WOMEN DIRECTORS, EDUCATIONAL BACKGROUND AND FIRM VALUE OF SPANISH LISTED COMPANIES

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Abstract

Purpose: We evaluate changes in the presence of women on Spanish boards after the Unified Good Governance Code of Listed Companies (2006) and the Organic Law 3/2007 on Gender Equality, and we compare the educational background of women and men directors. Also, we analyse the influence of gender diversity and educational background of women directors on economic performance, corporate social responsibility (CSR) and, ultimately, firm value. In addition, we explore the differences in board gender composition and its effect on firm value during the crisis and post-crisis periods. Finally, we analyse the different influence of women directors depending on their typology.

Design/methodology/approach: We use a system of structural equations and a sample of 4,101 directors of 30 Spanish companies listed on IBEX-35 over 2008-2017.

Findings: Our results show that women's presence on boards has grown since 2008 and they have higher educational background than men. We find that women directors improve economic performance and CSR, though results are non-significant for firm value. Women directors with a bachelor's or master's degree increase economic and social performance but reduce firm value. Women directors with business or industry-related studies positively influence CSR but business specialisation negatively affects economic performance and firm value.

Originality: We analyse the direct and indirect effect of women directors on firm value, the influence of their educational background and the potential differences arising from the economic situation (crisis) and the type of board position they hold.

Keywords

Women, Board of Directors, Educational background, Economic performance, Corporate Social Responsibility, Firm Value.

Article classification: Research paper.

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Introduction

In most European countries, women's employment rates are not only lower than men's, but also their wages are lower, and they hold fewer managerial positions. This gender gap extends to women's participation on company boards. In Spain, the debate on this issue led first to the publication of the Unified Good Governance Code of Listed Companies by the National Securities Market Commission (CNMV) on 19 May 2006 –its 15th recommendation stated that listed companies with few (or none) women directors need to actively seek female candidates to fill their vacancies, especially for independent directorships–, and, later, to the approval of Organic Law 3/2007 on gender equality, which promoted the balanced presence of women and men on the boards of directors of commercial companies –e.g., its Art. 75 stated that companies obliged to present a non-consolidated income statement shall endeavor to include women directors to enable a balanced presence of women and men within eight years from its entry into force. These "soft law" board gender quotas (de Cabo *et al.*, 2019) try to enhance gender balance on corporate boards though without sanctions in case of non-compliance. However, women's participation on boards should not be imposed by law, but rather a voluntary decision taken by companies to enhance their value creation. Increasing women's presence on boards generates both ethical and economic benefits (Campbell and Mínguez-Vera, 2008). Ethically, it is immoral to exclude women from boards for gender-based reasons. Economically, women bring unique knowledge and skills to companies that men do not have or could only bring with greater difficulty (Hillman *et al.*, 2002; Daily and Dalton, 2003).

Our aim in this paper is to analyse the evolution of women's presence on boards and the effect of this participation and their educational background on firm value. Specifically, we follow the approach of Isidro and Sobral (2015) that examines not only the direct influence of the women's board representation on firm value, but also its indirect effect through other dimensions, i.e., Corporate Social Responsibility (CSR) and economic performance. To do so, we use a sample of Spanish firms listed on the IBEX-35 from 2008 (one year after the approval of the Organic Law 3/2007) until 2017. This sample allows us to extend knowledge on board gender diversity in a civil law country such as Spain, which is characterized by low shareholder protection, high family ownership and also by having public and private

institutions highly concerned with the promotion of equality.

Our main contributions can be summarized as follows. First, we evaluate the effectiveness of "soft law" board gender quotas to promote gender equality. Second, we compare the educational level and specialisation of women and men directors to provide empirical evidence on the differences in educational background between them. Third, we assess the influence of both women's board participation and their educational background on firm value, both direct and indirectly (through CSR and economic performance). Fourth, we evaluate a period covering the crisis and recession (2008–12) and the subsequent economic recovery (2013–17) to test whether the board gender composition and its influence on firm value change during difficult times. Finally, we analyse the different influence of women directors depending on their typology (independent, proprietary or executive).

This paper is structured as follows. First, we review the previous literature on women's presence on boards and their influence on economic performance, CSR, and firm value to conclude with the proposed hypotheses. Next, we describe the sample of our study. Following, we provide the model, variables, and empirical results. Finally, we present the conclusions of the study, its limitations and future lines of research.

Women on boards and their influence on economic performance, CSR and firm value

Boards of directors plays mainly two roles in firms: managerial monitoring and resources provision, including advice to the executive team (Hillman and Dalziel, 2003). Under agency theory, the board plays primarily a monitoring role (Fama and Jensen, 1983). From the resource-dependence approach, board directors can also advise managers and shape their strategic initiatives (Zahra and Pearce, 1989). Finally, according to stakeholder theory, the board is expected to safeguard not only the providers of financial resources but also the rest of stakeholders. Women's participation on boards may influence the performance of these roles, ultimately affecting firm performance. Findings on this relationship are mixed and inconclusive, with positive, negative or no effects identified (see reviews: Post and Byron, 2015; Kirsch, 2018; Nguyen *et al.*, 2020). In the following lines, we describe how women can affect firm value by considering not only their direct influence, but also their indirect effect through their impact on economic performance, more related to a short-term notion of firm value and the adoption of CSR policies, which show a firm's concern for stakeholders other than the shareholders.

Influence of women on economic performance

The presence of women on boards is related to an increase in economic performance since they enhance the monitoring and advising effectiveness of the board. First, women result in better decisions as they favour collaborative work (Dargnies, 2012), have high attendance rates (Adams and Ferreira, 2009), add new perspectives to decision-making (Miller and Triana, 2009), and generally perform better in both control and accountability activities (Bravo and Alcaide-Ruiz, 2019). Second, women directors facilitate firm's relationship with external resources controlled by other women and help attract and retain women employees (Hillman *et al.*, 2007). Third, the incorporation of women on the board introduces fresh viewpoints and increases creativity and innovation (Carter *et al.*, 2003). Evidence found in civil law countries as Spain (Campbell and Minguez-Vera, 2008) and France (Bennouri *et al.*, 2018) also shows that women on boards improve firm economic performance. Therefore, our first hypothesis is stated as follows:

H1. The presence of women on the board of directors will have a positive effect on economic performance.

