



**Universitat Autònoma
de Barcelona**

**WOMEN ON CORPORATE BOARDS AND FIRM
PERFORMANCE: EVIDENCE FROM SPAIN**

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ABSTRACT

The aim of this study is to examine the impact of female board members on firm performance by focusing on Spanish companies. We are interested in Spain because despite being the second country to implement legislative actions on this topic, its proportion of women in the boardroom remains below the European average. Previous empirical evidence is mixed, finding a positive, negative or no relationship between the number of women directors and economic gains. We perform OLS and panel data regression models by using a sample of 36 firms listed on the Mercado Continuo Español's stock market, over the period 2011-2015. We find that there is a positive and statistically significant relationship between ROA or Tobin's Q and the female on board variable, which indicates that women directors can positively influence business results.

Keywords: Financial Performance, Gender-Diverse Boards, Women Directors, Firm Value, Female on Board.

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1. INTRODUCTION

Board gender diversity has become a widely discussed topic within corporate governance. Despite there has been a decisive trend to promote women at top management positions and some advances have been achieved, a vast majority of boardrooms are still composed of male directors (Jourová, 2016).

Spain was the second country to set out legislative actions that fostered the incorporation of more female members at executive levels, but the fraction is currently still low if compared to other European countries. On the contrary, Norway and other early adopters have recorded outstanding figures since the enactment of their respective policies (Berger, Kick and Schaeck, 2014). In this context, the need to investigate the effects of this legal implementation has become crucial; more concretely, the financial impact of having Women On Corporate Boards (WOCB hereafter) is one of the issues that have attracted growing research interest in recent years, but no homogenous results have been concluded yet.

According to previous literature, there are several channels predicting a positive effect against a few stating the opposite. For instance, it is said that women can contribute to decision-making because more diverse insights can be considered, though that might sometimes lead to higher coordination costs. Similarly, some theories address the existence of a positive relationship between gender-diverse boards and financial performance (Lückerath-Rovers, 2013; Terjesen, Sealy and Singh, 2009). Furthermore, some authors such as Smith, Smith and Verner (2005) and Campbell and Mínguez-Vera (2008) show empirical evidence supporting these arguments. Nonetheless, other researchers claim that there exists a negative relationship (Ahern and Dittmar, 2012); whereas Adams and Ferreira (2009) and Carter, D'Souza, Simkins and Simpson (2010) find no connection. Recently, Laffarga, Pilar and Reguera-Alvarado (2015) have found a positive relationship based on a Spanish sample too, and they attribute it to the fact that women are more risk-averse than men, as they tend to propose less aggressive and more sustainable investment strategies. However, it is worth noticing that their sample relates to a period prior to the introduction of legal measures that foster gender diversity in boards by the Spanish government, so we take a more recent one.

Under this framework, this study provides new evidence on the relationship between an increased fraction of women in the boardroom and firm performance. Our objective is to analyze whether the presence of female board members positively affects financial outcomes. Hence, we minimize endogeneity by employing panel data methodology when running the regression models. As we are especially interested in the Spanish case, we use a dataset of companies listed on the Mercado Continuo Español's stock market during the period 2011-2015. Overall, our results suggest that having WOCB in Spain is positively associated with financial performance measured by ROA, and in general also by Tobin's Q. An outstanding finding though is that this only holds when we account for omitted variables in the previous literature, such as board specific skills.

The structure of this thesis is as follows. The theoretical part is split into two main sections. The first one consists of the theoretical background, including the main assumptions and theories advocating the existence of the gender diversity-performance and of the gender diversity- risk taking relationship. The second one is the review of the empirical evidence, synthetized by three main geographical areas. Next, an overview of the enacted legislation concerning WOCB across countries is provided, as well as the evolution of results in Europe. In the empirical analysis we focus on the gender diversity-performance relationship. This practical part is divided into three main sections: in the first one we analyze the dataset and identify some trends, while in the second we explain the followed methodology to obtain the results, which are exhibited in the last section. Finally, we provide a conclusion for the thesis, as well as the consulted bibliography and further information in the appendix.

2. REVIEW OF EXISTING THEORIES AND EVIDENCE

2.1 Theoretical background

The board of directors is one of the most influential governance mechanisms in an organization as regards strategic decision-making. Among their large range of functions, the most relevant ones comprise: “monitoring and controlling managers, providing information and counsel to managers, monitoring compliance with applicable laws and regulations, and linking the corporation to the external environment” (Carter et al., pp. 398, 2010). Therefore, the composition of the board is expected to affect the overall performance of a firm, which might be influenced by corporate risk-taking.

The role of gender-diverse boards has recently been given a special focus when it comes to research on this relationship, which suggests the willingness and importance to figure out whether this assumption holds. Due to this reason, our theoretical section concentrates on investigating the effect of female board members on both corporate risk-taking and economic results.

2.1.1 Hypothesis development

After careful review of previous literature, we identified several channels predicting a positive and negative effect. More concretely, six factors correspond to potential benefits for having WOCB, whereas just three relate to potential costs.

- **Advantages**

1. **Attract external talents** → “Women directors are role models who inspire others” (Terjesen et al., pp 328, 2009). As stated in Marinova, Plantenga and Remery (2010), research based on institutional legitimacy theory¹ claims that the number of female top managers may influence positively the career development of women in lower positions, as it involves attracting well qualified candidates from sources different than the usual ones and reduces the influence of old boys’ network (Rose, 2007).

¹ A theory at the firm’s level which claims that there is a positive relationship between female corporate board members and overall female workers in a company (Terjesen et al., 2009).

2. **Eliminate tokenism²** → Tokenism is likely to take place whenever there is just one woman or one member of a minority group, as the token members may feel isolation and pressure to adopt stereotyped roles (Terjesen et al., 2009). According to some studies, “a critical mass is necessary to realize fully the benefits of diversity on corporate boards” (Packel and Rhode, pp. 409, 2015). Hence, gender diversity in the boardroom contributes to increase transparency of selection, by demonstrating to lower-level employees that the chance to fulfill highest positions in the firm depends only on their respective skills and qualifications rather than on other variables (Rose, 2007).
3. **Improve company image and stock value** → Given the current trend of socially responsible investments, investors are encouraged to consider gender equality in the boardroom as a positive variable. As Laffarga et al. advocate, the consequences are that “the economic results, the media visibility, and the demonstration of commitments with respect to social and ethical concerns, will boost and result in a higher demand of stocks and an increase in their price” (pp.2, 2015; Adams, Grey and Nowland, 2011). Moreover, Adams and Ferreira (2009) claim that the more gender-diverse the board is the more equity-based compensation in the company. Hence, appointing women in the boardrooms may result in an enhancement of the company’s reputation because it sends positive signals to stakeholders such as consumers, suppliers and the community (Rose, 2007).
4. **New insights and creativity** → A balanced proportion of women and men in leadership positions can positively contribute to problem-solving because more diverse alternatives and perspectives are evaluated: “By taking a broader view, the board will have a better understanding of the complexities of the business environment and thus improve decision-making” (Campbell and Mínguez-Vera, pp.440, 2008). Furthermore, creative ideas and innovation may arise as a result of having access to a wider range of information sources (Ferreira, 2010).
5. **Positive influence on men’s behavior** → Research from Adams and Ferreira (2009) not only argues that female directors have better attendance records than males, but that males’ attendance is likely to improve the more gender-diverse the board is. Moreover, they also claim that female directors are mainly associated with monitoring committees rather than with other types, such as nomination and

² Applied to the business context, tokenism is the practice of hiring a person who belongs to a minority group in order to prevent criticism against the company image and prove employees are treated fairly (Lückerath-Rovers, 2013).

compensation committees. Overall, their conclusions suggest women positively influence men's behavior and higher efforts to monitoring tend to be observed in gender-diverse boards.

