Female Directors on Corporate Boards Provide Legitimacy to a Company   *A Resource Dependency Perspective*

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Abstract

This study addresses the research question why some companies do and others do not have women on their boards. This study provides evidence on the organizational characteristics that affect the likelihood of women being appointed. The results show that in The Netherlands company size, board size, industry and the exchange segment the company is traded on, significantly impact the female representation on the board of directors. This study supports resource dependence theory that boards of directors serve as a linking mechanism between companies and their stakeholders, and that they provide legitimacy to different stakeholders or groups within our society. While societal pressure to appoint female directors to corporate boards has increased in the past decade, this is more likely to have influenced companies which are more inclined to conform to societal expectations. Moreover, the presence of female directors on company boards provides legitimacy to the outside world regarding the company's values on diversity. These results add new evidence to the existing literature whether corporate boards act as a linking mechanism to society. Any comprehensive investigation of the impact of providing legitimacy by female board members on corporate performance should not be limited to profitability (which is mostly concerned with shareholders profit), but should include, for example, social and market performance and the satisfaction of relevant stakeholders.

Keywords: Governance, Gender-diversity, Board composition, Resource dependence theory.

Introduction

The incidence of women on boards of directors is a growing area of research. Academics (a.o.Sealy *et al.*, 2007, Ees *et al.*, 2007, Adams and Ferreira, 2004, Burgess and Tharenou, 2002), societal pressure groups (Catalyst, 2007, EPWN, 2007), and professionals (McKinsey&Company, 2007) have published research on the subject indicating that the representation of women in the boardroom should be higher for several reasons. Although many studies describe why diversity should increase (see Burgess and Tharenou, 2002 for an overview), only a few studies investigate which company characteristics determine why some companies have women on their boards and others do not. This lack of research suggests that researchers assume the division between companies with and without female representation is a random process and not influenced by company characteristics. Hillman *et al.*, (2007) investigate which organizational characteristics affect the likelihood of women being appointed. Using resource dependency theory as a basis, they investigate how boards of directors serve as a linkage instrument and under which organizational characteristics gender diversity is most valuable. The study also addresses the research question of why some companies do and others do not have women on their boards. Based on stakeholder theory and resource dependence theory, hypotheses are formulated that test certain company

characteristics that could serve as predictors of female board representation. Stakeholder theory and resource dependence theory share the same basic idea, namely that both theories focus on players outside the company. In this study, the focus is on the legitimacy that diversity provides these outside players with (Berman *et al.*, 2006)[1].

On average, the percentage of female directors in Europe (2006:8.5%, EPWN, 2007) is lower than that of female board representation in the US (2007:14.8%, Catalyst, 2007) and Canada (2006:12%, EPWN, 2007). Although The Netherlands is often presented as being middle-of-the-road compared to other European countries[2] with 6.5% to 9.0% female board representation (Ees *et al.*, 2007, EPWN, 2007, Reier, 2008), this number is positively biased by two facts. Firstly, a two-tier board structure is applicable in The Netherlands. The percentage of female directors often represents the average number of female directors on supervisory boards, which is significantly higher than the percentage of female directors on executive boards. The weighted average of the percentage of female directors on the executive (2.1%) and supervisory boards (6.9%) of 122 listed Dutch companies is 5.1% (Lückerath - Rovers, 2008). This percentage would be more comparable with the one-tier board structure in other countries and would place The Netherlands with "slow-going" countries. Secondly, when choosing companies in the sample based on their size (EPWN, 2007, McKinsey&Company, 2007, Ees *et al.*, 2007) a bias may arise as larger companies may have greater female board representation. This study will therefore analyze the incidence of female directors occupying board seats, and company size will be used as a dependent variable instead of as a sample selection criterion.

Corporate Governance and Diversity

Previous studies show that corporate boards are relatively homogeneous compared to the society within which they operate and these studies argue that this is symptomatic of both poor corporate governance as well as being a missed opportunity (Brammer *et al.*, 2007, p.393). The arguments for increasing the number of women on boards can be grouped into three categories: theoretical, moral and business arguments (Walt and Ingley, 2003).