Influence of women on CSR

Following stakeholder theory, firms must generate value for all its stakeholders beyond economic goals. This is where CSR becomes an integral part of business strategies. It is defined as a set of principles, processes and outcomes related to an organisation's societal relationships (Wood, 1991). CSR depends on the industry in which the firm operates, and can include sustainability-related initiatives, as well as attempts to minimise the environmental and social impact of the firm.

Under a resource dependency approach, women on boards contribute to CSR strategy from a twofold perspective. On the one hand, women have psychological characteristics "that may make them more sensitive to certain stakeholders' claims" (Setó-Pamies, 2015, p.337). Women are more concerned about ethical issues (Tate and Yang, 2015), more sensitive to social needs and, in general, more concerned about the overall welfare (Ramon-Llorens *et al.*, 2021). Thus, some studies show that women directors are more benevolent and inclusive than men (Adams and Funk, 2012), more ecologically conscious (Wehrmeyer and McNeil, 2000), and more concerned with qualitative and non-labour interests (Hafsi and Turgut, 2013). On the other hand, women directors promote more effective global relationships (Carter *et al.*, 2003) by helping the firm manage its relationships with key stakeholders (Certo and Dalton, 1999) and by acting as a signal to external stakeholders of the firm's commitment to minority groups and socially responsible behaviour (Bear *et al.*, 2010). Overall, the presence of women

on boards is linked to better CSR performance (Hafsi and Turgut, 2013). Thus, we propose that:

H2. The presence of women on the board of directors will have a positive effect on the adoption of CSR policies.

Influence of women on firm value

The notion of firm value goes beyond economic performance, as it "addresses the aspect of increasing the value of an owner's assets in a sustainable manner" (Dang *et al.*, 2019, p.147). It therefore refers to the firm's ability to create value over the long term and not only for shareholders, but also for all other stakeholders. This concept of value creation is usually related to the long-term market perspectives for the company (market measures) rather than to the mere accounting of its activity (accounting measures) [1]. Hence, as we explain below, both economic performance and CSR (also considered as social performance) have an influence on it.

The effect of women directors on firm value can be twofold: direct and indirect. On the one hand, considering the direct effect, some authors suggest that company stock prices reflect more firm-specific information when their boards are gender-diverse (Gul *et al.*, 2011) and also that women directors increase investor confidence because they are associated with improvements in accountability, transparency and moral duty (Arkfen *et al.*, 2004). On the other hand, since both economic performance and CSR affect firm value, the influence of women's board participation in the above two issues is indirectly transferred to firm value. First, firm value is positively related to the benefits that the firm generates for the shareholder, i.e. economic performance or profitability (e.g. Varaiya *et al.*, 1987). Therefore, the influence of the presence of women on the board on economic performance will indirectly influence firm value. Second, the implementation of CSR disclosure has an impact on the firm's image and social legitimacy by decreasing information asymmetry and enhancing their relationship with stakeholders (Cho *et al.*, 2013) which ultimately favours firm value. Hence, we hypothesize that:

H3. The presence of women on the board of directors will have a positive direct effect on the firm value and an indirect effect, through its influence on economic performance and CSR.

Influence of women directors' educational background on the economic performance, CSR, and firm value

From the resource-dependence theory, the accumulation of human capital on the board is key

to achieving board's advisory and strategic roles (Hillman and Dalziel, 2003). As prior experiences, knowledge, and values shape the interpretation of information and the strategic decision-making process (Nguyen *et al.*, 2015), the incorporation of lawyers, financiers, business managers, and industry experts on the board is increasingly common because they enhance the effectiveness of the board (Baysinger and Butler, 1985).

In this line, there is a call to map the demographics, human capital and social capital of women directors (Kirsch, 2018). Considering education as "a way of acquiring technical expertise and enhancing directors' cognitive skills" (Bennouri *et al.*, 2018, p.270), it is expected that directors with a higher level of educational background can understand, evaluate, and provide solutions to complex problems more easily (Johnson *et al.*, 2013). Several authors argue that women in board positions have higher levels of education than men based, among other things, on the glass ceiling effect, i.e., that women invest more in education to gain recognition, increase their credibility, and attract the attention of directors' selectors (Hillman *et al.*, 2002). This higher level of educational background is evidenced in studies such as Singh *et al.* (2008). Thus, we propose the following hypothesis:

H4. The educational background of women on the boards of directors will have a positive effect on economic performance, CSR, and the firm value.

Evolution of the presence of women on the boards of directors of IBEX-35 firms

To test the hypotheses, we use a sample of Spanish firms listed on the IBEX-35 during the period 2008–2017. Specifically, our final sample consists of the 30 companies with available corporate governance reports at the CNMV during the ten years analysed and also with CSR information reported (300 observations and 4,101 directors). Financial data were obtained from the Thomson Reuters Eikon database. Finally, data about CSR was obtained from Refinitiv ESG (Environmental, Social and Governance) (https://www.refinitiv.com/en) and Merco (Corporate Reputation Business Monitor) (https://www.merco.info/es/) (only available from 2011).

The presence of women on boards of Spanish large companies has increased from 8,5% in 2008 to 24% in 2017, with most of the recruitments being through independent board positions (see Table I). This upward trend in women's participation in corporate governance has also been evidenced in French (Singh *et al.*, 2015) and Italian (Rossi *et al.*, 2018) companies.

About the educational background of directors, we focus on the independent ones, since only their curricula is included in the corporate governance report. According to our data, most

women independent directors were graduated (97-100%) and the figures maintain a slightly upward trend during 2008–2017. However, the trend is reversed when refereeing to master's degrees (down from 73% to 49%) or PhDs (down from 55% to 20%) (see mean differences in Table I). In the case of men independent directors, there is an increase in those with bachelor's degrees (from 85% to 96%) and master's degrees (from 32% to 47%), but a decrease in those with doctorates (from 20% to 18%) (see mean differences in Table I). In light of these figures, we might think that initially only overqualified women were on the boards, but as the number of women directors increases, their qualifications, while still high, become more balanced with those of men. We find no significant differences in the evolution of educational specialisation of women and men directors.