6. **Orientation towards Corporate Social Responsibility (CSR)** → Women possess some traits which may enhance board oversight of firm strategy, such as sensitivity towards others and the ability to handle with interests of multiple parties (Huse and Nielsen, 2010). It is not surprising then that gender-diverse boards achieve more effective communication levels among the board and its stakeholders. For instance, they emphasize both customer and employee satisfaction, innovation and gender equality measures (Terjesen et al., 2009). In this context, it is worth highlighting that female directors are often associated with sectors in close proximity to final customers and soft managerial areas, such as CSR, Marketing and Human Resources (Gimeno, Mangas and Mateos de Cabo, 2007; Huddleston, Runyan and Swinney, 2006; Rao and Tilt, 2016).

- **Disadvantages**

1. **Coordination costs** → Despite heterogeneous opinions may turn out in better quality decisions, coordinating and reaching consensus can be more time-consuming. Therefore, if the company operates in a quick-response market these costs may not offset the advantages of a diverse board, and they would rather lead to a less efficient decision-making body and competitive behaviour (Marinova et al., 2010; Smith et al., 2005).
2. **Conflict and lack of communication** → “A more diverse board may be in greater risk of being influenced by directors with distinct personal and professional agendas” (Ferreira, pp.229, 2010). Indeed, dissimilarities in interests often involve conflict and a reduction in group cohesiveness. Similarly, information flows may be harmed when members do not share the same values (Packel and Rhode, 2015).
3. **Choosing inadequate directors** → It is often argued that not only demographic characteristics such as age, gender or ethnicity should be taken into account when it comes to equality in the board. In the context of gender quotas, relying just on demographical factors is sometimes seen as a drawback because other relevant backgrounds such as education, qualifications and training are not considered. For example, it is said there is a short supply of qualified females who could join top

executive positions because they are likely to be younger and less experienced in the business field than their male counterparts³ (Ferreira, 2010; Terjesen et al., 2009).

2.1.2 Theoretical perspectives of women on boards

Terjesen et al. (2009) summarized several theoretical contributions on this topic and provided a better grasp in WOCB's relationship with financial performance by describing two main theories at the firm's level:

- **Agency theory** → It explains the relationship between a principal (e.g. shareholder) and its agent (e.g. directors or managers) by assuming outside directors are good monitors for shareholders' interests because they work separately from inside directors (Terjesen et al., 2009). In this sense, costs such as asymmetric information, opportunistic behavior and incomplete contracts can be significantly reduced with an adequate board of directors, which aligns the interests of both managers and shareholders (Laffarga et al., 2015). Therefore, it suggests diverse directors, who may be better monitors of management as they are able to consider a larger range of perspectives, influence firm value. Adams and Ferreira (2009) advocate this theory by arguing that female directors are austere monitors and more active, which in turn impacts corporate governance. However, whether a tighter monitoring leads to positive or negative outcomes is still questionable, so this theory is not a good indicator for WOCB's relationship with financial performance (Carter et al., 2010).
- **Resource dependency** → Highly supported by Carter et al. (2010), this theory states diversity in the board improves information due to the uniqueness of its source. It assumes better financial performance is achieved thanks to the appointment of different corporate directors, who are selected in order to maximize access to critical resources and connections (Ferreira, 2010). In fact, they are used as a linkage mechanism to expand not only relations with stakeholders, such as competitors and customers (Funch, Munch-Madsen and Rose, 2013), but also knowledge about the industry and finance prospects (Laffarga et al., 2015). Overall, this linkage involves four main advantages: firstly, it may provide the company with useful information; secondly, it is an adequate channel for communication purposes; thirdly, it obtains commitments of support from important elements of the environment; and fourthly, it legitimizes companies (Lückerath-Rovers, 2013).

³ Evidence on women human capital theory indicates they are just as well qualified as men in terms of education level and other important qualities, but less likely to have significant experience as business experts (Terjesen et al., 2009).

Finally, this theory justifies why female directors are usually found in customer-oriented business, as gender diversity not only enhances stakeholders' relations but also firm's reputation and performance (Dang and Nguyen, 2016).

Additionally, some authors such as Carter et al. (2010) and Lückerath-Rovers (2013) aim at demonstrating a more solid and realistic possibility of this link. For this reason, they develop an interdisciplinary approach by focusing as well on theories at the individual level, such as human capital, and at the board level, such as social psychology.

- **Human capital** → Related to resource dependency, this theory explores how education, skills, and experience of employees can affect organizations (Carter et al., 2010). Because gender diversity involves unique access to resources, firm value may increase.
- **Social psychology** → It predicts board diversity can positively influence decision-making dynamics, and consequently business performance, by encouraging miscellaneous thinking, in spite of the boundless power of majority status individuals (Carter et al., 2010). Nevertheless, Campbell and Mínguez-Vera (2008) claim that divergent opinions might turn out to be slower and less effective.

On the other hand, no theories are related with female board members and corporate risk-taking. Rather, Faccio, Marchica and Murac (2016) advocate the existence of three main channels, which will be further discussed in the review of empirical literature:

1. **Firm risk** → This hypothesis derives from the fact that a considerable number of female CEOs tend to be hired by companies with low leverage trends or those willing to undertake less risk. Therefore, women in top executive positions such as corporate boards are often associated with risk-averse decisions and firms.
2. **Self-selection** → As causality can run in either one direction or the other, it could also be that women are prone to work in low risk or more stable firms.
3. **Biological and/or environment-driven factors** → Different risk attitudes can arise depending on more complex elements, such as preferences or overconfidence. Hence, corporate risk-taking can be explained by external forces affecting gender, which build and model the framework for a given behavior.

To conclude, whereas both resource dependence and human capital theory indicate there may exist the possibility of a positive relationship between gender diversity on corporate boards and financial performance depending on the situation, agency and social psychological theory do not provide a clear support for it. In fact, there are limited empirical analysis attempting to clarify whether the sign could be negative or positive (Carter et al., 2010; Lückerath-Rovers, 2013). Moreover, the three channels regarding women risk-taking point out the difficulty in predicting the direction of causality, due to factors beyond the reach of the internal business scenario.

2.2 Review of empirical literature

Evidence on whether WOCB positively or negatively affect company performance varies across countries, and the same trend is found for studies related to risk-taking. To provide a better grasp of the wide empirical background, this section organizes the literature in three main geographical areas: US, Europe and Spain.

To begin with, it is worth examining previous empirical studies from the US, as most research on this topic has been based on data extracted from this country and its biggest firms. Secondly, the case of Europe has gained more interest during the recent years, so a large extent of contributions mainly based on Nordic countries help to understand different dynamics. Finally, as this project aims at examining the Spanish case, a special focus is given to the existing literature in this country.

