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Abstract

This article contributes to the literature by examining the determinants of the existence of a critical mass of women on boards. As critical mass theory suggests, the mere presence of women on boards may not be sufficient to bring significant change to the boardroom and to improve corporate governance. While studying the determinants of female presence on boards is useful, it may be helpful to study what are the characteristics of firms that have a sufficient number of women to enhance governance. In this paper, we study the predictors of the existence of a critical mass of women on S&P 100 boards between 1995 and 2010. We show that firms with at least three female directors have larger boards, are larger, are more likely to be run by a female CEO and have a greater proportion of non-Caucasian directors. On the contrary, we were not able to show significant differences in firm performance and board independence between firms with and without a critical mass of women on their boards.

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1. Introduction

In almost every country and every sector, female representation on corporate boards has increased in recent years. In an analysis of 3,000 companies across 40 countries worldwide, Credit Suisse (2014) documents that board diversity has progressed from 9.6% in 2010 to 12.7% in 2013. As it is so often the case, this average hides significant disparities. While in some countries in Europe, the proportion of women directors is close to 30% (Finland, France, Sweden) or to 40% (Norway), in other countries such as Japan or Pakistan, women hold less than 1 out of 50 corporate board seats (i.e. less than 2%).

According to Terjesen and Singh (2008), the differences between countries in the mean proportions of female directors are attributable to the social, political and economic structures of individual countries. In particular, they document that female directors are more numerous in countries characterized by more women in senior management levels, smaller gender pay gaps and a shorter period of women's political representation. Grosvold and Brammer (2011, p.129) show "*that as much as half of the variation across countries in the presence of women on corporate boards is attributable to institutional factors and that legal institutions appear to play the most significant role in shaping board diversity*".

Moreover, there are wide disparities in the number of women serving on boards within each country. In the United States, for example, in 2013, 23.4% of Fortune 500 firms had three or more women directors but 10.2% of them had no women serving on their boards (Catalyst 2013). Similarly, in the United Kingdom, in March 2015, 26% of FTSE 250 firms had at least 25% female directors but 9.2% of them had no women serving on their boards (Female FTSE Board report 2015). This contrasting situation (with some firms having no women director and some other having several women directors) challenges to study the determinants of female presence on boards.

However, relatively few studies have investigated this issue. Most studies have typically focused on the impact of board gender diversity on firm financial performance and have found mixed evidence. On the one hand, Carter et al. (2003), Campbell and Minguez-Vera (2008) and Liu et al. (2014) provide evidence that gender diversity enhances company performance. On the other hand, Bøhren and Strøm (2007) and Adams and Ferreira (2009) document a negative impact and Rose (2007), Francoeur et al. (2008) and Carter et al. (2010) no impact resulting from gender diversity. In an effort to reconcile these conflicting results, Post and Byron (2015) combined in a meta-analysis the results from 140 studies examining the relationship between women on boards and company performance. They show that female board representation is positively related to accounting returns but fail to a find a significant relationship between female board representation and market performance.

The Tokenism Theory (Kanter, 1977) according to which firms appoint female directors for purely symbolic reasons and thus are not expected to participate as full members of the board could explain at least partially the absence of consistency or of significance in the relationship between women on boards and firm performance. Indeed, the mere presence of women on boards may not be sufficient to bring significant change to the boardroom and to improve corporate governance. According to Erkut et al. (2008) and Kramer et al. (2006) at least three females on boards are needed for actual changes in board dynamics to occur. Indeed, when there is a critical mass of women on board (at least three), women are more likely to be heard since gender is no longer a barrier to acceptance and communication (Konrad et al. 2008) which translates into an improvement in firm performance (Catalyst, 2011; Joecks et al.,

2013), in the level of firm innovation (Torchia et al., 2011) and in corporate social performance (Post et al., 2011).

Therefore, while studying the determinants of female presence on boards is useful (Hillman et al., 2007; Geiger and Marlin, 2012 and Nekhili and Gatfaoui, 2013), in light of the Tokenism Theory, analyzing why some organizations have a critical mass of women on their boards but other do not is complementary. In this paper we examine the factors that impact the existence of a critical mass allowing female directors to affect the decision made by the board and not only the determinants of their presence.

The remainder of this paper is organized as follows: Section 2 develops hypotheses regarding the variables that could impact the likelihood of the existence of a critical mass of female directors on boards. The methodology used to test these hypotheses is presented in Section 3. Section 4 provides our results and our conclusions are set forth in the final section.