[TABLE I HERE]

We also find that, overall, women independent directors have a higher level of education than men (see Table II). Almost 99% of women independent directors have a bachelor's degree, more than half have a master's degree and 29% have a doctorate (compared to 92%, 37% and 19% of men, respectively). No significant difference emerged in educational specialisation, except for industry-related studies (7% of women vs. 14% of men).

[TABLE II HERE]

Regarding the differences in board composition during the crisis and post-crisis periods, Table III shows that during the crisis the women's percentage is lower than in the post-crisis period (12% vs. 19%). The level of education follows a similar pattern to that found when comparing 2008 and 2017: men significantly increase their level of education (from 89% of graduates during the crisis to 96% in the post-crisis), while the opposite is true for women directors (from 55% to 47% with a master's degree and from 37% to 24% with a doctorate). In any case, women directors continue to have a higher educational level than men.

[TABLE III HERE]

Empirical analysis of the influence of women directors on CSR, economic performance, and firm value of IBEX-35 firms

Our theoretical model shows the direct effect of board gender diversity –and the educational

background of women directors– on firm value and the indirect effect through its influence on CSR and economic performance.

Equation (1) FIRM VALUE = α_0 + α_1 WOMEN on BOARD + α_2 EDUCATIONAL BACKGROUND of WOMEN on BOARD + α_3 ECONOMIC PERFORMANCE + α_4 CSR + Control variables

Equation (2) ECONOMIC PERFORMANCE= β_0 + β_1WOMEN on BOARD + β_2 EDUCATIONAL BACKGROUND of WOMEN on BOARD + β_3 CSR+ Control variables

Equation (3) CSR = ρ_0+ ρ_1WOMEN on BOARD + ρ_2 EDUCATIONAL BACKGROUND of WOMEN on BOARD + Control variables

As dependent variables we use: FIRM VALUE in Equation 1, which is measured by the industry-adjusted Tobin's Q (e.g. Varaiya *et al.*, 1987) and the Market-to-book ratio of equity value (e.g. Yang *et al.*, 2019); ECONOMIC PERFORMANCE in Equation 2, which is measured as the industry-adjusted Return On Assets (ROA) (e.g. Mehran, 1995) and Return on Earnings (ROE) (e.g. Klein, 1998); and, CSR in Equation 3, which is measured by the ESG-score given by Refinitiv (e.g. Pérez-Cornejo *et al.*, 2020) and the Merco-Responsibility and Corporate Governance rank (e.g. Ramon-Llorens *et al.*, 2021). As independent variables, we use the percentage of women on the board, the percentage of women independent directors with high-level studies, and the percentage of women directors with business/law/industry-related studies. We also incorporate as control variables board size and independence, as well as firm size, leverage, growth, and industry. Finally, we include a dummy variable to identify the crisis years –2008–2012 according to Laeven and Valencia (2020)–; and year dummy variables to capture the effect of time. A detailed description of variables and their main statistics can be found in Table IV, while the correlation matrix is in Table V.

[TABLES IV AND V HERE]

We use a system of structural equations, where some of the equations (Equations 1 and 2) contain endogenous variables among the explanatory ones. Specifically, economic performance and CSR are endogenous explanatory variables and require a three-stage least squares estimation (Zellner and Theil, 1962). All estimations, obtained with STATA 16.0, are presented in Tables VI and VII.

[TABLES VI AND VII HERE]

As expected, we find a significant and positive effect of CSR on economic performance (ROA) and of ROA on firm value (Equation 1). Moreover, also in line with prior studies (Carter *et al.*, 2003; Campbell and Minguez-Vera, 2008), we find a direct effect of the presence of women directors on ROA (Equation 2) and also, like Bear *et al.* (2010) and Post and Byron (2015), we confirm a positive effect of women directors on CSR strategy (Equation 3). However, we find no significant effect of women directors on Tobin's Q, as it is evidenced in Rose (2007) and Carter *et al.* (2010). These results lead us to support both Hypotheses 1 and 2, and reject Hypothesis 3.

Women directors seem to favour the generation of economic and social performance (ROA and CSR, respectively), but their influence does not hold for the long-term value (Tobin's Q) as it is not appreciated by the market. These results are consistent with those of Isidro and Sobral (2015) for a sample of European firms as they evidence that women's influence on the firm value is not direct but indirect. Bennouri *et al.* (2018) also find similar results and argue that accounting measures of performance (i.e. ROA) are more connected to effectiveness of the board in its advisory and strategic roles while market-based performance is more affected by investors' perception of the board's monitoring effectiveness. Our results, as in their study of French companies, suggest that investors do not appreciate the monitoring skills of women directors because there are other channels that are supposed to be more effective in these civil law countries (e.g. family ownership or controlling majority shareholders).

Regarding the possible differences in our results depending on the time period, we observe that the crisis variable (CRISIS) is never significant. Following Rossi *et al.* (2018), we have also divided the sample into two periods (crisis vs. post-crisis) finding that women presence on board did not have a significant effect on economic performance during the crisis period but they maintain their positive influence on the CSR strategy (see Appendix Table I).

When we use alternative variables to measure economic performance, CSR and firm value (see Columns 2 to 4 of Table VI), the impact fades for economic performance but is maintained for CSR. As for firm value, if we limit this measure of value creation to equity (MARKET TO BOOK EQUITY VALUE), we find a positive direct effect of the presence of women on the board. Thus, we observe that using different measures can lead to major differences in the findings.