2.2.1 US

- **Performance**

Non-peer-reviewed publications such as Catalyst and The McKinsey report are among the first to address the existence, although not statistically significant, of a positive relationship between female top managers and company performance (Lückerath-Rovers, 2013). Subsequently, Huddleston et al. (2006) collect the results from small business entrepreneurs in one Mid-western state and find that female business owners, both at male-dominated and female-dominated business types⁴, register superior business performance when their education is beyond the high school level.

⁴ “Retail and service industries account for more than 80 percent of female entrepreneurs’ fields of operation” (Huddleston et al., 2006).

On the other hand, Adams and Ferreira (2009) argue too much monitoring⁵ can reduce shareholder value when companies have few takeover defenses. Therefore, there is not enough evidence that regulations enforcing quotas for women on boards lead to a higher firm performance. Finally, according to Carter et al. (2010) appointing women and ethnic minorities to corporate boards does not imply any significant effect on performance, so again they underpin gender quotas do not seem to be the convenient way of improving business results.

- **Risk-taking**

Huang and Kisgen (2013) predict male executives are more overconfident than females because the last ones are, among other findings, less likely to make early acquisitions or issue debt. In addition, Gonzalez and Sila (2014) assert that firm-level equity risk can be substantially reduced the more male directors interact with female directors. Thus, they suggest WOCB can positively impact firm decisions and stability in spite of their minority status. Similarly, greater gender diversity on the board together with other factors such as a smaller board size, greater board independence and lower concentration of institutional ownership, involves a lower default risk according to Cao, Davalos, Feroz and Leng (2015).

Nonetheless, Adams and Raganathan (2013) not only state that banks with a larger number of women on boards are more likely to be risk-lovers, but also that they show better performance records. In line with Adams and Funk's (2012) argument, they reflect risk-aversion research is misleading because it is usually based on general population samples, while they find that the pool of female corporate leaders in finance appears to be very different from other women.

2.2.2 Europe⁶

- **Performance**

Smith et al. (2005) perform a panel data study of 2,500 of the largest Danish companies and find that a higher fraction of women among top executives and on boards of

⁵ Adams, Hermalin, and Weisbach (2010) also support women are more oriented towards monitoring by confirming the tendency to find them in diversified companies, which devote more time to this activity, rather than to strategic issues as in growing companies.

⁶ Spain is excluded from this section but it is explained in detail afterwards, as it allows to highlight previous evidence on the country of interest.

directors is likely to boost financial outcomes. Some remarkable traits are that this positive relationship mainly takes place when female managers have university education or they are elected by the staff. Furthermore, businesses with a clear customer-orientation (e.g. service and retail industry) and with at least one top executive female possess a larger share of women among the overall staff than do others. More recently, Lückerath-Rovers (2013) shows that companies with women directors on their boards perform better than those without from a Dutch perspective, and associates it to resource dependency theory. Similarly, a longitudinal analysis of 91 Danish municipalities carried out by Opstrup and Villadsen (2014) indicates gender diversity in the top management team leads to better economic performance as long as integration and discretion measures at the group's level, such as teamwork, freedom of judgment and shared responsibilities, are encouraged by the organizational structure.

Notwithstanding the foregoing, Ahern and Dittmar (2012) provide evidence of a negative association from a Norwegian point of view, given the lower job experience of women. Hence, they claim mandatory board member gender quotas in this country resulted in a performance deterioration because corporate leaders were not freely chosen as requested by resource dependency theory.

Unlike the previous studies, Oxelheim, Randøy and Thomsen (2006) suggest gender-diverse boards have no impact on stock market valuation and profitability when investigating a sample of the largest companies in Scandinavia (Denmark, Norway and Sweden). Despite no negative financial outcomes are found, value destruction may arise if gender diversity is aimed at expanding the board's size. In this paper, they also reveal Denmark is the country with the lowest share of WOCB and older members. Consistent with this, Rose (2007) shows no substantial linkage between educational, ethnical and gender-diverse boards and firm performance when examining only listed Danish firms. Later on, Marinova et al. (2010) explore the Dutch and Danish business scenario and come up with no clear evidence for the concerned relationship, while Huse and Nielsen (2010) report the same results when using a Norwegian sample, though they do find another linkage between WOCB and board control. Reinforcing these findings, Funch et al. (2013) use a sample of the major listed firms in the Nordic countries and Germany to suggest again gender diversity has no effect on corporate performance and it can negatively influence it only if board's size is expanded, whilst homogeneous ethnicity

on boards appears to improve it. Latterly, Dang and Nguyen (2016) confirm the impact varies from positive to negative depending on the chosen performance measure, based on data from French listed companies. As in Adams and Ferreira (2009), they also find that female directors may damage company value when there are strong governance mechanisms and high profitability.

- **Risk-taking**

Parrota and Smith (2013) advocate, although not providing any causal effect, that female-led firms in Denmark tend to show less volatile investments, return on equity, profits and sales compared to those run by males. This is consistent with Faccio et al. (2016) results, who demonstrate female CEOs are usually associated with less risky firms in their large sample of European companies. Some of their findings include financing and investment choices are not as risky as the ones taken by their male counterparts, as well as transitions from male to female CEOs in a specific firm are likely to diminish risk-taking. Additionally, highly profitable and older firms tend to hire more women according to their research.

On the other hand, Adams and Funk (2012) document women directors in Sweden are slightly more risk-loving than both other women in the general population and male directors. One of the most distinguishable traits of this sample is that female managers seem to be more open to change and environmentally and socially concerned than the other groups tested. This is mainly due to self-selection, as women who choose to be managers are considerably different from all the rest. Moreover, evidence from Berger et al. (2014) reveals risk-taking increases when there is a higher proportion of young and female executives, but declines when appointing people possessing PhD degrees. In their empirical analysis, women directors in Germany self-select into banks which already have a female CEO due to the glass ceiling effect: career growth is difficult for women and therefore means they suffer from a higher risk exposure.

2.2.3 Spain

- **Performance**

Focusing on a Spanish context, Campbell and Mínguez-Vera (2008) demonstrate that firm value may be positively influenced by a right balance on board gender diversity rather than by the presence of WOCB itself. Furthermore, they prove that reverse causality does not hold and Spanish investors are willing to invest more in companies

with female directors. Later on, they analyze the short-term and long-term stock market reaction to the appointment of female directors by using an event study and the system GMM estimation procedure respectively. Because the market value of firms is positively affected, they suggest that female directors add value (Campbell and Mínguez-Vera, 2010). In line with these findings, García (2010) shows business technical efficiency increases the more heterogeneous the board is, whereas a study carried out by Apesteguia, Azmat and Iriberry (2012) advocates mixed teams in terms of gender show the highest performance and the best group dynamics. More recently, Martín-Ugedo and Mínguez-Vera (2014) examine SMEs in Spain and state that the presence of females on boards leads to higher economic gains. In addition, in their full sample women directors tend to be found in firms with substantial value and when a family member is a shareholder. Lastly, Laffarga et al. (2015) support gender quotas by also documenting a positive relationship between WOCB and financial results based on a sample of 125 non-financial companies listed on the Madrid Stock Exchange during 2005-2009.

Nevertheless, Martín and Mínguez-Vera (2011) report a negative impact on economic gains when analyzing non-financial SMEs. They also show that women on boards are usually found in family firms and those which have a financial institution as the main shareholder, as well as in firms with less debt, more assets and larger boards.