Firstly, theoretical arguments for board diversity are based on the question of whom the board should report to, whose interests it protects and by whom the board can be held accountable. The underlying theories include agency theory (Jensen and Meckling, 1976), stakeholder theory (Freeman, 1984), resource dependence theory (Pfeffer and Salancik, 1978) and stewardship theory (Donaldson and Davis, 1991). One way in which these theories differ is in their views on the role of the board (monitoring versus advice, shareholders versus stakeholders), and the importance of the independency of directors. Diversity is argued to improve independency while 'people with a different gender, ethnicity or cultural background might ask questions that would not be posed by directors with more traditional backgrounds' (Carter *et al.*,2002, p.6). Luoma and Goodstein (1999) point out that '*With the increasing importance of broadening the domain of corporate governance beyond major shareholders to other stakeholders, board diversity and independence will promote procedural fairness by providing a means of ensuring that their interests are more directly represented in corporate decision making*'.

Secondly, moral arguments are based on the social responsibility of companies and their boards such as being a good corporate citizen, not discriminating, and complying with diversity norms, (see Walt and Ingley, 2003). The stakeholder theory has grown into a theory for both corporate governance and corporate social responsibility (Kaptein and Wempe, 2002, Walt and Ingley, 2003). Moreover, the development of the stakeholder model has had an immediate effect on the idea that corporate boards should also be more diverse than the homogeneous group they are at present. However, corporate governance codes still do not give priority to the demographic attributes of directors when choosing new board members. Brammer *et al.*, 2007 p. 394, '*best practices in corporate governance focus upon the processes through which a board executes its duties rather than the characteristics of the directors themselves. Guidance on board composition is largely restricted to the presence of independent non-executive directors, rather than demographic*

attributes.' Compared with other countries, pressure from society for corporate board diversity has increased recently in The Netherlands (see Brammer *et al.*, 2007). The publication of the Dutch 'Female Board Index 2007', ranking the 122 companies in this study based on their percentages of female directors, gained a lot of media attention resulting in headlines stating that Philips NV was last in the ranking (see for example, Cats and Kleijwegt, 2008). However, in their 2007 annual report, the Corporate Governance Code Monitoring Committee limited their recommendation to the following: '*the board of non-executive directors should pursue a mixed composition and that especially gender diversity can be increased*' (Corporate Governance Code Monitoring Committee, 2007, p.14). The fact that societal pressure might not be sufficient was proved by the Norwegian case in which, after years of societal pressure as an ultimate remedy, a law became effective in 2005 forcing companies to have 40% female representation on their boards as from 2008.
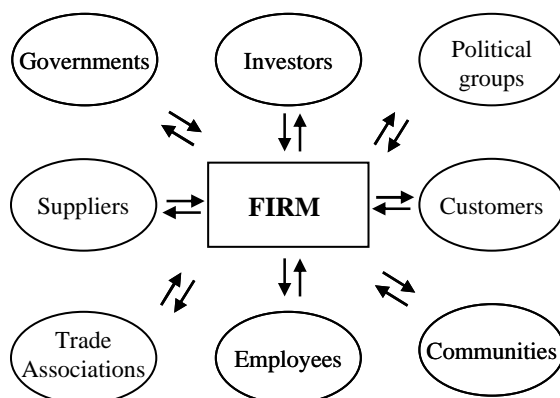
Thirdly, the improvement of company performance is used as a business argument for diversity. Diverse groups consider a greater range of perspectives and generate more high-quality solutions. This could ultimately lead to higher company performance and company value (Burgess and Tharenou, 2002, Singh and Vinnicombe, 2004, Kang *et al.*, 2007, De Bos *et al.*, 2007). However, the results of empirical studies on the subject are not consistent. Some studies found a positive relationship between diversity and performance, whereas others did not find any significant association. (Ees *et al.*, 2007). Attention to causality in this respect is also important, while the occurrence of a particular set of executive backgrounds in a firm is not a random process but may be affected by, for example, the industry within which the company operates (Hambrick and Mason, 1984).

Diversity, Stakeholder Theory and Resource Dependence Theory

Both stakeholder theory and resource dependence theory question who should serve on corporate boards in order to give the board legitimacy, and to what extent this contributes to corporate governance. As mentioned by Luoma and Goodstein (1999), normative arguments are often used by proponents of stakeholder representation on corporate boards and this applies *mutatis mutandis* to female representation.

Stakeholder Theory

Stakeholder management requires that equal attention is paid to the legitimate interests of all relevant stakeholders. Stakeholders in this context are the persons or groups having legitimate interests in various aspects of corporate activity (Donaldson and Preston, 1995). The stakeholder model is shown in Figure 1 (Donaldson and Preston, 1995).