2. Hypotheses development

Despite the difficulties met by women to obtain a board seat, a small number of women have broken the glass ceiling. However, their situation is contrasting with some firms having no women director and some other having several women directors. Some variables may be expected to impact the existence of a critical mass of women on boards.

First, the overall size of the board may impact the existence of a critical mass of women on boards since, in larger boards, there are more seats available for potential female directors.

Hypothesis 1: The likelihood of the development of a critical mass of women on a specific board will increase with board size.

Second, firm size may have an impact on the existence of a critical mass of women on boards because large firms are subject to more scrutiny by analysts and shareholders to increase the diversity of their boards. Moreover, the greater complexity of large firms may necessitate more monitoring. As underlined by Adams and Ferreira (2009), women are supposed to be better monitors. Finally, because of the prestige, it may be easier for large firms to attract and maintain more women on their boards.

Hypothesis 2: The likelihood of the development of a critical mass of women on a specific board will increase with firm size.

Third, the existence of a critical mass of women on boards could be associated to higher board independence. Existing research suggests that women are more likely to be outside directors (Carter et al., 2003; Adams and Ferreira, 2009; Simpson et al., 2010). Therefore, it is less likely for firms with a high proportion of dependent directors to reach a critical mass of women on boards.

Hypothesis 3: The likelihood of the development of a critical mass of women on a specific board will increase with board independence.

Fourth, CEO gender may have an impact on the existence of a critical mass of women on boards. In a recent article in the *Wall Street Journal,* Lublin (2014) underlines that many U.S. firms run by women have multiple female directors. More generally, Bilimoria (2006) establishes a positive relationship between the number of female directors and the number of female members of senior management in a sample of Fortune 500 firms. Thus, the presence

of women in positions of visible authority may encourage and support effective representation of women on boards.

Hypothesis 4: The likelihood of the development of a critical mass of women on a specific board will increase with the presence of a female CEO.

Fifth, according to the resource dependency theory (Pfeffer and Salancik, 1978), because firms are dependent on resources, they have to develop links with external environment for survival. A lack of control over these resources acts to create uncertainty for firms operating in that environment. Now, the board of directors is a primary linking mechanism for connecting a firm with external resources (Hillman et al., 2007). Thus, greater board diversity enhances overall board expertise and the number of important external linkages to the firm's environment (Hillman et al., 2002). Having a heterogeneous board can ensure that a variety of views and ideas is represented at the top. Thus, gender and ethnic diversity may be complementary.

Hypothesis 5: The likelihood of the development of a critical mass of women on a specific board will increase with board ethnic diversity.

Six, according to Farrell and Hersch (2005), better performing firms may have more females on their board. Due to internal and external calls for diversity, the demand for female directors allows women to self-select better performing firms. Since qualified women interested in serving on corporate boards are scarce, they may have the opportunity to choose to serve on better performing firms. Moreover, better performing firms may have more latitude to focus on diversity goals.

Hypothesis 6: The likelihood of the development of a critical mass of women on a specific board will increase with firm performance.

3. Data and methodology

In order to test these 6 hypotheses we determine the exact composition of the boards of S&P 100 firms between 1995 and 2010. To do this, we obtained the proxy statements from the Securities and Exchange Commission website[1]. Following Farrell and Hersch (2005) and Hermalin and Weisbach (1988), we exclude financial firms[2] (SIC codes 6000-6999) and utilities industry[3] (SIC codes 4900-4999) since board of directors in these companies may be subject to regulatory supervision affecting their governance system. Consequently, the final data set consists of an unbalanced sample of 78 firms and 1,181 firm-year observations.

Our variable of interest is the existence of a critical mass of women on a specific board, a dummy variable that takes the value of 1 if there are at least 3 women on boards and 0 otherwise. In this study, we analyze whether variables such as board size, firm size, board independence, CEO gender, board ethnic diversity or firm performance are determinants of the existence of a critical mass of women on boards.

We define *board size* as the total number of directors on a given board (excluding Emeritus and Advisory member positions) and *firm size* is approximated by the natural logarithm of total assets. Three proxies were used to assess board independence: the proportion of co-opted directors *(co-opted*), the proportion of outside directors (*outside*) and the independence of the

[1] http://www.sec.gov/

[2] Financial institutions, insurance companies and real estate companies.

[3] Electric, gas and sanitary services.