Opposite to the previous findings, Gallego, García and Rodríguez (2010) claim that board gender diversity does not necessarily influence company performance. By using several market and accounting measures for a sample of the largest 117 firms, no significant relationship is observed.

- **Risk-taking**

There exists little research on this topic based on the Spanish market, but the results point out that women are considerable more risk-averse than men.

Some interesting findings can be attributed to Karande and Zinkhan (2002). In their paper, they do not explicitly test directors, rather they compare a Spanish and American sample of MBA students. Despite the first one turns out to be less risk-averse than the second, women in both nationalities tend to be more conservative in risky scenarios. Hernández, Martín-Ugedo and Mínguez-Vera (2015) provide similar evidence when examining both CEOs and board members of small start-up firms, finding that debt

financing is likely to diminish as the presence of females increases. Therefore, they conclude gender-diverse boards are more stable because they allow the company to reduce its cost of the debt and increase its debt maturity.

In conclusion, most of previous research in the geographical areas of interest suggest WOCB have a positive impact on firm performance, with some exceptions drawing negative or neutral conclusions. As regards female risk attitudes, there are mixed results according to North-American and overall European studies, whereas Spanish evidence underpins women exhibit risk-averse behaviour. This ambiguity may be due to the differing time periods and institutional contexts. Besides, estimation methods for financial performance and risk-taking seem to vary and there may exist other unobserved factors.

2.3 Institutional framework

Country characteristics and institutional environment play an important role for shaping both corporate governance regulation and women directors' features. As observed in Terjesen et al. (2009), countries with a larger proportion of women in the boardroom tend to have females in senior management and legislature levels, as well as smaller gender pay gaps. Then, if a given country exhibits difficulties for women in pushing forward to executive positions, there is room for its female directors being much more risk-lovers than in others (Adams and Funk, 2012).

To promote the representation of WOCB, enacted legislation across countries generally consists of a set gender quota (33–50 %), time frame (3–5 years), and sanctions for non-compliance (Aguilera, Lorenz and Terjesen, 2015).

In 2012, the European Parliament proclaimed a legislative initiative aimed at the underrepresented sex filling 40% of supervisory and executive positions of European firms listed on stock exchanges by 2020 (Berger et al., 2014; Jourová, 2016).

In 2006, Norway became the first country in the world to set such a law, demanding this quantitative target to all its public-limited firms by 2008 and forcing them to dissolve

otherwise⁷. As of today, this strong penalty has been already removed because the effect of the gender balance regulations has been full (Izquierdo, Möltner and Morten, 2016).

In Denmark, a new rule concerning approximately 1100 of its biggest private and public companies⁸ came into force in April 2013. The covered companies are obliged to self-regulate and set their own targets and time frame as in Sweden, by providing information on the reported gender inequality in both the board of directors and other management levels. It is worth taking into account that no punishment arises in case of non-compliance with the committed target figure, whilst SMEs, which account for a large proportion of the businesses as in Spain, are exempt of applying this policy (Hastings, 2013).

Similarly, the Netherlands enforced another self-regulated and “soft⁹” law but requesting a 30% target. More recently, Austria, Belgium, France, Germany, Greece and Italy have adopted this regulation in their respective corporate governance codes, though the measures and conditions vary because the European Commission, to some extent, allows the member countries to “flexibly” implement it (*See Appendix 1*).

Other countries such as Australia, China and India have also started disclosing gender diversity policies to foster the participation of females in executive levels (Rao and Tilt, 2016).

Focusing on Spain, it was the second country in the world to set out gender balance legislation on corporate boards by introducing the so-called “Law of Equality” (Organic Law 3/2007) (Izquierdo et al., 2016). It consisted of a comply-or-explain type law calling for public limited companies with 250 or more employees to reach the 40% target by 2015, including both executives and non-executive boards (Rao and Tilt, 2016). However, the figure was not achieved due to the fact it did not apply to SMEs firms, which represent 99% of all Spanish businesses and account for 80% of employment (Baixauli-Soler, Lucas-Pérez, Martín-Ugedo, Mínguez-Vera and Sánchez-

⁷ This implied many companies decided to either leave the country or shift to private. In 2009, the number of public limited firms in Norway was less than 70 percent of the number in 2001. In contrast, the number of private limited firms, hence not affected by the quota, rose by over 30 percent (Ahern and Dittmar, 2012).

⁸ “If exceeding two of these criteria in two consecutive financial years: Balance sheet total of DKK 143 million; Revenue of DKK 286 million; or Average number of employees of 250” (Hastings, P., pp 71, 2013).

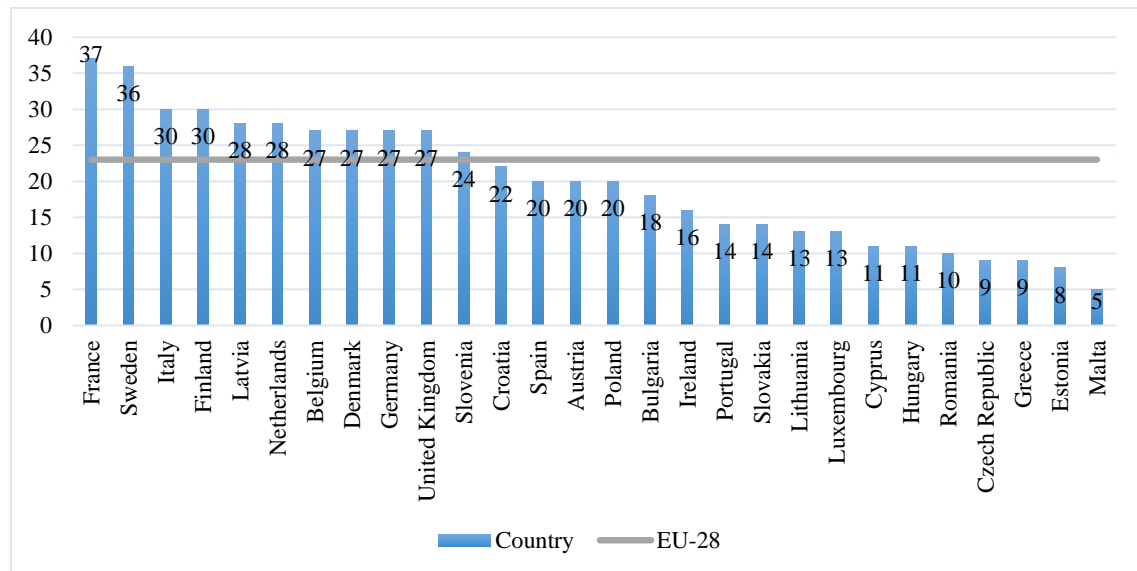
⁹ Soft mechanism which does not entail any statutory penalty for firms in the event of non-compliance. It can also be referred to as a “comply-or-explain” type law.

Marín, 2015), and it was attempted at stimulating companies to develop their own gender parity policies rather than at imposing sanctions¹⁰. Consequently, in 2014 the Spanish government decided to shift towards a “flexi-quota” in an attempt of emulating the Nordic behavior, characterized by a successful voluntary style. In this new framework, the 40% compulsory figure has been substituted by a 30% recommended quota which does not apply anymore to all large companies, but just to listed ones. In other words, firms are now obliged to give convenient explanations in case the recommended quota is not achieved, as in Denmark, but without setting a number or any objective within a specific time reference (Izquierdo et al., 2016).