Figure 1. The Stakeholder Model (Donaldson and Preston, (1995, p.69))

When considering the stakeholder model above, and the eight groups of stakeholders, several groups of stakeholders have expressed their concern about the absence of female board directors (see also Hillman *et al.*, 2007). Different stakeholder groups have explicitly expressed their concern about the absence of women in leading positions. Investment funds in the US (Calpers), Switzerland (Amazone Europe Fund) and Finland (TopWomen Fund) include gender diversity as one of their selection criteria (see McKinsey&Company, 2007, De Jong, 2008). Singh and Vinnicombe, 2004, explained that companies without women directors may find that large investors such as pension funds start to question whether they should put their funds in companies that do not demonstrate equal opportunities at the top. Taking Norway as an example, in the Netherlands a proposal for a 40% quota of female directors by 2012 has been proposed by the Dutch labour party (PvdA, see Cats, 2008) and by The Netherlands' largest trade union (FNV, see Stoker, 2008). Furthermore, a voluntary charter has been prepared in The Netherlands to commit companies to increasing the percentage of women in top management positions (see Kleijwegt, 2008, Reier, 2008). Apparently, appointing women to boards of directors is highly valued by important stakeholders of a company.

Resource Dependence Theory

Resource dependence theory regards corporate boards as an essential link between the company and its environment and the external resources on which a company depends. This link is necessary for good corporate performance (Pfeffer and Salancik, 1978). The rationale behind resource dependence is as follows: "The most direct method for controlling dependence is to control the source of that dependence" (Pfeffer and Salancik, 1978: 143). From the perspective of resource dependence theory, the board of directors is a primary linking mechanism for connecting a firm with external resources (Hillman *et al.*, 2007). From the perspective of the stakeholder model as shown in Figure 1, the board of directors *might* be a linking mechanism for connecting a firm with external stakeholders.

In the context of resource dependence theory, using the board of directors as a linkage mechanism towards stakeholders provides companies with at least four benefits (Pfeffer and Salancik, 1978, p.145): firstly, linkage may provide the organisation with useful information, secondly, linkage provides a channel for communication purposes, thirdly, linkage is an important step in obtaining commitments of support form important elements of the environment and fourthly, linkage has a value in legitimizing organisations. Providing legitimacy is explained by Pfeffer and Salancik, as follows: '*Prestigious or legitimate persons or organisations represented on the organisation board provide confirmation to the rest of the world of the values and worth of the organisation'*. Hillman *et al.*, 2007 add that legitimacy and conformity to societal expectations are considered key components of organisational survival. In this study, the focus will be on the fourth benefit of board linking: providing legitimacy to an organisation.

Hypotheses

Larger and more visible organisations experience greater pressure to conform to societal pressure. Large organisations are more likely to be a visible target for the demands of others in the social context and thus need to establish linking in the social context (Hillman *et al.*, 2007, p.944; Pfeffer *et al.*, 1978, p.168). According to Burgess and Tharenou (2002), company size is one of the most consistent predictors of a company having female directors. Adams and Ferreira (2004), also suggest that gender diversity on boards may have a political dimension, 'Companies may care more about diversity when they are concerned about their public image, either because they are large firms which are visible to outsiders or because they are required to deal with government agencies which have preferences for diversity'.

Large and more visible organisations are therefore expected to relate positively to female representation on the board. Besides size as a visibility measure, the most visible companies in The Netherlands are the 25 stocks with the highest turnover on the stock exchange (AEX-companies).

Hypothesis 1. *A positive relationship is expected between the size of a company and the presence of female directors on the board of directors.*

Hypothesis 2. *A positive relationship is expected between highly visible companies and the presence of female directors on the board of directors.*

The need for external linking also has an effect on board size: the greater the need for effective external linking, the larger the board should be (Pfeffer, p.172). Board size may therefore serve as a measure of the organisation's need for integration with the environment. Board size is therefore often hypothesized to relate positively with the size of the company. However, this is not only limited to the number of board members as a whole, but also to the number of female board members. The greater the need for external linking, the greater the need for female directors. Based on previous evidence, Brammer *et al.*, 2007 suggest that women have sometimes been added to the board purely to fulfil the need for equal opportunity. This suggests that larger boards will have more female directors. While board size is also influenced by size of the company, measuring board size corrected for company size will test the relationship between board size and the representation of female directors.