Table 1: Correlation coefficients

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
board size (1)	1.000										
CEO duality (2)	0.051	1.000									
women CEO (3)	-0.211	0.008	1.000								
Co-opted (4)	0.125	-0.217	0.053	1.000							
ethnicity (5)	0.156	0.004	0.094	0.133	1.000						
outside (6)	0.030	0.245	-0.022	0.046	0.103	1.000					
ROA (7)	-0.059	-0.070	-0.010	-0.015	0.012	-0.094	1.000				
debt to equity (8)	0.216	0.111	0.058	0.138	0.135	0.085	-0.224	1.000			
firm size (9)	0.279	0.001	-0.096	0.119	0.277	-0.010	0.008	0.076	1.000		
shareholder returns (10)	-0.093	-0.013	-0.004	-0.101	-0.133	-0.060	0.147	-0.074	-0.121 [a]	1.000	
total risk (11)	-0.192	-0.004	0.057	-0.127	-0.174	-0.068	-0.216	-0.001	-0.233 [a]	-0.161 [a]	1.000

board chair (*CEO duality)*. Co-opted directors are those appointed after the CEO assumes office. They are supposed to be less independent from the management than non co-opted directors since they were appointed by the current CEO and thus may feel beholden to him (Core et al. 1999 and Coles et al. 2014). Outside directors are non executive directors with no significant relationship with the company. In comparison to inside directors, there are supposed to have more freedom to ask difficult questions and to be more willing to stand up to the CEO to safeguard the interests of shareholders (Duchin et al. 2010). The independence of the board chair is measured by a dummy variable that is equal to one if the CEO is the board chair, and zero otherwise. If the CEO is also the chairperson, board independence is reduced since in case of CEO duality more difficult for the board to oppose a decision made by the CEO. Our dummy variable *women CEO* is equal to 1 if the CEO is a woman and to 0 otherwise. The proportion of non Caucasian directors (*ethnicity*) is used to measure the impact of board ethnic diversity on the existence of a critical mass of women on boards. Finally, following Hillman et al. (2007), we used *Return On Assets (ROA)*, *debt to equity*, *shareholder returns* and *total risk* as our performance measures. [4] *ROA* and *debt to equity* were collected from Thomson ONE Banker database. The two others performance measures have been computed by ourselves. Table 1 presents the correlation matrix among all the independent variables employed in this study.

Table 1 gives us the correlation coefficients between all the variables.[5] We can observe that the magnitude of the correlation coefficients is 0.3 or bellow suggesting that there is a weak correlation between the variables.

4. Results

The summary statistics for the whole sample and for our two subsamples (firms with and firms without a critical mass of women) are provided in Table 2. We observe major differences between firms with a critical mass of women on boards and those with no critical mass for different independent variables. For instance, firms with at least 3 female directors are much more frequently run by women CEO (in 16.8 % of the cases) than firms with less than 3 female directors (in 0.43 % of the cases). Similarly, firms with a critical mass of women on boards have larger board (13.37 directors on average) than firms with no critical mass of female directors (11.75 directors on average). These results suggest, among others that board size and CEO gender may be good determinants of the existence of a critical mass of women on a given board. On the contrary, for example the independence of the board chair and the ROA do not seem to allow discriminating between firms with a critical mass of women and firms with no critical mass since there are no important differences between our two subsamples.

[4] The *shareholder return* is a measure of the performance over the time. It combines share price appreciation and dividends to show the total return to the shareholder. It is expressed as a percentage as the compound annual growth rate.
The risk of an asset may be measured by the dispersion of the possible returns below the expected value. In this way, the *total risk* is measured as the standard deviation of asset returns.

[5] Correlations involving dummies are only indicative.

Table 2: Group statistics table

Critical mass of women on boards		Mean	Std. deviation	Number of obs.
no critical mass	board size	11.753	2.379	931
	firm size	4.264	0.458	931
	outside	0.810	0.110	931
	co-opted	0.510	0.300	931
	CEO duality	0.575	0.495	931
	women CEO	0.004	0.065	931
	ethnicity	0.117	0.081	931
	ROA	9.498	7.438	931
	debt to equity	76.023	95.860	931
	shareholder returns	0.155	0.355	931
	total risk	0.021	0.010	931
critical mass	board size	13.372	2.699	250
	firm size	4.524	0.436	250
	outside	0.852	0.080	250
	co-opted	0.526	0.274	250
	CEO duality	0.592	0.492	250
	women CEO	0.168	0.375	250
	ethnicity	0.173	0.090	250
	ROA	9.250	5.839	250
	debt to equity	108.597	115.796	250
	shareholder returns	0.070	0.281	250
	total risk	0.019	0.009	250
total	board size	12.096	2.537	1,181
	firm size	4.319	0.466	1,181
	outside	0.819	0.106	1,181
	co-opted	0.513	0.295	1,181
	CEO duality	0.578	0.494	1,181
	women CEO	0.039	0.194	1,181
	ethnicity	0.129	0.086	1,181
	ROA	9.446	7.128	1,181
	debt to equity	82.919	101.237	1,181
	shareholder returns	0.137	0.342	1,181
	total risk	0.020	0.010	1,181