Concerning the percentage of women on the board, our key independent variable, we

considered it relevant to analyse, as previous studies do (Cabeza-García *et al.*, 2018; Pucheta-Martinez *et al.*, 2018), the different role played by women directors depending on their typology. Thus, we divided women directors into insiders or executive directors, independent directors, and ownership representatives or proprietary directors. Our findings show that the positive effect of women on CSR is driven by women independent and executive directors, while women acting as proprietary directors are directly related to economic performance and firm value. These results may suggest that women representing a major shareholder reduce their concern for the rest of stakeholders and focus on those they represent (major shareholder), defending the pursuit of short-term (ROA) and long-term (Tobin's Q) economic interests (see Appendix Table II).

Finally, our results support that women with bachelor's or master's degrees positively influence economic (ROA) and social (CSR) performance but they harm firm value (see Columns 1 and 2 in Table VII). This result is again aligned with Bennouri *et al.* (2018), who argue that education level is negatively perceived by investors. The same is true for women with PhD, but without significant effect on ROA (see Column 3 in Table VII). Thus, our Hypothesis 4 is only partially confirmed.

Regarding the influence of the education specialisation of women directors, while industry-related and business studies have a positive effect on CSR, business specialisation has a negative influence on ROA and Tobin's Q. This result may be due to a possible higher risk aversion of women that leads them to be more conservative when making decisions (Sunden and Surette, 1998). If so, specific business knowledge would make them more aware of the risks the company is exposed to when considering certain investment decisions which could negatively impact economic performance and firm value.

Conclusions

Organic Law 3/2007 set a target for women representation on boards of 40% in 2015. Based on our data, although large Spanish firms have substantially increased the number of women on their boards, in 2017 they were still quite far from that figure. Hiring women on boards brings different perspectives, values and a high volume of knowledge. Here, we evidence that the educational background of women directors does exceed that of men ones. And this greater knowledge highlights the importance of incorporating them into corporate governance beyond compliance with the quotas indicated by the "soft laws", given that they can lead to an improvement in business performance, both in economic and social terms.

Here, we evidence a positive effect of women's participation in CSR strategy and economic

firm performance, though investors still do not value these new recruitments positively. In terms of women's educational background, our results are not very enlightening, as they increase economic and social performance, but harms firm value. These results could indicate a potential reluctance of investors for the women's involvement in corporate governance.

The balance between the pursuit of gender equity and the markets' valuation of women in corporate governance takes time. Public administrations clearly need to continue to promote gender equality, because without it, it may never be achieved. But, at the same time, investors need be able to appreciate the value of women's participation in corporate governance and their ability to help companies create value in a sustainable way.

Throughout the study, several limitations affected the collection of data from some of the IBEX-35 firms. Future research could increase the sample of firms, e.g., by including firms from other secondary markets. Likewise, we have only studied independent directors, but it would also be interesting to analyse the rest of women directors. Future lines of research would be to identify, as Öberg (2020) highlighted, how women board interlocks could have an influence on the firm value. Furthermore, following Ntim (2015), it would be interesting to study the effect of other types of diversity among women directors, e.g., ethnic.

Note:

[1] Many studies alternatively use both accounting measures –what we have called economic performance or profitability– and market measures to proxy firm value. However, as Yang *et al.* (2019) suggest, while firms report accounting measures according to legally enforceable and independently audited accounting principles, market measures are conditioned by investors' sentiments, behaviours, and beliefs, as well as analysts' views on the firm's potential future earnings (growth opportunities). As market data take the perspective of investors, they are forward-looking, whereas accounting measures only incorporate information from the reporting period. Hence, the difference between accounting and market measures has also been explained as a matter of temporality, being the former short-term and the latter long-term.

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Table I. Differences in board composition between 2008 and 2017.

	Women			Men		
	2008	2017	Sig.	2008	2017	Sig.
%Directors on board	0.0851	0.2409	***	0.9148	0.7591	***
%Independent directors	0.6833	0.7906	-	0.3602	0.3993	-
%Executive directors	0.0250	0.0289	-	0.1956	0.1987	-
%Proprietary directors	0.2750	0.1628	-	0.3920	0.3152	-
%Independent directors with bachelor's degree	0.9688	0.9914	***	0.8488	0.9621	**
%Independent directors with master's degree	0.7292	0.4891	**	0.3205	0.4753	**
%Independent directors with PhD	0.5521	0.1994	***	0.2046	0.1793	-
%Independent directors with business studies	0.6875	0.6184	-	0.5564	0.5180	-
%Independent directors with law studies	0.2188	0.1862	-	0.3086	0.3259	-
%Independent directors with industry-related studies	0.0833	0.1034	-	0.1122	0.2038	-

Note: Significance level: *** 99%, ** 95%. The Mann-Whitney (non-parametric) test for two independent samples is used to analyse the mean difference between 2008 and 2017 (Columns 3 and 6).

Table II. Differences in board composition between women and men directors

TOTAL SAMPLE	Women	Men	Sig.
%Directors on board	0.1535	0.8465	***
%Independent directors	0.6848	0.3745	***
%Executive directors	0.0388	0.1871	***
%Proprietary directors	0.2483	0.3654	***
%Independent directors with bachelor's degree	0.9861	0.9236	***
%Independent directors with master's degree	0.5046	0.3682	***
%Independent directors with PhD	0.2943	0.1866	***
%Independent directors with business studies	0.6086	0.5478	-
%Independent directors with law studies	0.2382	0.2851	-
%Independent directors with industry-related studies	0.0717	0.1449	***

Note: Significance level: *** 99%. The t-test (parametric) for paired samples is used to evaluate the mean difference between women and men (Column 3).

Table III. Differences in board composition in crisis (2008–12) and post-crisis (2013–17) periods.

