a board is conventionally composed the arguments for and against a certain decision may be

less contested and challenged which is aligned with the arguments in the human capital theory, see Terjesen et al (2009).

Moreover, one can claim that when a board is not only composed by men from the same nation, it will be easier to maintain and motivate good managers in the company as it may serve as a credible signal that a manager regardless of ethnic origin may eventually become member of the board. This will also lead to more competition within the company's internal labor market since women and other groups e.g. ethnic minorities know that they are not excluded from the opportunity of reaching the highest positions in the company. Eagly et al. (1995) conduct a large meta analysis of gender and the effectiveness of leaders. Their motivation is straightforward since the authors motivate their large careful study by noting that "As women gain greater access to leadership and managerial roles in organizations, it becomes increasingly important to understand the nature and the extent of the similarities and differences between female and male leaders.". The find clear differences as women fared poorly in settings in which leadership was defined in highly masculine terms. On the other hand men fared slightly worse than women in settings in which leadership were defined in less masculine terms, especially in educational organizations and in governmental and social service organizations. Board members are to a large extent former CEOs which traditionally has been viewed as masculine oriented e.g. focused on the firm's ability to generate a positive return in a competitive environment. Therefore one may argue that there is a difference between the firms with and without female board members as well as the proportion of female board members.

Boards with little or very few female board members are characterized by less decision-making dynamics. Elstad and Ladegard (2012) conduct a study on Norwegian firms where they find that women directors perceive that they do receive more information and engage in a more informal social interaction when the ratio of female board member increases. This is also the case with respect to perceived influence when this ratio increases. Naturally, it is virtually impossible to measure the real degree of influence, but the findings relate to a key polarization mechanism, according to both tokenism and social identity theory, to contribute to the social exclusion of tokens. As the authors note, informal discussion and socializing with other board members outside formal meetings are activities. If women feel it difficult to participate in such informal social activity, there is reason to believe that their influence and activity in the formal board meetings is lower, hence there might be a negative performance impact in such a situation.

The resourced dependence theory argues that board diversity may have a positive impact on performance and on company market valuations. The reason is that diversity links an organization to its external environment and stakeholders. This means that board members with a highly diverse background can help provide a better link with an organization's stakeholders, such as consumers and communities, which can be used to penetrate competitive markets see Goodsterin et al. 1994.

There are several theoretical contributions regarding women on corporate boards, which have been nicely summarized in Terjesen, Sealy and Singh (2009). They range from human and social capital theories and gender schema at the individual level; social identity, token and social network theories at board level which also has been addressed here. The theories are not mutually exclusive, but they have different impacts as illustrated by Terjesen, Sealy and Singh (2009). Eventually, one may argue that the impact of women on corporate boards may become an empirical question, which this article seeks to contribute with. All these factors may therefore lead to an increased financial performance of the company leading to the first hypothesis.

H1: Increased female board representation has a positive impact on financial performance

In addition, a company may increase the diversity of its board by having more non-nationals on the board. In large listed firms that operate globally, knowledge about non-national markets, cultures and customers are crucial for the financial success of a firm. Non-national board members may possess these skills as well as provide a board with unique human capital which is not available where the firm has its headquarters, especially in smaller countries where the pool of very skilled international board candidates may be limited, especially if that person may provide valuable industry experience. This leads to the second hypothesis.

H2: Increased proportion of non-national board members has a positive impact on financial performance

One may argue that even though a person's citizenship differs from the other board members, there might not be any real difference. To illustrate, a person from Austria may share the same norms and values as a person from Bavaria in Germany, which could be similar if a Dane joined a board in Sweden. In other words, there might be a big difference whether e.g. a Danish company selects a new board candidate from some of the other Scandinavian countries compared to a person from the US or Brazil, as these cultures differ substantially from the Scandinavian mindset as well as leading to contacts within new markets that the company could benefit financially from.