Table 3 presents the univariate ANOVA results for the significance of the variables and shows strong statistical evidence of significant differences between our two subgroups for most of our independent variables. Our results provide strong statistical evidence of significant differences between the subgroups. Firms with a critical mass of female directors tends to have larger boards, are larger, are more likely to have a female CEO and have a higher proportion of non-Caucasian directors than firms without a critical mass. Regarding financial performance variables, 3 out of the 4 variables have significant differences between means in the two subsamples (*debt to equity*, *shareholder returns* and *total risk*). Only ROA does not seem to be a significant determinant of our independent variable. On the contrary, only 1 out of our 3 board independence measure (the proportion of *outside* directors) has significant differences between means in the two subsamples.

Table 3 : Tests of equality of group means table

	Wilk's Lambda	F	p-value
board size	0.932	86.033	0.000*
firm size	0.948	64.740	0.000*
outside	0.974	32.071	0.000*
co-opted	0.999	0.613	0.434
CEO duality	1.000	0.243	0.622
women CEO	0.881	159.964	0.000*
ethnicity	0.931	87.583	0.000*
ROA	1.000	0.238	0.625
debt to equity	0.983	20.744	0.000*
shareholder returns	0.990	12.128	0.001*
total risk	0.991	10.162	0.001*

*Significant at the 1% level.

Table 4 provides the standardized canonical discriminant function coefficients and the structure matrix.

The discriminant coefficients can be interpreted as those in a multiple regression. Therefore, the results show that *women CEO* and *board size* are the strongest predictors of the existence of a critical mass of women on boards. The positive signs indicate a positive relationship: firms with a critical mass of female directors have larger boards and are more likely to be run by female CEO. The relative importance of the predictors can be seen from the structure matrix. A coefficient higher than 0.30 suggests an important variable to discriminate between the two subgroups. Consequently, we conclude that *board size*, *firm size*, *women CEO* and *ethnicity* are good predictors and that *firm performances* and *board independence* are weak predictors of the existence of a critical mass of female directors.

The results clearly support Hypothesis 1. Firms with at least 3 female directors have larger boards than firms with less than 3 female directors. This result is consistent with Agrawal and Knoeber (2001) and Carter et al. (2003) in the US and Brammer et al. (2007) in UK who show a positive relation between board size and the percentage of women directors. Our results also show that the likelihood of the development of a critical mass of women on a specific board increases with firm size. This validates Hypothesis 2 and is consistent with Agrawal and Knoeber (2001), Hyland and Marcellino (2002), Carter et al. (2003) and Wang and Clift (2009) who show a positive relation between firm size and the percentage of women directors. On the contrary, Hypothesis 3 is rejected since our 3 measures of board independence are weak predictors of the existence of a critical mass of women on boards. These results contrast with Geiger and Marlin (2011) who show that a positive relationship exists (significant at the 1%) between the percentage of outside board members and the percentage of women on the board. This indicates that the determinants of the percentage of women on boards and the determinants of the existence of a critical mass of women on boards are different. Hypotheses 4 and 5 are supported by the data and constitute original results. Firms with at least 3 women on boards are more likely to be run by a female CEO and have a greater proportion of non-Caucasian directors. Finally, Hypothesis 6 is rejected since none of our performance measure significantly impacts the existence of a critical mass of women on boards. This result agrees well with Hillman et al. (2007) who document that most of their performance variables are not associated with female representation on a board.