	Women			Men			Sig. Differences Women - Men	
	Crisis	Post-crisis	Sig.	Crisis	Post-crisis	Sig.	Crisis	Post-crisis
%Directors on board	0.1171	0.1899	***	0.8829	0.8101	***	***	***
%Independent directors	0.6455	0.7186	-	0.3680	0.3811	-	***	***
%Executive directors	0.0515	0.279	-	0.1849	0.1894	-	**	***
%Proprietary directors	0.2840	0.2176	-	0.2840	0.3435	*	***	***
%Independent directors with bachelor's degree	0.9767	0.9932	-	0.8880	0.9598	***	***	***
%Independent directors with master's degree	0.5529	0.4680	*	0.3419	0.3950	-	***	**
%Independent directors with PhD	0.3710	0.2363	***	0.1993	0.1737	-	***	***
%Independent directors with business studies	0.6380	0.5864	-	0.5559	0.5395	-	-	-
%Independent directors with law studies	0.2455	0.2327	-	0.2835	0.2867	-	-	-
%Independent directors with industry-related studies	0.0717	0.0717	-	0.1253	0.1649	-	-	***

Note: Significance level: *** 99%, ** 95%, * 90%. The t-test (parametric) test for two independent samples is used to analyse the mean difference between crisis and post-crisis periods (Columns 3 and 6). The t-test (parametric) for paired samples is used to evaluate the mean difference between women and men in crisis and post-crisis periods (Columns 7 and 8).

Table IV. Definition and descriptive statistics of variables.

VARIABLES	TYPE OF VARIABLE	DESCRIPTION	MEAN	S.D.	MIN.	MAX.
FIRM VALUE						
TOBIN'S Q FIRM	Dependent	Industry adjusted market value of equity plus the book value of debt over total assets	0.209	0.847	-0.890	5.411
MARKET-TO-BOOK EQUITY VALUE	Dependent	Adjusted market to book value of equity (MB-industry median each year)	0.644	1.742	-4.314	7.980
ECONOMIC PERFORMANCE						
ROA	Dependent	Industry adjusted firm return on assets: firm ROA (EBIT/total assets) minus industry median yearly	0.015	0.052	-0.247	0.395
ROE	Dependent	Industry adjusted firm return on assets: firm ROE (Net Benefit/Equity) minus industry median yearly	-0.746	11.900	-205.629	0.585
CORPORATE SOCIAL RESPONSIBILITY						
CSR ESG	Dependent	Refinitiv ESG (Environmental, Social and Governance) score measures the company's ESG performance based on verifiable reported data in the public domain.	0.678	0.145	0.181	0.931
CSR MERCO	Dependent	Merco Corporate Social Responsibility (CSR) score measures the most responsible companies.	4.404	3.091	0.000	10.000
PRESENCE OF WOMEN ON BOARDS						
WOMEN ON BOARD	Independent	Percentage of women over the total number of directors	0.154	0.105	0.000	0.500
EDUCATIONAL BACKGROUND OF WOMEN ON BOARD						
EDUCATION LEVEL	Independent	%Women independent directors with a bachelor's degree	0.105	0.096	0.000	0.500
		%Women independent directors with a master's degree	0.056	0.064	0.000	0.333
		%Women independent directors with a PhD	0.032	0.049	0.000	0.250
EDUCATION SPECIALISATION	Independent	%Women independent directors with studies in business	0.062	0.065	0.000	0.273
		%Women independent directors with studies in law	0.027	0.046	0.000	0.200
		%Women independent directors with industry-related studies	0.009	0.030	0.000	0.167
Control variables related with the board of directors						

BOARD SIZE	Control	Number of directors that constitute the board of directors	13.670	2.884	7.000	21.000
BOARD INDEPENDENCE	Control	Percentage of independent directors	0.422	0.160	0.056	0.857
Control variables related with the firm						
FIRM SIZE	Control	Logarithm of total assets	16.831	1.700	13.506	21.091
FIRM LONG LEVERAGE	Control	Long-term debt to total assets ratio	0.359	0.214	0.000	0.840
FIRM GROWTH	Control	Variation in sales over the last three years	0.073	0.424	-3.798	0.992
FIRM AGE	Control	Logarithm of the total number of years since its foundation	3.789	0.664	1.792	5.075
INDUSTRY	Control	Dummy industry variable following the Thomson Reuters Business Classification of companies				
Concept: Control variables related with time-						
CRISIS	Control	Dummy variable that takes value 1 if the year is 2008 to 2012 and 0 otherwise.				
YEAR	Control	Dummy variable for each of the 11 years under analysis				

Table V. Correlation matrix

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
TOBIN'S Q FIRM	1									
MARKET-TO-BOOK EQUITY VALUE	0.7844***	1								
ROA	0.6956***	0.6120***	1							
ROE	0.0278	0.0445	0.0642	1						
CSR ESG	0.0982*	-0.0542	0.0719	0.0399	1					
CSR MERCO	0.1065	-0.0202	0.1124	0.0021	0.6630***	1				
WOMEN ON BOARD	0.0888	0.1366**	0.1167**	-0.0689	0.2249***	0.3036***	1			
EDUCATION LEVEL: Bachelor's Degree	0.0655	0.1541***	0.1224**	0.0665	0.1770***	0.1875***	0.7683***	1		
EDUCATION LEVEL: Master's Degree	0.1315**	0.1635***	0.2013***	0.0534	0.2072***	0.2445***	0.6130***	0.7887***	1	
EDUCATION LEVEL: PhD	-0.1382**	-0.0210	-0.0012	0.0375	0.0883	0.1439**	0.3710***	0.5355***	0.7294***	1
EDUCATION SPECIALISATION: Business	-0.1206**	-0.0005	-0.0472	0.0573	0.0877	0.1066	0.5752***	0.7470***	0.5934***	0.4071***
EDUCATION SPECIALISATION: Law	-0.0217	0.0882	-0.0309	0.0335	0.2338***	0.1238*	0.5364***	0.6779***	0.3965***	0.2878***
EDUCATION SPECIALISATION: Industry-Related	-0.0736	0.0100	0.0684	0.0196	-0.1076*	0.0893	0.2383***	0.3634***	0.4544***	0.4442***
BOARD SIZE	-0.3053***	-0.2301***	-0.1552***	-0.0831	0.0482	0.1707**	-0.0834	-0.1373**	-0.1542***	0.0194
BOARD INDEPENDENCE	0.0225	-0.0268	-0.0217	0.0352	0.5160***	0.4161***	0.3679***	0.5214***	0.4768***	0.3777***
FIRM SIZE (LOG)	-0.2045***	-0.2171***	-0.2070***	0.0111	0.4769***	0.5977***	0.0467	0.0168	0.0553	0.2122***
FIRM LONG LEVERAGE	-0.3499**	-0.2819***	-0.1623***	0.0305	-0.0507	0.0570	-0.0527	-0.0625	-0.1126*	0.0448
FIRM GROWTH	0.1076*	0.1474**	0.1871***	0.1230**	0.0980*	0.2372***	0.0305	0.0506	0.1739***	0.1509***
FIRM AGE (LOG)	-0.2426***	-0.3811***	-0.1975***	-0.0881	0.2211***	0.2737***	0.1417**	0.0097	0.0760	0.0930
CRISIS	0.031	-0.0319	0.0244	0.0617	-0.0994*	-0.1062	-0.3488***	-0.3181***	-0.2110***	-0.1118*