Hypothesis 3. *A positive relationship is expected between the relative board size of a company and the presence of female directors on the board of directors.*

Internationally, The Netherlands has a lower percentage of female directors on boards. Resource dependence theory suggests that boards also provide conformation to the rest of the world of their values. Companies listed on a foreign stock exchange are more likely to conform with the expectation of foreign investors and a positive relationship is expected between the representation of female directors on the boards and their being listed on an international stock exchange.

Hypothesis 4. *A positive relationship is expected between a listing on a foreign stock exchange and the presence of female directors on the board of directors.*

A board of directors provides legitimacy to several groups of stakeholders. As discussed by Brammer *et al* (2007), greater equality of representation relates to direct and indirect benefits that may potentially arise from more closely reflecting the demographic characteristics of key stakeholder groups such as customers, employees and investors. Female directors on boards can provide a valuable form of legitimacy in the eyes of potential and current employees, and women directors also symbolise career possibilities to prospective recruits (Hillman *et al.*, 2007, Singh and Vinnicombe, 2004). Furthermore, customer-oriented businesses are more inclined to appoint female directors to their board, as it provides legitimacy to their customers and enhances relations with customer stakeholders (Brammer *et al.*, 2007). The need to provide legitimacy to employees is greater for labour intensive companies and for industries with a more direct contact with customers.

Hypothesis 5. *A positive relationship is expected between the presence of female directors and the labour intensity of a company.*

Hypothesis 6. *Companies within more customer oriented industries will positively affect the representation female directors.*

Methods

Sample Data was collected on 122 Dutch companies listed on the Amsterdam Stock Exchange. Companies that do not have their statutory seat in The Netherlands were excluded from the study to prevent a bias occurring due to differences in foreign governance codes or cultural and legal differences between countries. Using various sources such as company annual reports, websites, or other publicly available websites, information was gathered regarding the composition of the board

with respect to the gender of executive and supervisory directors. Company data such as size, board size, number of employees, industry, exchange segment and number of listings abroad was also collected. Table 1 provides an overview of the sample. Thirty-four companies (27.9 percent) out of the total sample of 122 companies have one or more female directors on either their executive or supervisory boards. Seven companies (5.7 percent) have one or more female directors on their executive board and 31 companies (25.4 percent) have one or more female directors appointed to their supervisory boards (four companies have a female director on both boards). Of the 928 directors seats within these 122 companies, 48 (5.2 percent) are held by a woman. Of these 48 female directors, seven (2.1 percent) have been appointed as executive directors and 41 (6.9 percent) as non-executive directors. The 48 female director positions are held by 42 different women, while four women fulfil two positions and one woman holds three director seats.

Table 1.   Description of the Sample

	COMPANIES				
	ALL	COMPANIES WITH FEMALE DIRECTORS	%	COMPANIES WITHOUT FEMALE DIRECTORS	%
TOTAL BOARD	122	34	27.9	88	72.1
EXECUTIVE BOARD	122	7	5.7	115	94.3
SUPERVISORY BOARD	122	31	25.4	91	74.6
	DIRECTORS				
		FEMALE DIRECTORS	%	MALE DIRECTORS	%
ALL DIRECTORS	928	48	5.2	880	94.8
EXECUTIVE DIRECTORS	333	7	2.1	326	97.9
NON-EXECUTIVE DIRECTORS	595	41	6.9	554	93.1

Presence of female directors The dependent variable in this study is the presence of one or more female directors on the board of directors. This is measured using a dichotomous variable (a dummy) in which variables have a value of 1 for companies that include at least one female director and a value of 0 otherwise. The presence of female directors is measured as of December 2007 (Lückerath-Rovers, 2008).

Company size The size of the company is measured using the natural logarithm of total assets.

Board size Board size is total board size (executive and supervisory board members) controlled for organisational size, while larger companies have larger boards.

Labour intensity The total number of employees per one million total assets was used as a measure of labour intensity.

Industry Based on SIC codes, the companies were grouped into seven different industries: Construction (SIC 15-17), Manufacturing (SIC 20-39), Transportation and Communication (SIC 40-49), Wholesale Trade (SIC 50-51), Retail Trade (52-59), Financial (60-67) and Services (SIC 70-89). The retail, financial and services industries are considered to be more customer-oriented than the other industries.