Potential non-national board candidates may have a clear perception about being on the board of a listed company in another country. A firm that is located in a country with a high positive image may find it easier to recruit new board candidates outside its own country. The authors Guina and Giraldi (2012) use consumer characteristics such as age and gender to analyze a country's image. Specifically, they find that beliefs about country and to certain demographic knowledge issues, and respondents that had better evaluations on Brazil's image were young, men with a high level of knowledge of Brazil and from France. The findings are interesting as they suggest that a person's knowledge and gender may influence how people view another country and thereby indirectly company's located in that firm. The point is that men and female board candidates may view this differently. This leads to the third hypothesis.

H3: The national background of non-nationals has an impact on performance

Yermack (1996) finds that companies with small boards outperform companies with larger boards. Everything equal, larger boards represent more competences. However, one may argue that if a board becomes too large the decision process may lead to board decision inefficiency given the fact that decisions taken by more board members require more time. Furthermore, there is a risk in large boards, such as in German boards that the monitoring efficiency declines. The reason is that each board member's responsibility for monitoring and controlling the managing directors may be evaded since one may expect that the person next to him/her will do the job and the other person may share the same belief. Hence nobody really takes up the job of monitoring and controlling the managing directors. Therefore, we test the following last hypothesis.

H4: Companies with small boards outperform company with larger boards

3 DATA AND METHODOLOGY

The sample constitutes data from 2010 in all companies in the leading stock indices in Denmark, Sweden, Finland, Norway and Germany, i.e. companies belonging to the following indices: OMXC20, OMXS30, OMXH25, OSEBX and the DAX.

Information about board composition is obtained from each company's annual accounts, where data on each company's total number of board members, the number of men and women as well as non-nationals and their nationality are found. This information is used to construct the following board variables, which we use in our regression analysis.

In calculating the market cap, which serves as control variable for size, we use the following currency values $DKK/NOR = 0,953$, $DKK/SWE = 0,827$ as well as $DKK/EUR = 7,454$, i.e. the market values for each firm are calculated in DKK using the last trading day in December 2010.

We got the relevant information for all the Danish companies, whereas Orkla in Finland has a policy not to inform about nationality of board members. It was also not possible to get data from the Norwegian/Canada-listed Company Questerre Energy Corporation. This is also the case for the following German companies Daimler and Volkswagen. We could not get sufficient with information for Deutsche Börse and Infineon.

This means that the total sample constitutes 117 companies of the year 2010, which we use in our cross-sectional regression analysis using OLS. We also use statistical factor analysis in order to examine the interrelations among our selected board variables using principal component that is used to explain the variation in the data set and to reduce the number of variables.

All financial data is obtained from Bloomberg where we also control for risk using beta values to measure how sensitive a company's financial return is to the market return. A beta value in excess of 1.0 indicates that the company is more risky than the market.

We control for country effects using country dummy variables where Denmark serve as benchmark. We also control for industry effects using industry dummy variables where benchmark is Industry.

Finally, we control for firm size using market cap where we take the natural log, which enables us to see the change in the dependent variable when the market cap increases by one percent.

We use three measures of corporate performance i.e. ROA, ROE and ROCE, which are among the most common measures of firm performance. These numbers serve as dependent variables in our OLS cross sectional regression analysis.

4 RESULTS

Table 1 illustrates descriptive statistics for some of the variables.

Table 1: Descriptive statistics

Simple Statistics						
Variable	N	Mean	Std Dev	Sum	Minimum	Maximum
Women %	117	0.23366	0.15943	27.33792	0	0.83333
Non-nationals %	117	0.26405	0.22686	30.89404	0	0.90909
SCANDI%	117	0.08250	0.14190	9.65197	0	0.81818
USUKAUS %	117	0.09412	0.14609	11.01231	0	0.62500
EU %	117	0.05576	0.09161	6.52392	0	0.50000
NonEU %	117	0.02261	0.05524	2.64589	0	0.37500
Mcap DKK	115	75101	95685	8636655	0	479255
Beta	115	1.04110	0.39712	119.72700	0.25600	3.12700
Members	117	10.54701	3.87631	1234	4.00000	22.00000

It can be seen that on average female board members make up 23 % whereas non-nationals account for 26% (.). It is striking that boards with non-national members in Scandinavia and Germany have very few board members from other EU countries as well as non-EU countries i.e. from the rest of the world as these groups only make up 5.5 and 2.2 percent respectively. Scandinavian companies typically recruit “non-national” board members among the nearest Nordic country e.g. in Finland where many Swedes have board positions.