Table 4 : Summary of the canonical discriminant function

	Standardized canonical discriminant function coefficients	Structure matrix
board size	0.511	0.456
firm size	0.279	0.396
Outside	0.296	0.279
co-opted	-0.178	0.038
CEO duality	-0.122	0.024
women CEO	0.752	0.622
Ethnicity	0.211	0.460
ROA	0.043	-0.024
debt to equity	0.038	0.224
shareholder returns	-0.065	-0.171
total risk	-0.004	-0.157
Eigenvalue	0.351	
Canonical correlation	0.510	
Wilk's Lambda Analysis		
Wilk's Lambda coefficient	0.740	
Chi-square	352.77	
Sig.	0.000	

5. Conclusion

The issue of female representation on corporate boards has been one of the key business debates of the decade. However, most studies have typically focused on the impact of the presence of women on financial performance. Therefore, while women are still largely underrepresented as directors, very few studies have examined the determinants of female presence on boards. Moreover, as critical mass theory suggests, the mere presence of women on boards may not be sufficient to bring significant change to the boardroom and to improve corporate governance. While studying the determinants of female presence on boards is useful, it may be helpful to study what are the characteristics of firms that have a sufficient number of women to enhance governance.

Knowing that women are still significantly underrepresented on corporate boards and that female board representation is far from uniform across firms, some firm or board characteristics may hinder the growth of female representation on boards. Firms seeking to benefit from board gender diversity should take into account these factors. In this paper, we study the predictors of the existence of a critical mass of women on S&P 100 boards between 1995 and 2010. We show that firms with at least three female directors have larger boards, are larger, are more likely to be run by a female CEO and have a greater proportion of non-Caucasian directors. On the contrary, we were not able to show significant differences in firm performance and board independence between firms with and without a critical mass of women on their boards.

The contributions of this work are multiple. First, this article contributes to the literature by examining the determinants of the existence of a critical mass of women on boards. While some studies have explored the determinants of female presence on boards (Hillman et al., 2007; Geiger and Marlin, 2012 and Nekhili and Gatfaoui, 2013), the critical mass theory

invites us to consider the characteristics of firms with at least three female directors. To the best of our knowledge, this research is the first to study the determinants of the existence of a critical mass of women on boards. We believe that this approach is a good complement to the existing works: by studying whether or not there is a critical mass of female directors, we can better explore under what conditions a firm's board is more likely to take full advantage from board diversity.

Second, we show that some predictors of the percentage of women on boards (in particular board independence) are not good predictors of the existence of a critical mass of women on boards. This confirms the interest to study specifically the determinants of the critical mass.

Third, we identify new predictors that significantly impact the likelihood of female representation on boards of directors. For instance, we show that firms with at least three women on boards are more likely to be run by a female CEO. This result is significant because it demonstrates that the presence of women in positions of visible authority may encourage and support effective representation of women on boards. Similarly, we show that firms with a critical mass of women have a greater proportion of non-Caucasian directors. Therefore, other form of board diversity could have a positive impact on board gender diversity.

References

Adams, R.B. and Ferreira, D. (2009) "Women in the boardroom and their impact on governance and performance" *Journal of Financial Economics* **94**, 291-309.

Agrawal, A. and Knoeber, C.R. (2001) "Do some outside directors play a political role?" *Journal of Law and Economics* **44**, 179-198.

Bilimoria, D. (2006) "The relationship between women corporate directors and women corporate officers" *Journal of Managerial Issues* **18**, 47-61.

Bøhren, Ø. and Strøm, R.Ø. (2007) "Aligned. informed and decisive: Characteristics of value creating boards" SSRN working paper.

Brammer, S., Millington, A. and Pavelin, S. (2007) "Gender and ethnic diversity among UK corporate boards" *Corporate Governance: An International Review* **15**, 393-403.

Campbell, K. and Minguez-Vera, A. (2008) "Gender diversity in the boardroom and firm financial performance" *Journal of Business Ethics* **83**, 435-451.

Carter, D.A., D'Souza, F., Simkins, B.J. and Simpson, W.G. (2010) "The gender and ethnic diversity of US boards and board committees and firm financial performance" *Corporate Governance: An International Review* **18**, 396-414.

Carter, D.A., Simkins, B.J. and Simpson, W.G. (2003) "Corporate governance. board diversity. and firm value" *Financial Review* **38**, 33-53.

Catalyst (2011) "The bottom line: Corporate performance and women's representation on boards (2004–2008)".

Catalyst (2013) "2013 Catalyst census: Fortune 500 women board directors".

Coles, J.L., Daniel, N.D. and Naveen, L. (2014) "Co-opted boards" *Review of Financial Studies* **27**, 1751-1796.

Core, J.E., Holthausen, R.W. and Larcker, D.F. (1999) "Corporate governance. chief executive officer compensation and firm performance" *Journal of Financial Economics* **51**, 371-406.

Credit Suisse (2014) "The CS Gender 3000: Women in senior management".