AEX-companies The exchange segment in which the shares are traded is used as a measure of visibility of the company. Companies listed in The Netherlands are grouped into three different exchange segments based on their effective turnover on the Amsterdam Euronext Stock Exchange. The 25 stocks with the highest effective turnover form the AEX, the subsequent 25 companies (medium caps) form the AMX and the subsequent 25 companies (small caps) with the highest effective turnover form the AscX. The fourth group of companies form the group 'Other'. To test whether the visibility of companies is associated with the presence of female board members, a

dummy was created to indicate whether a company is an AEX company (dummy takes value 1) or not (dummy takes value 0).

Cross-listing A dummy indicating the occurrence of multiple listings (listing on a foreign exchange other than the Amsterdam Euronext exchange) was used as a measure of the international visibility of the company. The dummy has a value of 1 if the company has multiple listings and 0 otherwise.

Analysis

The univariate analysis assessed one variable at a time to analyse the differences between companies with and without female directors. The t-test of differences in mean values was used to test differences in company size, board size and labour intensity, whereas the Pearson chi-square test was used to analyse whether the circumstance of having female directors on the board relates with the division over industries, exchanges segment and cross-listing. Finally logistic regression was used to analyse which company characteristics affect the likelihood of a company having one or more female directors appointed on the total board. Logit analysis was used to distinguish between two classes (in this case companies with female board representation and those without female board representation). The model estimates a logistic regression equation and then uses a critical level of Z to classify observations into one class or the other. The dependent variable takes the form of a dummy variable and can be either 1 (=company with female board member(s)) or 0 (=no female board members). The logistic model can be calculated as follows:

$$P(Z) = \frac{1}{1 + e^{-\alpha + \beta_1 X_1 + \beta_2 X_2 + ... + \beta_n X_n + \varepsilon}},$$
(1)

where P(Z) is the probability of the dependent variable reaching its maximum value (Z=1), $\beta_1...n$ are the coefficients showing the relationship between X and Z, and $X_1...n$ are the independent variables.

Results

Univariate Analysis Table 2 displays the analysis of differences in the variables, whereas Table 3 shows the correlation between the variables.

Average company size is significantly higher for companies with female directors ($p<0.01$). All three absolute board sizes, as well as relative board size, are significantly higher for companies with female directors (all $p<0.01$). The average total board size for companies with female directors is 10.5 directors, which is, on average, four directors more than the average total board size of 6.5 directors for companies without female directors. Furthermore, the relative board size is significantly higher for companies with female directors (1.57 directors per million total assets for companies with female directors as opposed to 1.19 directors per million total assets for companies without female directors, $p<0.01$). Companies with female directors have significantly more employees ($p<0.01$), which is, of course, in line with the results on company size measured in total assets. Labour intensity measured by the number of employees per one million total assets is also higher, but the difference is not significant. The distribution over the seven industries is significantly different for the companies with female directors than for the companies without female directors (chi-square 15.93, $p<0.05$). Companies with female directors on their board are found primarily in the production and financial sectors. More than 75% of the companies with female directors are active in one of these two sectors, whereas this is only 42% for the companies without female directors. The exchange segment in which shares of the company are traded also seems to be a determining factor for the presence of female directors (chi-square 23.62, $p<0.01$). Forty-one per cent of the companies with female directors on their boards are AEX-companies; this is only 7% for companies without female directors on board. Finally, the exchange dummy indicating whether a company is listed solely on the Euronext Amsterdam Exchange or had multiple listings abroad is significantly different (chi-square 10.28, $p<0.01$) for companies with and without female directors on their boards. Thirty-eight

per cent of the companies with female directors are listed on a foreign stock exchange, while this is only 13 per cent for the companies with female directors.