Table 2: Correlations among some of the variables

Pearson Correlation Coefficients					
Prob > r under H0: Rho=0					
Number of Observations					
	Women%	Non-nationals%	Mcap DKK	Beta	Members
Women %	1.00000	0.02191	-0.11649	-0.00371	-0.16976
		0.8146	0.2150	0.9686	0.0673
	117	117	115	115	117
Non-nationals %	0.02191	1.00000	0.07882	0.00314	-0.24374
	0.8146		0.4024	0.9734	0.0081
	117	117	115	115	117
Mcap DKK	-0.11649	0.07882	1.00000	-0.24768	0.43395
	0.2150	0.4024		0.0079	<.0001
	115	115	115	114	115
Beta	-0.00371	0.00314	-0.24768	1.00000	-0.06048
	0.9686	0.9734	0.0079		0.5208
	115	115	114	115	115
Members	-0.16976	-0.24374	0.43395	-0.06048	1.00000
	0.0673	0.0081	<.0001	0.5208	
	117	117	115	115	117

Board members from the US, UK or AUS are the most common in the sample accounting for more than 9 %. The average board size consists of 10.5 persons, with a minimum value of 4 and a very large maximum value of 22.

Table 2 shows correlations among some of the variables. There is a significant correlation between the size of the board and the proportion of female members, which is also the case for the proportion of non-nationals. There is also a positive correlation between company size and board size.

The impact of increasing the proportion of women as well as non-nationals in the board is displayed in table 3 where the dependent variable is ROA. Notice that the coefficient in the first equation is negative for Women%, but it is not significantly different from zero. This is also the case for the dummy variable WomanYes that measures the impact on ROA of having at least one woman on the board. WomanYes is positive, but again not significantly different from zero.

Table 3: Parameter estimates when ROA serves as the dependent variable

Variables	1.	2.	3.	4.
Constant	5,89	2,45	6,11	5,72
Woman %	-1,87			
Woman Yes		2,06		
Non-nationals %			2,59	
Non-nationals Yes				0,73
LnMcap	0,33	0,35	0,24	0,26
Beta	0,33	1,17	0,30	0,33
Norway	-2,26	-2,61	-2,87	-2,65
Sweden	-0,08	-0,36	-0,43	-0,11
Finland	-2,74	-4,34**	-2,85	-2,65
Germany	-6,84***	-6,67***	-6,48***	-6,72***
Consumer	4,20**	4,47***	3,94***	4,02***
Materials	-0,09	-1,87	-0,57	-0,38
Healthcare	4,71**	5,76**	4,53**	4,80**
Financials	-5,36***	-5,22***	-5,69***	-5,64***
Telecom	-0,13	0,55	-0,37	-0,26
Energy	-0,24	-0,13	-0,58	-0,43
Utilities	2,43	3,09	1,77	1,89
Adj. R2	0,25	0,31	0,25	0,25
Observations	113	109	113	113
F value	3,65	4,50	3,73	3,65

*), (**), (***) Significant on a 10 %, 5% and 1 % level

This is also the case in equation 3 and 4, which measures the impact of increasing the proportion of non-nationals as well as the effect of having at least one non-national on the board. Again both variables Non-nationals% and Non-nationalsYes are not significantly different from zero.

The variables in equations 1, 3 and 4 explain 25 percent of the variation in ROA, which is quite high in a cross sectional regression. In equation 2 this percentage is even as high as 31 percent. The F values are all significant, hence we cannot reject that all the explanatory variables are not zero. Germany has in all equations a very negative impact on ROA. To illustrate, in the first equation the coefficient is -6,84. This means that if a firm belongs to the German DAX it has a ROA that is -6,48 lower than the Danish firm that serves as the benchmark dummy. The industries: Consumer, Healthcare and Financials are all significant compared to benchmark, which is Industrials. To illustrate, the coefficient of Financials is -5,36 in the first equation meaning that if a firm in the entire sample belongs to Financials, it has a lower ROA of -5,36 compared to Industrials.