	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
EDUCATION SPECIALISATION: Business	1									
EDUCATION SPECIALISATION: Law	0.2754***	1								
EDUCATION SPECIALISATION: Industry-Related	0.2031***	-0.0024	1							
BOARD SIZE	-0.0586	0.0158	-0.1066*	1						
BOARD INDEPENDENCE	0.4399***	0.3539***	0.0705	-0.2079***	1					
FIRM SIZE (LOG)	0.0196	0.1495***	-0.1960***	0.3566***	0.3384***	1				
FIRM LONG LEVERAGE	-0.0846	0.0588	0.1091*	0.0895	-0.0523	0.0046	1			
FIRM GROWTH	0.0800	-0.0724	0.1409**	0.1151**	-0.0001	0.1475**	-0.0361	1		
FIRM AGE (LOG)	0.0148	0.0951	-0.1501***	0.2594***	0.1285**	0.3822***	0.2622***	-0.0093	1	
CRISIS	-0.2224***	-0.1752***	-0.1143**	0.1100*	-0.1429**	-0.0369	0.0369	0.1561***	-0.1054*	1

Significance level: *** 99%, ** 95%, * 90%.

Table VI. Regression analysis for women presence on boards

VARIABLES	MODEL 1	MODEL 2	MODEL 3	MODEL 4
		TOBIN'S Q		MARKET-TO-BOOK EQUITY VALUE
WOMEN ON BOARD	-0.4233	-0.6625	0.5750	1.5859**
	(0.3756)	(0.4419)	(0.4744)	(0.7911)
ROA	18.1524***	19.9421***		20.3024***
	(1.4575)	(1.9698)		(3.2329)
ROE			0.0159	
			(0.0144)	
CSR ESG	0.1432		1.4470***	1.1563
	(0.3647)		(0.4458)	(0.7708)
CSR MERCO		0.0353		
		(0.0322)		
FIRM SIZE	0.0154	-0.0399	-0.1527***	0.0373
	(0.0294)	(0.0476)	(0.0327)	(0.0625)
FIRM LONG LEVERAGE	-0.7089***	-1.1031***	-1.2606***	-0.9496***
	(0.1743)	(0.2151)	(0.2184)	(0.3675)
FIRM GROWTH	-0.2313**	-0.4366***	0.1640	0.1451
	(0.0913)	(0.1100)	(0.1148)	(0.1936)
FIRM AGE	0.0216	0.0258	-0.1044	-0.6319***
	(0.0611)	(0.0757)	(0.0800)	(0.1287)
CRISIS	0.0260	0.0032	0.0773	-0.1686
	(0.0752)	(0.0060)	(0.0940)	(0.1581)
Year dummy	Included	Included	Included	Included
VIF	1.84	1.69	1.83	1.84
R-squared	0.3454	0.4929	0.1861	0.4744
F-statistic	35.65***	31.46***	11.22***	22.50***
Obs.	300	210	300	300
	ROA		ROE	ROA
WOMEN ON BOARD	0.0539*	0.0148	-9.3348	0.0572*
	(0.0306)	(0.0348)	(7.4834)	(0.0307)
CSR ESG	0.0893***		4.2038	0.0951***
	(0.0313)		(7.6927)	(0.0316)
CSR MERCO		0.0100***		
		(0.0022)		
BOARD INDEPENDENCE	-0.0159	-0.0269	4.3694	-0.0246
	(0.0215)	(0.0226)	(5.4994)	(0.0227)

FIRM SIZE	-0.0092***	-0.0149***	-0.0423	-0.0090***
	(0.0021)	(0.0030)	(0.5111)	(0.0021)
FIRM LONG LEVERAGE	-0.0274**	-0.0289*	3.5349	-0.0273**
	(0.0136)	(0.0158)	(3.3137)	(0.0136)
FIRM GROWTH	0.0243***	0.0261***	3.3926**	0.0240***
	(0.0068)	(0.0075)	(1.6486)	(0.0068)
FIRM AGE	-0.0089*	0.0088	-1.9200	-0.0091*
	(0.0048)	(0.0057)	(1.1691)	(0.0048)
CRISIS	0.0032	0.0046	0.3274	0.0032
	(0.0060)	(0.0072)	(1.4647)	(0.0060)
Year dummy	Included	Included	Included	Included
VIF	1.88	1.70	1.88	1.88
R-squared	0.1642	.01308	0.0367	0.1642
F-statistic	7.28***	8.46***	1.41	7.35***
Obs.	300	210	300	300

	CSR ESG	**CSR MERCO**	**CSR ESG**	
WOMEN ON BOARD	0.1594***	6.9315***	0.1593***	0.1585***
	(0.0480)	(1.2810)	(0.0480)	(0.0480)
BOARD SIZE	-0.0145***	-0.1966***	-0.0145***	-0.0141***
	(0.0019)	(0.0537)	(0.0019)	(0.0019)
FIRM SIZE	0.0674***	2.1555***	0.0673***	0.0666***
	(0.0049)	(0.1447)	(0.0049)	(0.0049)
FIRM AGE	0.0089	-0.3204	0.0088	0.0090
	(0.0082)	(0.2385)	(0.0082)	(0.0082)
CRISIS	0.0017	-0.2463	0.0016	0.0012
	(0.0096)	(0.2848)	(0.0096)	(0.0096)
Industry dummy	Included	Included	Included	Included
Year dummy	Included	Included	Included	Included
VIF	2.08	2.00	2.08	2.08
R-squared	0.7215	0.6511	0.7216	0.7217
F-statistic	59.95***	31.86***	59.99***	59.95***
Observations	300	210	300	300

Standard errors in parenthesis. Significance level: *** 99%, ** 95%, * 90%.