Consequences in Europe

Figure 1 exhibits that, as of April 2016, WOCB belonging to the largest publicly-listed companies in the EU-28 Member States account for an average 23%. Currently, just ten countries (Belgium, Denmark, Finland, France, Germany, Italy, Latvia, the Netherlands, Sweden and the United Kingdom) record females for at least a quarter of their board members.

Figure 1. Percentage of female board members of the largest listed firms in the EU-28. April 2016.

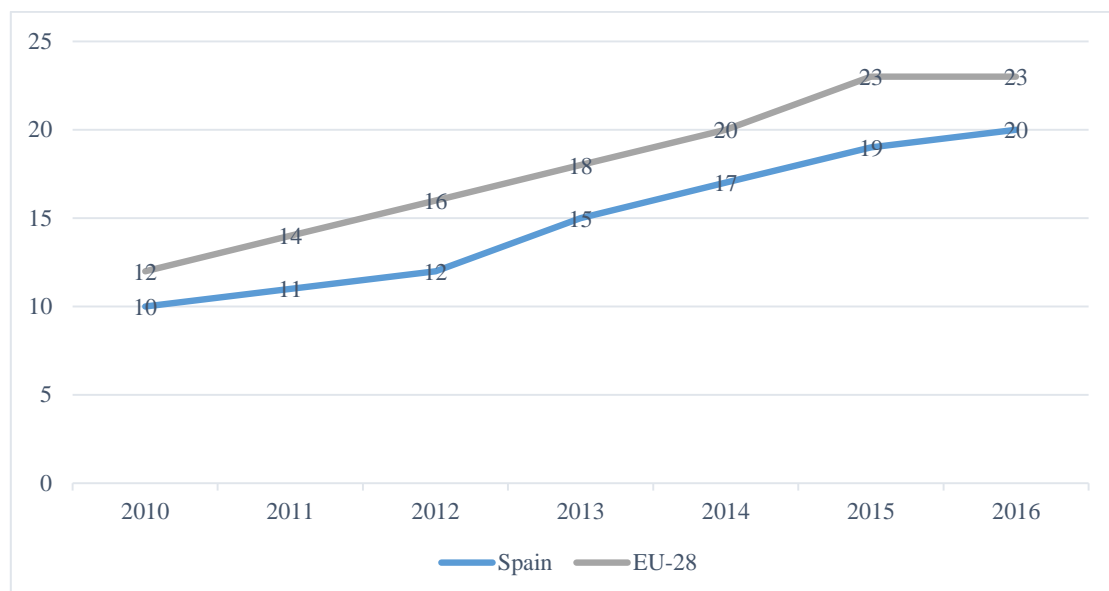


Source: made by the author, based on data from the European Commission

¹⁰ “In May 2012, an award was given to 30 companies including Acciona Ingeniería, S.A., Banco Bilbao Vizcaya Argentaria, S.A., CaixaBank, S.A. and Ernst & Young, S.L. Moreover, certain Autonomous Regions also established awards for companies that comply with local equality regulations” (Hastings, P., pp 98, 2013).

As observed in Figure 2, the 2010-2016 raise in the share of women on boards is significantly bigger than the one in the years before the application of the policy by the member states¹¹. Despite the most successful change figures seem to be achieved in countries which have already adopted the EU regulation in their National Corporate Governance Codes (e.g. Italy +25.5 pp) (Jourová, 2016), Spain is surprisingly growing at a very slow pace, roughly reaching 17% female directors in 2014¹². Thus, Spain is characterized by a slight evolution on incorporating female members in the boardrooms, with yearly outcomes far below the respective EU average.

Figure 2. Percentage of female board members in Spain and the EU-28. Years 2010-2016.



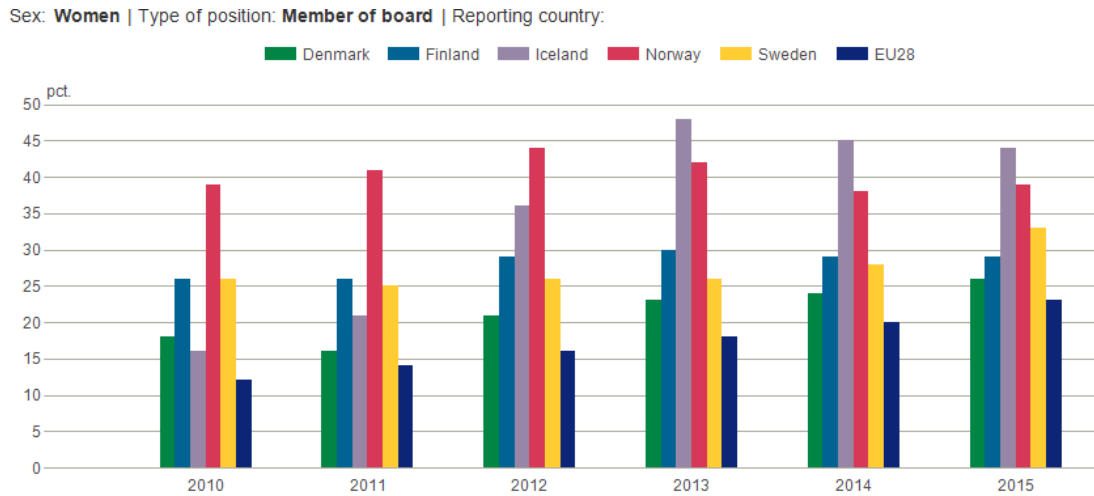
Source: made by the author, based on data from the European Commission

Turning to the Nordic countries (See Figure 3), the results are overall remarkably successful and surpass by far the EU average in all cases. In Finland and Norway, the fraction of female board members has been kept at figures close to 29% and 42% during the last six years. By contrast, in Sweden and Denmark it has steadily risen, reporting 26% and 18% in 2010 while 33% and 27% respectively in 2016. These are just modest growths if compared to Iceland though, which shows a variation from 16% to 44% during the concerned period.

¹¹ From 2003 to 2010 an average increase of 0.5 pp/year, against 2.1 pp year from 2010 to 2016 (Jourová, V., 2016).

¹² The deadline to reach the 40% gender quota was 2015, but in 2014 the figures were undoubtedly low.

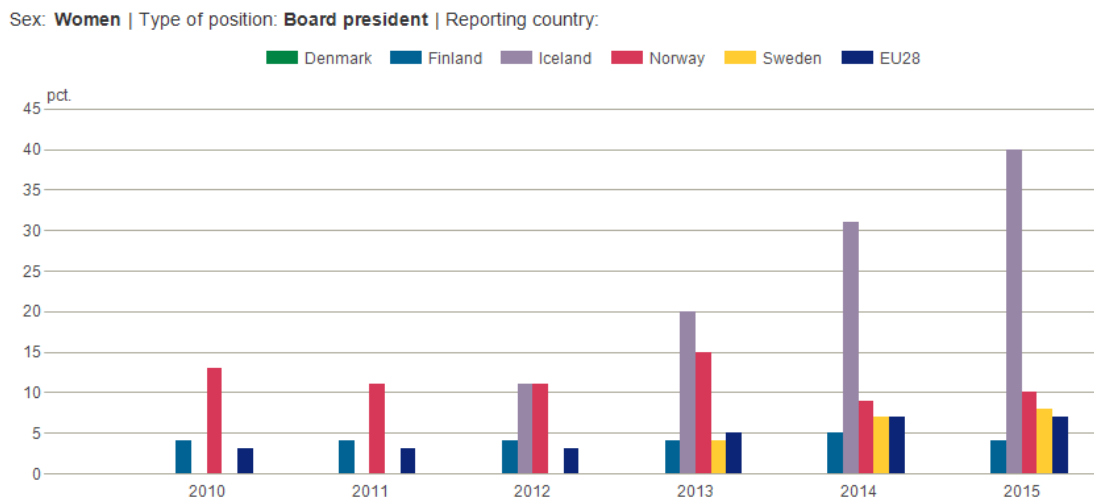
Figure 3. Percentage of female board members of larger publicly listed companies in Nordic countries. Years 2010-2015.