Table 4: Parameter estimates when ROE serves as the dependent variable

Variables	1.	2.	3.	4.
Constant	18,33	10,76	20,68	18,80
Woman %	-1,04			
Woman Yes		5,41		
Non-nationals %			9,62	
Non-nationals Yes				1,65
LnMcap	0,11	0,15	-0,23*	-0,05
Beta	2,44	4,03	2,02	2,26
Norway	-3,93	-4,26	-5,38	-4,37
Sweden	1,16	0,57	0,07	1,23
Finland	-5,55	-8,25**	-5,99	-5,37
Germany	-10,48***	-10,80***	-9,69**	-10,50***
Consumer	6,81*	7,93**	6,18*	6,58*
Materials	-2,98	-6,66	-4,41	-3,44
Healthcare	8,21*	10,46**	7,13	8,18*
Financials	-7,68**	-7,08**	-8,21**	-7,94*
Telecom	-3,08	-1,81	-3,86	-3,31
Energy	1,57	1,96	0,71	1,35
Utilities	8,51	9,96	6,95	7,77
Adj. R²	0,12	0,19	0,14	0,12
Observations	112	108	112	112
F value	2,08	2,81	2,34	2,10

*), (**), (***) Significant on a 10 %, 5% and 1 % level

Table 4 shows a similar pattern when ROE serves as the dependent variable. None of the relevant board variables are significantly different from zero. Firm size measured as market capitalization (or the natural log) is only significant in equation 3 and the beta value is not significant in any of the equations. Almost the same control variables as previous are significant. However, the explanatory power has decreased as the four equations only explain around 12-19 percent of the variation of the ROE.

Table 5: Parameter estimates when ROCE serves as the dependent variable

Variables	1.	2.	3.	4.
Constant	48,84	38,41	60,45	52,79
Woman %	10,15			
Woman Yes		9,93		
Non-nationals %			46,21**	
Non-nationals Yes				6,31
LnMcap	-3,97	-4,26	-5,31	-4,54
Beta	18,94	23,28*	16,62	17,90
Norway	-16,37	-15,52	-21,62	-15,89
Sweden	8,98	8,90	3,71	10,39
Finland	-14,17	-24,56	-16,13	-13,37
Germany	-12,06	-12,42	-9,47	-13,14
Consumer	33,05*	36,63*	30,58**	33,17*
Materials	-6,75	-12,29	-15,94	-7,92
Healthcare	30,39*	35,38*	24,15	29,65*
Financials	15,56	17,75	16,07	15,88
Telecom	15,42	21,72	10,13	14,99
Energy	-0,78	1,62	-3,32	-0,79
Utilities	17,53	25,73	11,84	17,03
Adj. R2	0,6	0,12	0,12	0,06
Observations	91	88	91	91
F value	1,42	1,82*	1,84*	1,43

*), **, ***) Significant on a 10 %, 5% and 1 % level

Turning to the last performance variable ROCE we see in table 5 that a similar pattern evolves although there is an exception: In equation 3 the variable Non-nationals% is positive and significantly different from zero. None of the other board variables are significant. We also observe that the explanatory power has declined dramatically since the equations only explain around 6-12 percent of the variation of ROEC. The number of observations has also dropped, which influence the number of degrees of freedom.

Based on table 3, 4 and 5 we cannot say that increasing the proportion of women or non-nationals in general impact performance significantly. This is also the case if there is at least one woman or non-national on the board. Therefore we now decompose the data set by studying if a non-nationaler's origin matters.