Table VII. Regression analysis for women directors' educational background

VARIABLES	MODEL 1	MODEL 2	MODEL 3	MODEL 4	MODEL 5	MODEL 6
			TOBIN'S Q			
EDUCATION LEVEL: Bachelor's Degree	-0.7267* (0.3987)					
EDUCATION LEVEL: Master's Degree		-1.4399** (0.6133)				
EDUCATION LEVEL: PhD			-2.1993*** (0.7241)			
EDUCATION SPECIALISATION: Business				-1.0713** (0.5446)		
EDUCATION SPECIALISATION: Law					0.2322 (0.7963)	
EDUCATION SPECIALISATION: Industry-Related						-3.2594*** (1.2188)
ROA	18.2617*** (1.4921)	18.5225*** (1.5502)	18.0760*** (1.4772)	16.5308*** (1.5059)	17.8663*** (1.4879)	17.6533*** (1.4674)
CSR	0.1749 (0.3635)	0.1566 (0.3638)	-0.0096 (0.3554)	0.2638 (0.3526)	0.0587 (0.3670)	0.1195 (0.3508)
FIRM SIZE	0.0154 (0.0295)	0.0171 (0.0297)	0.0336 (0.0296)	0.0008 (0.0290)	0.0166 (0.0294)	0.0037 (0.0291)
FIRM LONG LEVERAGE	-0.7037*** (0.1748)	-0.7326*** (0.1756)	-0.6731*** (0.1727)	-0.7661*** (0.1705)	-0.7095*** (0.1744)	-0.6379*** (0.1736)
FIRM GROWTH	-0.2264** (0.0918)	-0.2055** (0.0924)	-0.2005** (0.0912)	-0.1797** (0.0909)	-0.2294** (0.0917)	-0.1810** (0.0918)
FIRM AGE	0.0117 (0.0605)	0.0275 (0.0613)	0.0127 (0.0596)	0.0017 (0.0586)	0.0116 (0.0602)	-0.0110 (0.0598)
CRISIS	0.0113 (0.0748)	0.0152 (0.0731)	0.0249 (0.0706)	0.0229 (0.0705)	0.0574 (0.0712)	0.0216 (0.0707)
Year dummy	Included	Included	Included	Included	Included	Included
VIF	1.83	1.82	1.79	1.82	1.79	1.82
R-squared	0.3429	0.3336	0.3625	0.4259	0.3584	0.3802
F-statistic	35.55***	34.81***	36.53***	35.47***	35.02***	36.48***
Obs.	300	300	300	300	300	300
			ROA			
EDUCATION LEVEL: Bachelor's Degree	0.0597* (0.0363)					
EDUCATION LEVEL:		0.1501***				

Master's Degree		(0.0807)				
EDUCATION LEVEL: PhD			0.0347 (0.0643)			
EDUCATION SPECIALISATION: Business				-0.0955* (0.0500)		
EDUCATION SPECIALISATION: Law					-0.0073 (0.0662)	
EDUCATION SPECIALISATION: Industry-Related						0.0055 (0.1019)
CSR ESG	0.0932***	0.0955***	0.0906***	0.0761**	0.0931***	0.0871***
	(0.0313)	(0.0307)	(0.0323)	(0.0319)	(0.0315)	(0.0314)
BOARD INDEPENDENCE	-0.0282	-0.0317	-0.0028	0.0202	-0.0068	-0.0034
	(0.0136)	(0.0228)	(0.0228)	(0.0240)	(0.0215)	(0.0213)
FIRM SIZE	-0.0092***	-0.0089***	-0.0099***	-0.0100***	-0.0097***	-0.0096***
	(0.0021)	(0.0021)	(0.0021)	(0.0021)	(0.0021)	(0.0021)
FIRM LONG LEVERAGE	-0.0282**	-0.0240*	-0.0292**	-0.0306**	-0.0286**	-0.0287**
	(0.0.136)	(0.0135)	(0.0137)	(0.0136)	(0.0137)	(0.0139)
FIRM GROWTH	0.0240***	0.0203***	0.0250***	0.0277***	0.0255***	0.0254***
	(0.0068)	(0.0069)	(0.0069)	(0.0068)	(0.0068)	(0.0069)
FIRM AGE	-0.0077	-0.0092**	-0.0078	-0.0075	-0.0078	-0.0077
	(0.0048)	(0.0047)	(0.0048)	(0.0048)	(0.0048)	(0.0048)
CRISIS	0.0029	0.0032	0.0002	-0.0026	-0.0004	-0.0002
	(0.0060)	(0.0057)	(0.0058)	(0.0058)	(0.0058)	(0.0058)
Year dummy	Included	Included	Included	Included	Included	Included
VIF	1.88	1.89	1.85	1.89	1.83	1.85
R-squared	0.1642	0.1822	0.1541	0.1609	0.1534	0.1537
F-statistic	7.28***	8.14***	6.78***	7.20***	6.72***	6.61***
Obs.	300	300	300	300	300	300
			CSR ESG			
EDUCATION LEVEL: Bachelor's Degree	0.1870*** (0.0536)					
EDUCATION LEVEL: Master's Degree		0.3870*** (0.0807)				
EDUCATION LEVEL: PhD			0.3537*** (0.1166)			
EDUCATION SPECIALISATION: Business				0.1583** (0.0779)		