Source: made by the author, based on the Nordic co-operation's database.

However, it is worth considering that when it comes to board presidents, Denmark is the only Nordic state which still does not have any women, whilst the EU average has slightly evolved from 3% to 7% (See Figure 4). According to Berner, Ellersgaard and Larsen (2016), since the enactment of the national Danish legislation in 2013, less than one fifth of those who have climbed the corporate ladder is a female, and they seem to be concentrated just on the biggest companies of the financial sector.

Figure 4. Percentage of female board presidents of larger publicly listed companies in Nordic countries. Years 2010-2015.



Source: made by the author, based on the Nordic co-operation's database

3. EMPIRICAL ANALYSIS

In this section we analyze empirically the relationship between WOCB and firm performance. We will first describe the database that we use; we will next present the methodology. Finally, we will discuss our results.

3.1 Data analysis

3.1.1 Data collection

Our data is collected from Thomson Reuter's Datastream, a database which contains firm performance and corporate governance information for companies all over the globe. After careful review of all possible populations, we decide to take the firms included in the Mercado Continuo Español's stock market, ordered by highest to lowest level of turnover. However, the final sample is limited to 36 firms¹³ because of missing data related to the number of female on board, which is the variable of main interest. Among these, it is worth noticing 29 companies are listed in the IBEX-35, and that we effectively checked gender data related to the boards of directors was not available for the remaining ones in the index.

This report is focused on recent trends concerning WOCB in Spanish companies; hence, we decide to take a time series request consisting of the last available 5 years. That is, we download information for the end of the years 2011 until 2015.

As previously mentioned, our empirical section just concentrates on the gender diversity-firm performance link, so we do not take into account corporate risk-taking figures. In total, we obtain 1342¹⁴ board-firm-year observations for the selected sample.

3.1.2 Variable definition

This section provides the description of our variables, which are synthetized in Appendix 2. After careful review of the missing values, we decide to consider just those

¹³ Unlike other authors (e.g. Adams and Ferreira (2009); Rose (2007)), we do not exclude companies in the finance and insurance industry due to several reasons. First, financial firms are usually excluded because the high leverage that is normal in this sector would probably indicate financial distress for non-financial firms. However, we do not focus on leverage. Second, as Campbell and Minguez-Vera (2008) show, the financial sector is by far the leading one regarding announcements of female appointments to board of directors. Finally, since this industry represents as much as 25% of our sample, excluding these companies would lead to a substantial limitation of our sample size. We are nevertheless aware that, as mentioned by Rose (2007), these firms are subject to special accounting standards, thus results should be interpreted with caution.

¹⁴ See Table 1.

variables that are not significantly affected by this issue. All in all, we take 8 variables and we group them in 3 main categories.

- **Independent variable**

Because our study focuses on women situation in corporate boards, Female On Board is the explanatory variable. It is automatically calculated in Datastream by computing the total percentage of female directors in each firm's board, which fits with previous literature such as Laffarga et al. (2015). As mentioned previously, just 36 companies provide information about it, so this is the variable that sets our sample and therefore our framework for the analysis.

- **Dependent variables**

According to Adams and Ferreira (2009), Carter et al. (2010), Campbell and Mínguez-Vera (2008) and Laffarga et al. (2015) among others, financial performance can be measured by 2 main proxies: ROA and Tobin's Q.

1. **ROA** → Return On Assets measures operating performance from an accounting perspective relative to the company's assets (Carter et al., 2010). This variable is available in Datastream as a percentage, and it is computed in a different way depending on whether the firm is a bank, an insurance company or any other firm in the financial sector¹⁵. However, the general formula comprises the company's Net Income over its Total Assets, which Datastream identifies as $(\text{Net Income} - \text{Bottom Line} + ((\text{Interest Expense on Debt} - \text{Interest Capitalized}) * (1 - \text{Tax Rate}))) / \text{Average of Last Year's and Current Year's Total Assets} * 100$.
2. **Tobin's Q** → Contrary to ROA, this indicator is not based on any accounting prospect. Rather, it is said to be one of the best proxies for competitive advantage because it indicates the market valuation of the firm. It relates a company's market value to its physical assets, measuring the market's forecast for future earnings (Laffarga et al., 2015). Therefore, when Tobin's Q is high it means the financial performance increases, and we compute it as the sum of Market Capitalisation plus Total Liabilities¹⁶, over Total Assets (Campbell and Mínguez-Vera, 2008). In other words, it corresponds to the sum of Book Value of Debt plus Total Market Capitalisation, over the Book Value of Equity plus the Book Value of Debt (Rose, 2007). These are all provided by Datastream, except for the Total Liabilities, which

¹⁵ See Appendix 2 for detailed formulas.

¹⁶ Due to the lack of data related to non-financial debt, the Total Liabilities just include financial liabilities.

can be found by subtracting Total Assets minus Book Value of Equity. We calculate this last one by multiplying the Book Value of Equity per share times the Total Number of Shares.

- **Control variables**

Within this group, we distinguish firm and board characteristics. Each of them consists of 2 and 3 variables respectively, which are further explained in Appendix 2. These variables have already been used by some renowned authors, such as Adams and Ferreira (2009) and Carter et al. (2010), but we download an additional one which we find interesting and potentially related to our field of study.

- Firm characteristics:**

Fortunately, Datastream allows us to download not only common records such as Firm Size (in terms of asset value¹⁷), but also non-financial data such as the percentage of Women Employees.

- Board characteristics:**

We also control for the total members on the board (Board Size) and the percentage of Independent Board Members. Finally, we include an additional variable displaying the percentage of board members with previous industry knowledge (Board Specific Skills).

3.1.3 Descriptive statistics

Table 1 displays the Mean, Standard Deviation, Maximum and Minimum values for both financial performance and corporate governance variables.

The standard deviation of the selected Key Performance Indicators (ROA and Tobin's Q) shows our sample comprises variable financial outcomes. For instance, whereas there exist some companies with very low financial performance reporting negative minimum numbers, there are others in the opposite extreme with outstanding results.

The rounded average number of female on board is just 15,21%, thus in line with the previously mentioned trends in section "Consequences in the EU". Moreover, the fact that women employees in the sample represent roughly 36,92% on average reflects not even half of the staff appears to be a female, though there is some exception because the maximum value is 79,50%.

Regarding board characteristics, they can be composed by 7 up to 22 members, who tend to be independent and with a considerable expertise on the sector. At the

¹⁷ Firm Size is expressed as the logarithm of total assets, as done in previous literature (Adams and Ferreira, 2009).

company's level, on average firms have a size of 9,79 if measured by log assets, which corresponds to an asset value of 100.979,9 million euros.