Table 2.   Difference Analysis Between Companies With and Without Female Directors
COMPANY SIZE is measured by the logarithm of total assets. TOTAL BOARD SIZE, EXEC. BOARD SIZE AND SUP.BOARD SIZE are the number of directors in respectively the combined and separate executive and supervisory boards. RELATIVE BOARD SIZE is total board size, controlled for company size (total board size/ log(total-assets)). The relative LABOUR INTENSITY is measured by the number of employees per 1 million total assets. CONSTRUCTION, MANUFACTURING, TRANSPORT/COMMUNICATION, WHOLESALE, RETAIL, FINANCE AND SERVICES are dummy-variables, based on the SIC-codes of the companies. AEX is a dummy-variable, which takes the value of one when the company is an AEX-company, meaning that the company is one of the 25 companies in The Netherlands with the highest turnover on the Amsterdam Stock Exchange. CROSS-LISTING is a dummy-variable, indicating in which of the four exchange segments of the Amsterdam Stock Exchange the company is traded on the Amsterdam Stock Exchanges, either the AEX, the AMX, the AscC or other, which takes the value of one if the company is also listed on a stock exchange besides Amsterdam, and zero if the company is only listed at the Amsterdam Stock Exchange.

VARIABLE	ALL COMPANIES		WITH FEMALE DIRECTORS		NO FEMALE DIRECTORS		Analysis of difference
	N	MEAN	N	MEAN	N	MEAN	Abs. t-value
COMPANY SIZE	122	5.70	34	6.56	88	5.37	6.15***
TOTAL BOARD SIZE	122	7.61	34	10.53	88	6.48	6.76***
EXEC.BOARD SIZE	*122*	*2.74*	*7*	*4.86*	*115*	*2.61*	*3.52****
SUP.BOARD SIZE	*122*	*4.87*	*31*	*7.00*	*91*	*4.14*	*7.89****
RELATIVE BOARD SIZE	122	1.30	34	1.57	88	1.19	5.45***
LABOUR INTENSITY	118	8.36	33	10.32	33	7.59	0.91
INDUSTRY	N	PERCENT	N	PER CENT	N	PER CENT	Chi-square
Construction	7	5.74	1	2.94	6	6.82	
Production	46	37.70	17	50.00	29	32.95	
Transport & communication	6	4.92	2	5.88	4	4.55	
Wholesale trade	14	11.48	0	0.00	14	15.91	
Retail trade	4	3.28	1	2.94	3	3.41	
Financial	17	13.93	9	26.47	8	9.09	
Services	28	22.95	4	11.76	24	27.27	
ALL	122	100.00	34	100.00	88	100.00	15.93**
EXCHANGE-segment							
AEX	20	16.39	14	41.18	6	6.82	
AMX	20	16.39	3	8.82	17	19.32	
AscX	21	17.21	7	20.59	14	15.91	
OTHER	61	50.00	10	29.41	51	57.95	
ALL	122	100.00	34	100.00	88	100.00	23.62***
CROSS-LISTINGS							
AMSTERDAM	98	80.33	21	61.76	77	87.50	
CROSS-LISTING	24	19.67	13	38.24	11	12.50	
ALL	122	100.00	34	100.00	88	100.00	10.28***

*** Significance at p<0.01
** Significance at p<0.05

Table 3. Correlation Coefficients

COMPANY SIZE is measured by the logarithm of total assets. BOARD SIZE is the total board size, meaning the combined executive board and the supervisory board. The relative LABOUR INTENSITY is measured by the number of employees per 1 million total assets. CONSTRUCTION, MANUFACTURING, TRANSPORT/COMMUNICATION, WHOLESALE, RETAIL, FINANCE AND SERVICES are dummy-variables, based on the SIC-codes of the companies. AEX is a dummy-variable, which takes the value of one when the company is an AEX-company, meaning that the company is one of the 25 companies in The Netherlands with the highest turnover on the Amsterdam Stock Exchange. CROSS-LISTING is a dummy-variable, which takes the value of one if the company is also listed on a stock exchange besides Amsterdam, and zero if the company is only listed at the Amsterdam Stock Exchange.

		1	2	3	4	5	6	7	8	9	10	11	12
1	PRESENCE FEMALE DIRECTORS	1											
2	COMPANY SIZE	0.489***	1										
3	BOARD SIZE	0.525***	0.810***	1									
4	LABOUR INTENSITY	0.084	-0.101	0.045	1								
5	CONSTRUCTION	-0.075	0.080	0.048	-0.027	1							
6	MANUFACTURING	0.158*	-0.058	0.009	-0.094	-0.192**	1						
7	TRANSPORT/COMMUNICATION	0.028	0.061	0.081	-0.003	-0.056	-0.177*	1					
8	WHOLESALE	-0.224**	-0.157	-0.189**	-0.016	-0.089	-0.280***	0.082	1				
9	RETAIL	-0.012	0.071	-0.006	0.025	-0.045	-0.143	-0.042	-0.066	1			
10	FINANCE	0.225**	0.436***	0.347***	-0.218**	-0.099	-0.313***	-0.092	-0.145	-0.074	1		
11	SERVICES	-0.165*	-0.279***	-0.197**	0.309***	-0.135	-0.425***	-0.124	0.197**	-0.100	-0.220**	1	
12	AEX-DUMMY	0.416***	0.541***	0.517***	0.121	-0.014	-0.025	0.104	-0.02	0.043	0.078	-0.084	1
13	CROSS-LISTING	0.290***	0.536***	0.536***	-0.132	-0.122	0.126	-0.017	-0.113	-0.091	0.218**	-0.123	0.394***