Table 6: Parameter estimates when ROA serves as the dependent variable

Variables	1.	2.	3.	4.
Constant	5,06	4,75	5,39	5,67
Scandinavian %	-1,21			
US/UK/AUS %		6,53 ^(*)		
EU %			-2,41	
NonEU %				11,84
LnMcap	0,38	0,41	0,32	0,29
Beta	0,46	0,23	0,44	0,47
Norway	-2,51	-2,95	-2,44	-2,77
Sweden	-0,20	-0,78	-0,20	-0,61
Finland	-2,68	-2,57	-2,76	-2,97
Germany	-6,80***	-6,66***	-6,45***	-7,04***
Consumer	4,09**	3,65**	4,14**	4,31**
Materials	-0,13	-0,48	-0,19	-0,38
Healthcare	4,85**	4,52**	4,81**	4,81**
Financials	-5,45***	-5,51***	-5,66***	-5,20***
Telecom	-0,12	-0,88	-0,20	0,26
Energy	-0,38	-1,26	-0,42	-0,16
Utilities	2,20	1,51	2,18	2,29
Adj. R ²	0,25	0,26	0,25	0,26
No. Firms	113	113	113	113
F value	3,64***	3,88***	3,65***	3,77***

*), **), ***) Significant on a 10 %, 5% and 1 % level, (*)=13%

It is interesting to notice that it does not matter for ROA if a non-national is of Scandinavian, EU or NonEu origin. The coefficient for the variable US/UK/AUS is 6,53, which is weakly significant.

A similar pattern is disclosed in table 7 that shows the impact on ROE. However, here the variable US/UK/AUS is clear. It is positive and significantly different from zero.

Table 7: Parameter estimates when ROE serves as the dependent variable

Variables	1.	2.	3.	4.
Constant	18,13	16,84	18,08	18,53
Scandinavian %	0,17			
US/UK/AUS %		15,40*		
EU %			0,75	
NonEU %				29,68
LnMcap	0,10	0,27	0,10	0,01
Beta	2,48	1,86	2,48	2,69
Norway	-4,09	-5,11	-4,09	-4,70
Sweden	1,12	-0,23	1,13	-0,10
Finland	-5,55	-5,15	-5,53	-6,16
Germany	-10,32**	-10,37**	-10,35**	-11,30***
Consumer	6,75*	5,84	6,74*	7,22**
Materials	-3,06	-3,69	-3,06	-3,50
Healthcare	8,26*	7,48*	8,28*	8,23*
Financials	-7,82**	-7,62**	-7,78*	-6,84***
Telecom	-3,10	-4,82	-3,08	-1,99
Energy	1,51	-0,58	1,53	1,97
Utilities	8,34	6,82	8,34	8,72
Adj. R ²	0,12	0,14	0,12	0,14
No. Firms	112	112	112	112
F value	2,08**	2,33***	2,08**	2,24***

*), **), ***) Significant on a 10 %, 5% and 1 % level

Turning to the last performance measure, ROCE, we see the same tendency, as the dummy variable US/UK/AUS is strongly significant. This is not the case for any of the other origin dummy variables. This suggests that when a firm increases the board size with a board member from the US, the UK or Australia, it has a clear positive impact on performance.

Table 8: Parameter estimates when ROCE serves as the dependent variable

Variables	1.	2.	3.	4.
Constant	55,15	41,06	50,86	55,76
Scandinavian%	22,82			
US/UK/AUS%		74,53**		
EU%			-7,56	
NonEU%				116,34
LnMcap	-4,47	-2,88	-3,91	-4,43
Beta	17,90	16,99	18,64	17,99
Norway	-14,90	-20,42	-14,81	-18,14
Sweden	10,92	1,18	9,40	3,46
Finland	-15,42	-12,24	-14,50	-16,28
Germany	-10,59	-13,56	-13,07	-17,71
Consumer	33,53**	27,78**	33,67**	36,68
Materials	-7,84	-11,30	-5,88	-9,53
Healthcare	29,46*	26,07*	29,70*	29,37
Financials	15,92	11,40	16,71	21,32
Telecom	14,39	5,75	15,71	20,09
Energy	-0,03	-8,16	-0,52	1,19
Utilities	18,48	11,44	19,38	20,00
Adj. R²	0,06	0,12	0,06	0,09
No. Firms	91	91	91	91
F value	1,44	1,86**	1,41	1,60*