Duchin, R., Matsusaka, J.G. and Ozbas, O. (2010) "When are outside directors effective?" *Journal of Financial Economics* **96**, 195-214.

Erkut. S., Kramer, V.W. and Konrad, A.M. (2008) "Critical mass: Does the number of women on a corporate board make a difference?" In *Women on Corporate Boards of Directors: International Research and Practice* by S. Vinnicombe, V. Singh, R. Burke, D. Bilimoria and M. Huse, Eds., Edward Elgar, Cheltenham, 350-366,.

Farrell, K.A. and Hersch, P.L. (2005) "Additions to corporate boards: The effect of gender" *Journal of Corporate Finance* **11**, 85-106.

Female FTSE Board report (2015) "Putting the UK progress into a global perspective"

Francoeur, C., Labelle, R. and Sinclair-Desgagné, B. (2008) "Gender diversity in corporate governance and top management" *Journal of Business Ethics* **81**, 83-95.

Geiger, S.W. and Marlin, D. (2012) "The relationship between organizational/board characteristics and the extent of female representation on corporate boards" *Journal of Managerial Issues* **24**, 157-172.

Grosvold, J. and Brammer, S. (2011) "National institutional systems as antecedents of female board representation: An empirical study" *Corporate Governance: An International Review* **19**, 116-135.

Hermalin, B.E. and Weisbach, M.S. (1988) "The determinants of board composition" *RAND Journal of Economics* **19**, 589-606.

Hillman, A.J., Cannella, A.A. and Paetzold, R.L. (2002) "The resource dependence role of corporate directors: Strategic adaptation of board composition in response to environmental change" *Journal of Management Studies* **37**, 235-256.

Hillman, A.J., Shropshire, C. and Cannella, A.A. (2007) "Organizational predictors of women on corporate boards" *Academy of Management Journal* **50**, 941-952.

Hyland, M.M. and Marcellino, P.A. (2002) "Examining gender on corporate boards: A regional study" *Corporate Governance* **2**, 24-31.

Joecks, J., Pull, K. and Vetter, K. (2013) "Gender diversity in the boardroom and firm performance: What exactly constitutes a ''critical mass?" *Journal of Business Ethics* **118**, 61-72.

Kanter, R.M. (1977) "Some effects of proportions on group life: Skewed sex ratios and responses to token women" *American Journal of Sociology* **82**, 965-990.

Konrad, A.M., Kramer, V.W. and Erkut, S. (2008) "Critical mass: The impact of three or more women on corporate boards" *Organizational Dynamics* **37**, 145-164.

Kramer, V.W., Konrad, A.M. and Erkut, S. (2006) "Critical mass on corporate boards: Why three or more women enhance governance" Report WCW 11, Wellesley centers for women.

Liu, Y., Wei, Z. and Xie, F. (2014) "Do women directors improve firm performance in China?" *Journal of Corporate Finance* **28**, 169-184.

Lublin, J.S. (2014) "Female CEOs make room for female directors" *Wall Street Journal,* 11/11/2014.

Nekhili, M. and Gatfaoui, H. (2013) "Are demographic attributes and firm characteristics drivers of gender diversity? Investigating women's positions on French boards of directors" *Journal of Business Ethics* **118**, 227-249.

Pfeffer, J. and Salancik, G.R. (1978) *The External Control of Organizations: A Resource Dependence Perspective,* Harper & Row: New York.

Post, C., Rahman, N. and Rubow, E. (2011) "Green governance: Boards of directors' composition and environmental corporate social responsibility" *Business & Society* **50**, 189-223.

Post, C. and Byron, K. (2015) "Women on boards and firm financial performance: A Meta-Analysis" *Academy of Management Journal*, forthcoming.

Rose, C. (2007) "Does female board representation influence firm performance? The Danish evidence" *Corporate Governance: An International Review* **15**, 404-413.

Simpson, W.G., Carter, D.A. and D'Souza, F. (2010) "What do we know about women on boards?" *Journal of Applied Finance* **20**, 27-39.

Terjesen, S. and Singh, V. (2008) "Female presence on corporate boards: A multi-country study of environmental context" *Journal of Business Ethics* **83**, 55-63.

Torchia, M., Calabrò, A. and Huse, M. (2011) "Women directors on corporate boards: From tokenism to critical mass" *Journal of Business Ethics* **102**, 299-317.

Wang, Y. and Clift, B. (2009) "Is there a "business case" for board diversity?" *Pacific Accounting Review* **21**, 88-103.