Table 1. Descriptive statistics.

Variables	Number of observations	Mean	St.Dev.	Min.	Max.
<i>Independent variable</i>					
Female On Board (%)	171	15,21	10,26	0,00	45,45
<i>Dependent variables</i>					
ROA (%)	168	4,47	7,59	-19,28	41,87
Tobin's Q	171	1,53	1,27	0,77	7,86
<i>Firm characteristics</i>					
Firm Size (thousands)	171	9,79	2,01	5,59	14,12
Women Employees (%)	159	36,92	15,62	9,32	79,50
<i>Board Characteristics</i>					
Board Size	167	13,70	3,49	7,00	22,00
Independent Board Members (%)	165	42,37	18,82	9,09	88,89
Board Specific Skills (%)	170	38,67	15,94	8,33	100,00

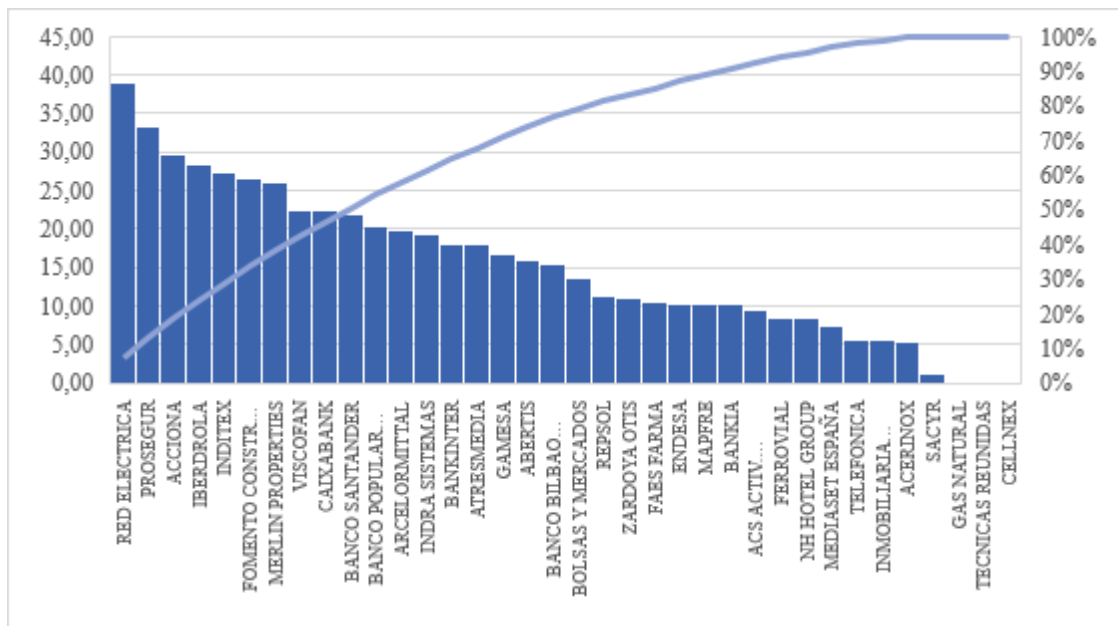
Source: made by the author, based on information downloaded from Datastream

3.1.4 Trends

This section covers a selection of general trends for this specific sample. Different tables and graphs are made according to our data, but just the most relevant are explained below.

As observed in Figure 5, the firm which on average shows the largest proportion of female on board across the concerned period is Red Eléctrica, which belongs to the energy sector. Prosegur, Acciona, Iberdrola and Inditex follow the subsequent leading positions, so at first glance it seems that activity sectors do not influence gender equality on boards (*See Appendix 3 for detailed information about sectors*). In the opposite extreme, some companies such as Gas Natural, Técnicas Reunidas or Cellnex report 0 women in their respective boardrooms.

Figure 5. Average percentage of Female On Board for each firm (2011-2015).

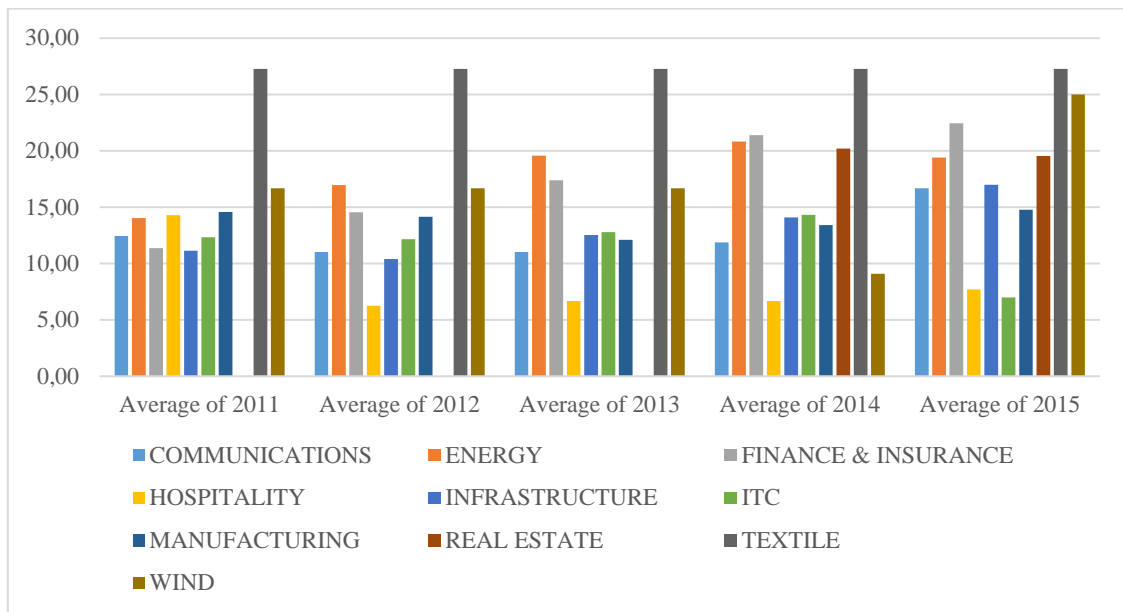


Source: made by the author, based on information downloaded from Datastream

Focusing on the evolution by activity sectors (See Figure 6), the textile is the one displaying the uppermost results every single year. Actually, Inditex is the only company in this sample operating in the textile industry, so the assumptions related to the previous graph hold. Unlike the other ones, the proportion of women in the boardroom is constant (27,27%) and therefore still far from the maximum value found in the overall sample (45,45%).

Most sectors, such as the Wind, Energy, Communications, Infrastructure, Finance and Insurance show increasing trends; whilst the Hospitality, Real Estate, Manufacturing and ITC disclose a slightly dropping and uneven pattern.

Figure 6. Evolution of Female On Board by Sector (2011-2015).