*), (**), (***) Significant on a 10 %, 5% and 1 % level

One may argue that the causation may run from performance to the proportion of female board members. Therefore, we have also constructed two models where the dependent variable is the proportion of women using instruments such as WomenYes. This has only been done in the two regression studies where the explanatory variables are significantly different from zero i.e. Boardsize as well as UK/US/AUS%, but the last model did not report significant variables. This is not to say that we have completely eliminated the issue of endogeneity. This issue is common in most corporate governance studies where it is very difficult to find suitable instruments, especially for performance measures (lagged performance values may not eliminated this problem).

Table 9: Parameter estimates when ROA, ROE and ROCE serve as the dependent variables

Variables	ROA	ROE	ROEC
Constant	6,02	19,24	54,76
No. Board members	-0,39**	-0,72 ^(*)	-2,84 ^(*)
LnMcap	0,61	0,63	-1,97
Beta	0,97	3,49	23,19*
Norway	-3,57*	-6,03	-21,84
Sweden	-0,37	0,74	8,40
Finland	-3,93**	-7,79	-22,91
Germany	-5,07***	-7,40	-0,06
Consumer	4,36***	7,26	34,19***
Materials	-0,24	-3,12	-7,16
Healthcare	4,15**	6,99	25,08 ^(*)
Financials	-5,44***	-7,54	20,24
Telecom	0,64	-1,59	21,74
Energy	0,03	2,23	3,05
Utilities	3,32	10,53	27,59
Adj. R²	0,27	0,14	0,09
No. Firms	113	112	91
F value	4,04***	2,23***	1,64*

*), (**), (***) Significant on a 10 %, 5% and 1 % level, (*)=11%,12%

Finally, we explore whether large boards are associated with any performance effect. This is depicted in table 9 where there is a strong negative significant impact on ROA. The impact on ROE and ROEC is also negative, but less significant. Therefore, this suggests that companies with large boards are not performing as well as companies with smaller boards. This also seems plausible even though large boards in principle represent more human resources, but the costs of effective decision making as well as monitoring the managing directors seem to be higher.

4.1 Factor analysis

In addition to regression we also employ factor analysis based on principal component analysis where focus is on the variance and co-variance among the variables. Table 10 displays each of the 9 chosen variables and their so-called factor loadings, as the aim is to represent each of these 9 variables as a linear combination of a smaller common set of factors plus a unique factor to each of the response variables. In other words the aim is to study the underlying diversity dynamics choosing a smaller set of common factors than the 9 selected variables.

Table 10: Factor Pattern

	Factor1	Factor2	Factor3	Factor4
Women %	-0.01966	-0.66745	0.26020	-0.31669
Non-nationals %	0.87977	-0.04639	0.41749	0.12636
SCANDI %	0.02930	-0.47994	0.61002	0.55417
USUKAUS %	0.70348	-0.16055	0.08162	-0.41698
EU %	0.59266	0.43494	-0.21665	0.11751
NonEU %	0.46793	0.52950	-0.01034	0.13936
Members	-0.48469	0.50138	0.31280	0.06778
Beta	0.08477	-0.24271	-0.39952	0.62984
Mcap DKK	-0.17335	0.50337	0.68502	-0.02486

The factor model breaks each of the 9 variables variances into two parts i.e. the communality, which is the variance due to the common factors, as well as the specificity, which is a unique variance factor. The communalities are displayed in table 11. For instance, the four common factors account for 0.9664% of the variance in total.

Table 11: Final Communality Estimates: Total = 6.276386

Women%	Non-nationals %	SCANDI%	USUKAUS %	EU%	NonEU%	Members	Beta	Mcap DKK
0.613877	0.96640086	0.9104239	0.70119248	0.601171	0.5188570	0.58874410	0.62241059	0.75330773

Specifically, first we need to determine the number of factors. From Table 12 we see that there are four common factors that adequately describe the interrelationships among the 9 variables (eigenvalues above 1.0 serve as cutoff factor). These four factors account for 0.6974 % of the total variance where the first and most important factor accounts for 0.2347 %.