* $p<0.1$, **$p<0.05$, ***$p<0.01$

These preliminary results show that results may be biased for studies that use company size or exchange segment (i.e. AEX-companies) as a sample selection criterion when determining the presence of women on boards. Limiting the dataset to larger companies (Ees *et al.*, 2007, McKinsey&Company, 2007, Reier, 2008) provides a favourable view of women on boards. This is also the case when focusing on international companies or when the results for supervisory boards in The Netherlands (two-tier board) are compared to the total of boards in countries with a one-tier regime. Logistic regression will be used to investigate which company characteristics determine the presence of female directors.

Multivariate Analysis Two models are shown in Table 4 due to the high correlation between some of the variables and in order to prevent multicollinearity. Model 1 excludes company size and includes the AEX dummy and finance dummy whereas both the AEX companies and finance companies are also the largest companies in The Netherlands. Model 2 therefore includes company size and excludes the AEX and finance dummies. Industry dummies have been limited to finance and manufacturing while all other industries did not improve the models either individually or jointly.

Table 4.   Results of Logit Analysis of Likelihood of the Presence of Female Directors on the Board

COMPANY SIZE is measured by the logarithm of total assets. BOARD SIZE is the relative total board size, meaning the combined executive board and the supervisory board, controlled for company size (total board size/ log(total-assets). The relative LABOUR INTENSITY is measured by the number of employees per 1 million total assets. MANUFACTURING and FINANCE are dummy-variables, taking value of one when a company has respectively a SIC-code between 20-39 or 60-67, and zero otherwise. AEX is a dummy-variable, which takes the value of one when the company is an AEX-company, meaning that the company is one of the 25 companies in the Netherlands with the highest turnover on the Amsterdam Stock Exchange. CROSS-LISTING is a dummy-variable, which takes the value of one if the company is also listed on a stock exchange besides Amsterdam, and zero if the company is only listed at the Amsterdam Stock Exchange.

	TOTAL BOARD			
	Model 1		Model 2	
VARIABLE	ODDS	WALD	ODDS	WALD
CONSTANT	0.00	23.21***	0.00	18.04***
COMPANY SIZE	3.83	11.97***		
BOARD SIZE	11.02	5.51**	15.47	8.65***
LABOUR INTENSITY	1.05	1.24	1.05	1.26
MANUFACTURING	4.72	7.18***	6.66	8.79***
FINANCE			10.41	6.86***
AEX			7.12	6.65***
CROSS-LISTING	0.38	1.66	0.64	0.39
N	122		122	
NAGELKERKE R2	0.47		0.45	
CLASSIFICATION ACCURACY	81.4%		79.7%	
Random model	72.0%		72.0%	
Chi-square		5.2***	8.4***	

* $p<0.1$, **$p<0.05$, ***$p<0.01$

Table 4 presents odds ratios instead of the coefficients of the logit analysis. Odds ratios represent changes in the likelihood of the dependent variable occurring due to a change of one unit in the sample mean of the independent variable, and they are easier to interpret than coefficients in the logistic formula (1) (see also Hillman *et al.*, 2007). An odds ratio of one indicates that the independent variable is equally likely to occur for companies with or without female representation on boards, whereas an odds ratio greater (smaller) than one indicates that the condition is more (or less) likely to occur for companies with female representation.

Table 4 shows that both Model 1 and 2 significantly ($p<0.01$) outperform the random model. A random model assigns the companies randomly to either one of the two categories: companies with

or without female directors. A random model would have classified 72% correctly. By introducing variables, the classification accuracy increases to 79.7% in Model 1 and 81.4%[3] in Model 2 (both models classify significantly better than the random model at $p<0.01$).