EDUCATION					0.1388	
SPECIALISATION: Law					(0.1078)	
EDUCATION						0.7781***
SPECIALISATION:						
Industry-Related						(0.2618)
BOARD SIZE	-0.0148***	-0.0140***	-0.0150***	-0.0149***	-0.0151***	-0.0156***
	(0.0019)	(0.0018)	(0.1166)	(0.0019)	(0.1078)	(0.0019)
FIRM SIZE	0.0675***	0.0650***	0.0650***	0.0675***	0.0647***	0.0684***
	(0.0049)	(0.0048)	(0.0049)	(0.0052)	(0.0050)	(0.0051)
LAGE	0.0131	0.0077	0.0104	0.0131	0.0144*	0.0168**
	(0.0080)	(0.0080)	(0.0082)	(0.0082)	(0.0082)	(0.0081)
CRISIS	0.0022	-0.0003	-0.0058	-0.0045	-0.0069	-0.0028
	(0.0096)	(0.0090)	(0.0091)	(0.0094)	(0.0093)	(0.0093)
Industry dummy	Included	Included	Included	Included	Included	Included
Year dummy	Included	Included	Included	Included	Included	Included
VIF	2.08	2.07	2.08	2.09	1.96	2.24
R-squared	0.7215	0.7322	0.7201	0.7152	0.7134	0.7196
F-statistic	59.95***	63.27***	59.47***	58.04***	57.51***	59.29***
Observations	300	300	300	300	300	300

Standard errors in parenthesis. Significance level: *** 99%, ** 95%, * 90%.

Appendix Table I. Regression analysis for women presence on boards in crisis and post-crisis periods

VARIABLES	Crisis	Post-crisis
	TOBIN'S Q	
WOMEN ON BOARD	-0.4001	0.4653
	(0.5081)	(0.4962)
ROA	18.8510***	11.9800*** (1.5511)
	(0.6051)	
CSR	0.7513	-0.3263
	(0.6051)	(0.3868)
FIRM SIZE	-0.0414	0.0230
	(0.0431)	(0.0345)
FIRM LONG LEVERAGE	-1.2607***	-0.5187**
	(0.2543)	(0.2092)
FIRM GROWTH	-0.5156***	0.0787
	(0.1552)	(0.1008)
FIRM AGE	0.0121	-0.0363
	(0.0970)	(0.0648)
Year dummy	Included	Included
VIF	1.50	1.45
R-squared	0.5059	0.5294
F-statistic	24.20***	18.21***
Obs.	150	150
	ROA	
WOMEN ON BOARD	0.0630*	-0.0031
	(0.0362)	(0.0551)
CSR ESG	0.1529***	0.0540
	(0.0417)	(0.0435)
BOARD INDEPENDENCE	-0.0533*	0.0279
	(0.0291)	(0.0326)
FIRM SIZE	-0.0091***	-0.0099***
	(0.0026)	(0.0033)
FIRM LONG LEVERAGE	-0.0105	-0.0409*
	(0.0179)	(0.0209)
FIRM GROWTH	0.0360***	0.0115
	(0.0089)	(0.0104)
FIRM AGE	-0.0099	-0.0056
	(0.0067)	(0.0068)
Year dummy	Included	Included

VIF	1.58	1.47
R-squared	0.2436	0.1366
F-statistic	7.32***	3.30***
Obs.	150	150
	CSR ESG	
WOMEN ON BOARD	0.1586***	0.1410*
	(0.0544)	(0.0800)
BOARD SIZE	-0.0182***	-0.0147***
	(0.0026)	(0.0026)
FIRM SIZE	0.0767***	0.0596***
	(0.0065)	(0.0070)
LAGE	-0.0042	0.0217*
	(0.0108)	(0.0112)
Industry dummy	Included	Included
Year dummy	Included	Included
VIF	1.90	1.93
R-squared	0.7314	0.7609
F-statistic	34.43***	39.79***
Observations	150	150

Standard errors in parenthesis. Significance level: *** 99%, ** 95%, * 90%.

Appendix Table II. Regression analysis for women presence dividing by director's typology

VARIABLES	**TOBIN'S Q**
WOMEN EXECUTIVE DIRECTORS	-0.0536
	(0.4020)
WOMEN PROPRIETARY DIRECTORS	0.2983*
	(0.1805)
WOMEN INDEPENDENT DIRECTORS	-0.2004
	(0.2623)
ROA	17.8844***
	(1.4295)
CSR	-0.1614
	(0.3857)
FIRM SIZE	0.0423
	(0.0280)
FIRM LONG LEVERAGE	-0.5949***
	(0.1692)
FIRM GROWTH	-0.0360
	(0.0969)
FIRM AGE	-0.0274
	(0.0564)
CRISIS	0.0646
	(0.0663)
Year dummy	Included
VIF	1.81
R-squared	0.4706
F-statistic	34.53***
Obs.	296
	ROA
WOMEN EXECUTIVE DIRECTORS	-0.0219
	(0.0330)
WOMEN PROPRIETARY DIRECTORS	0.0352**
	(0.0143)
WOMEN INDEPENDENT DIRECTORS	0.0078
	(0.0216)
CSR ESG	0.0807***
	(0.0303)
FIRM SIZE	-0.0097***
	(0.0020)

FIRM LONG LEVERAGE	-0.0369***
	(0.0133)
FIRM GROWTH	0.0193**
	(0.0076)
FIRM AGE	-0.0051
	(0.0046)
CRISIS	-0.0005
	(0.0055)
Year dummy	Included
VIF	1.82
R-squared	0.1738
F-statistic	7.08***
Obs.	296
	CSR ESG
WOMEN EXECUTIVE DIRECTORS	0.1728***
	(0.0582)
WOMEN PROPRIETARY DIRECTORS	-0.0155
	(0.0244)
WOMEN INDEPENDENT DIRECTORS	0.2117***
	(0.0365)
BOARD SIZE	-0.0095***
	(0.0021)
FIRM SIZE	0.0582***
	(0.0049)
LAGE	0.0044
	(0.0082)
CRISIS	-0.0050
	(0.0087)
Industry dummy	Included
Year dummy	Included
VIF	2.08
R-squared	0.7472
F-statistic	58.51***
Observations	296

Standard errors in parenthesis. Significance level: *** 99%, ** 95%, * 90%.