Table 12: Eigen values of the Correlation Matrix: Total= 9 Average = 1

	Eigenvalue	Difference	Proportion	Cumulative
1	2.11248638	0.37550839	0.2347	0.2347
2	1.73697800	0.34243130	0.1930	0.4277
3	1.39454670	0.36217210	0.1549	0.5827
4	1.03237460	0.14279264	0.1147	0.6974
5	0.88958197	0.17867856	0.0988	0.7962
6	0.71090341	0.09108953	0.0790	0.8752
7	0.61981388	0.15897907	0.0689	0.9441
8	0.46083481	0.41835456	0.0512	0.9953
9	0.04248025		0.0047	1.0000

Now that we have decided on the number of the four factors, the next step is to interpret these factors. Here we rely on factor scores that numerically must range between +/-1.0. Notice that the first and most important factor scores highly positive on the variables Non-nationals%, USUKAUS%, EU%, but negatively on Members. One could interpret this common factor describing the board structure in the Northern Europe, as the: “Small board structure with high level of internationalisation”. The second factor assigns high positive score on Women%, but low negative scores on Members and McapDKK that could be labeled as the: “Large traditionally male dominated boards”. The third factor scores high on firm size and Scandi%, which suggest that this factor could be labeled: “Large firm Scandinavian dominated”. The last factor also scores positively high on Scandi%, but in combination with a positive score on risk, hence this could be labeled: “The risky Scandinavian dominated board”.

It should be acknowledged that assigning labels to factors are in practice not straightforward. The classical textbook example is determining how many factors could explain intelligence based on all the grades of high

school graduates. Usually, the results provide two factors, which are interpreted as logical and verbal/social intelligence. However, when we deal with the complex dynamic interrelationships in the largest listed boards it becomes much more difficult.

One other hand factor analysis can add guidance to further studies of board diversity e.g. within other fields such as case studies.

5 CONCLUSION AND IMPLICATIONS

This article contributes to the ongoing discussion whether increased diversity on boards fosters greater efficiency (better economic performance?) and enhanced competences, which may justify legislation for implementing quota rules. We do not find that such a quota rule can be supported in our analysis, as female board representation is not associated with superior performance, hence hypothesis H1 must be rejected. However, more importantly, by decomposing the dataset regarding non-nationals, we document that increasing the proportion in the largest Nordic as well as German companies with board members from the US, UK or AUS impacts company performance positively. This means that hypothesis H2 is rejected whereas H3 cannot be rejected statistically. Moreover, we show that companies with larger boards have a significant negative impact on performance, especially ROA which means that H4 cannot be rejected. We rely on traditional performance measures when we test the formulated hypothesis, but one should acknowledge that measure a firm's true financial performance is not straightforward. We control for size and to some also for risk. However, controlling for firm risk is not uncontroversial as there is no consensus about how risk adjusted performance should be calculated.

Compared to several other studies e.g. Ntim (2013) our data sample is more homogenous in the sense that the studied firms may have non-nationals, but many of them are located in countries which have cultures that are not radically different from each other.

Finally, we demonstrate using factor analysis that boards in the studied countries can be explained by four common underlying factors, which explain the vast majority of the variance. We make an attempt to characterize these factors by labeling them using factor scores, which contributes to a better understanding of the underlying board variation.

Our results may contribute to the theoretical literature on board diversity as there seems not to be a performance impact of increased woman on corporate boards. This means that one may want to reconsider the existing theory. One suggestion could be to study if female directors uncounsciously become socialized to think as their male peers regardless of their sex. A reason could be that in order to get to the top in the hierarchy of a listed large firm, women have to give up some of their traditional values. We do not know if this is actually the case, but it seems fruitful to empirically study if this is the case e.g. using a case based approach. One thing is however, certain, the last word on gender and ethnic board diversity has not been said and there is reason to believe that more attention to this issue will be given both academically as well as politically.

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