Larger and more visible companies experience more pressure to conform to societal expectations. Hypothesis 1 tested the relationship between company size and the presence of female directors. A positive relationship between company size and the presence of female directors was expected in hypothesis 1. The results in Table 4 support this hypothesis. In Model 2, the odds ratio for the log of total assets is 2.30 ($p<0.01$), indicating that the likelihood of female representation increases by 130% when the log of total assets increases one unit above the sample mean. The results in Table 4 also support hypothesis 2: a positive relationship between highly visible companies (the AEX companies in The Netherlands) and the presence of female directors. In Model 1, the odds ratio of the AEX dummy is 7.12 ($p<0.01$).

Hypothesis 3 predicted a positive relationship between board size and the presence of female directors. The results of Model 1 support this hypothesis with a significant positive relationship between relative board size and the presence of female directors. The relationship is also significantly positive in Model 2, in which absolute board size is used as independent variable .

Whether the presence of female directors provides legitimacy to different stakeholders (providing conformation to the rest of the world) was tested for the international community, employees and consumers. Hypothesis 4 predicted a positive relation between multiple listings and the presence of female directors. Neither models support this hypothesis with an odds ratio below one, but this is not significant. Hypothesis 5 predicted a positive relationship between labour intensity and the presence of female directors. The hypothesis is not supported by the results of Model 1 or 2, the odds ratio is greater than one but not significant. Finally, Hypothesis 6 predicted a positive relationship between the more customer-oriented industries and the presence of female directors. The univariate analysis previously showed that most of the companies with female directors were found in the manufacturing and finance sectors. The service industry actually showed a negative correlation with the presence of female directors. In the logit analysis, different combinations of dummies were tested, but only the manufacturing and finance dummies remained constantly significant. Hypothesis 6 is therefore also rejected.

Conclusions

This study questioned whether companies with a greater need for external linkings are more likely to have female (executive and non-executive) directors on their corporate boards. Based on resource dependence theory and stakeholder theory, it was argued that boards of directors serve as a linking mechanism between companies and their stakeholders, and that they provide legitimacy to different stakeholders or groups within our society. Moreover, the presence of female directors on company boards provides legitimacy to the outside world regarding the company's values on diversity (analogue to Pfeffer and Salancik, 1978). While societal pressure to appoint female directors to corporate boards has increased in the past decade, this is more likely to have influenced companies which are more inclined to conform to societal expectations. It was hypothesized that larger, more visible (nationally and internationally) companies with higher labour intensity and which are more consumer-oriented are more inclined to conform to societal expectations on gender diversity.

The results of the logistic regression show that companies which are generally more visible to the society as a whole (larger, AEX-companies) are indeed more likely to appoint female directors. This remains true when board size is included in the model (while board size is also greater for these larger, highly visible companies). However, when looking at more specific groups of stakeholders (in this study these were employees and customers), no evidence was found that these stakeholder groups determine the presence of female directors on corporate boards. This result supports the idea behind resource dependence theory that companies experiencing more pressure to provide

legimacy are more likely to have female representation on corporate boards, whereas ties with specific groups of stakeholders were not confirmed by the findings of this study.

These results add new evidence to the existing literature on stakeholder representation on corporate boards and whether corporate boards act as a linking mechanism to society. The next question should address the possible benefits of female representation and the legitimacy provided by that representation. The reinforcement of perceived legitimacy may enhance performance, but might also be largely symbolic and have no impact on performance (Luoma and Goodstein, 1999). Building upon the conclusion of Luoma and Goodstein (1999), any comprehensive investigation of the impact of providing legitimacy by female board members on corporate performance should not be limited to profitability (which is mostly concerned with shareholders profit), but should include, for example, social and market performance and the satisfaction of relevant stakeholders.

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[1] Berman *et al* (2006, p.3) explain that stakeholder theory prescribes more cooperative behavior between the firm and its constituency groups, and resource dependence theory is better adapted to relationships between firms and stakeholders characterized by greater conflict.

[2] Varying from 29% in Norway to 0% in Portugal (EPWN, 2007). These figures, however, are also biased by the selection of companies in the sample, for example only five Portuguese companies are included in the sample, and these five companies (80 board members) do not have female board representation.

[3] As opposed to Model 1, Model 2 classifies correctly four additional companies.

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