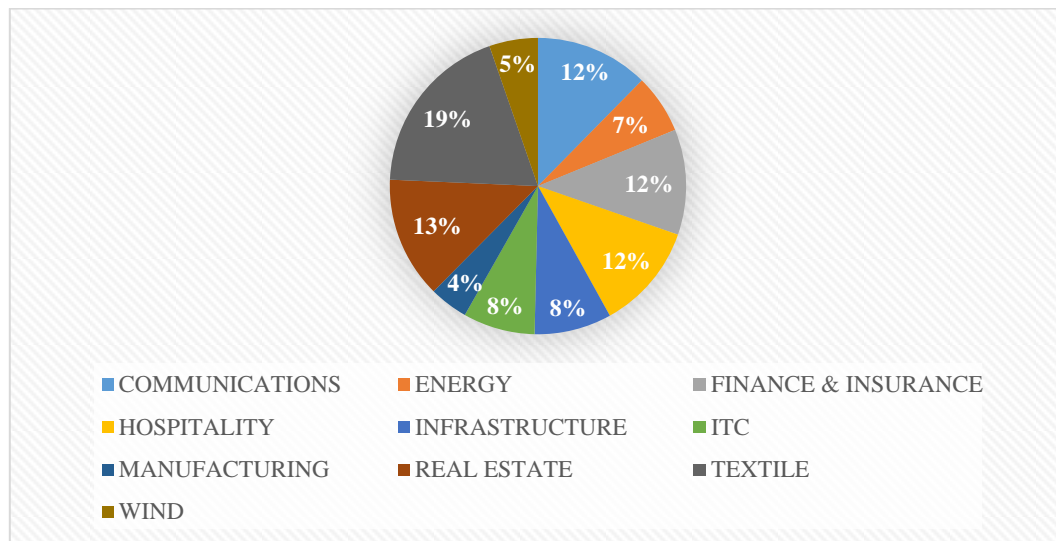
Source: made by the author, based on information downloaded from Datastream

Another outstanding trend is exhibited in Figure 7. Not only is the textile sector the one with the prevalent number of female board members, but also with the largest average number of women employees as of 2015. Thus, our data is consistent with previously mentioned hypothesis predicted by a wide variety of authors ¹⁸, who stated that women tend to be found in sectors operating close to end customers. By contrast, the wind industry records the second minimal proportion of female staff but one of the highest regarding female on board. Hence, assumptions stating that women holding top executive positions attract women employees do not seem to hold¹⁹.

¹⁸ See page 9. Section “6. Orientation towards Corporate Social Responsibility”.

¹⁹ See page 7. Section “1. Attract external talent”.

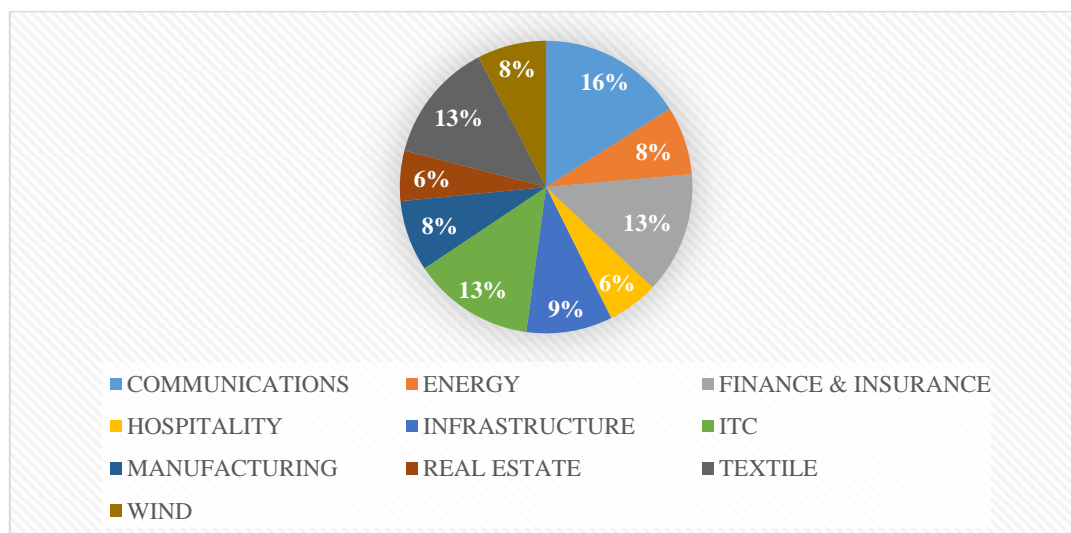
Figure 7. Average Women Employees by Sector in 2015.



Source: made by the author, based on information downloaded from Datastream

Regarding board skills and industry background (*see Figure 8*), some of the sectors with the greatest amount of WOCB also hold a top position in this category (e.g. Textile, Communications, Finance and Insurance). However, the trend is counterbalanced by the outcomes of Wind, Energy and ITC, so no hypothesis can be supported²⁰.

Figure 8. Average Board Specific Skills by Sector in 2015.

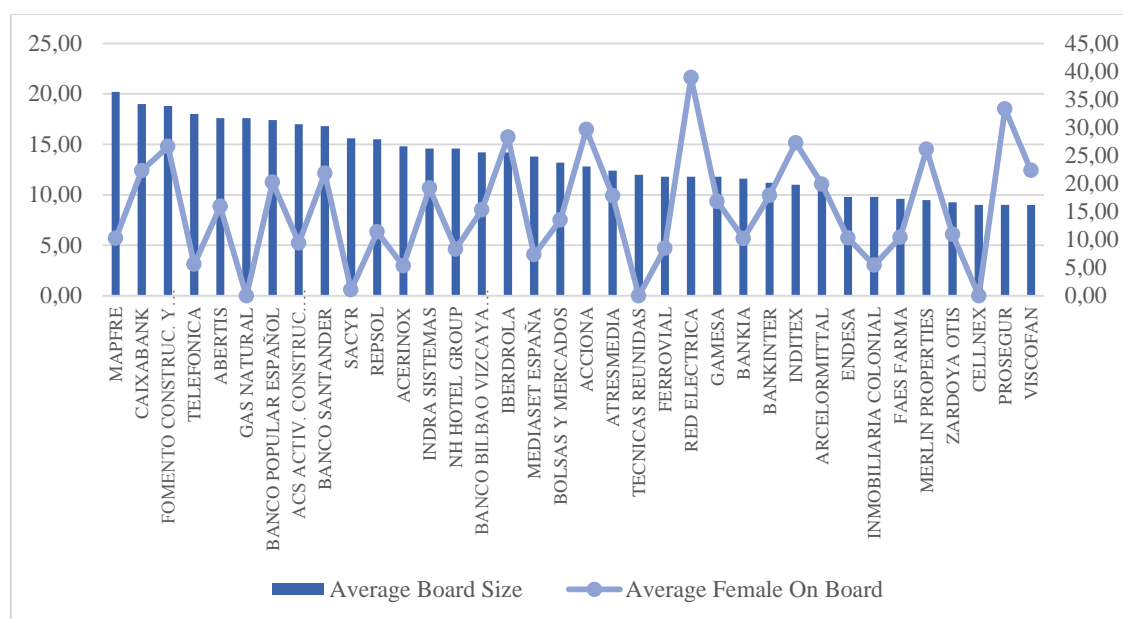


Source: made by the author, based on information downloaded from Datastream

²⁰ See page 9, Section “3. Choosing inadequate directors”.

As shown in Figure 9, women in the boardroom appear to be mostly concentrated on companies with a small board size (e.g. Red Eléctrica, Prosegur). In this sense, some of the previously mentioned hypothesis predicted by Oxelheim et al. (2006) and Funch et al. (2013), which stated that having more female with the intention of expanding board size could damage firm value, would fit.

Figure 9. Board Size and Female On Board for each firm (2011-2015).



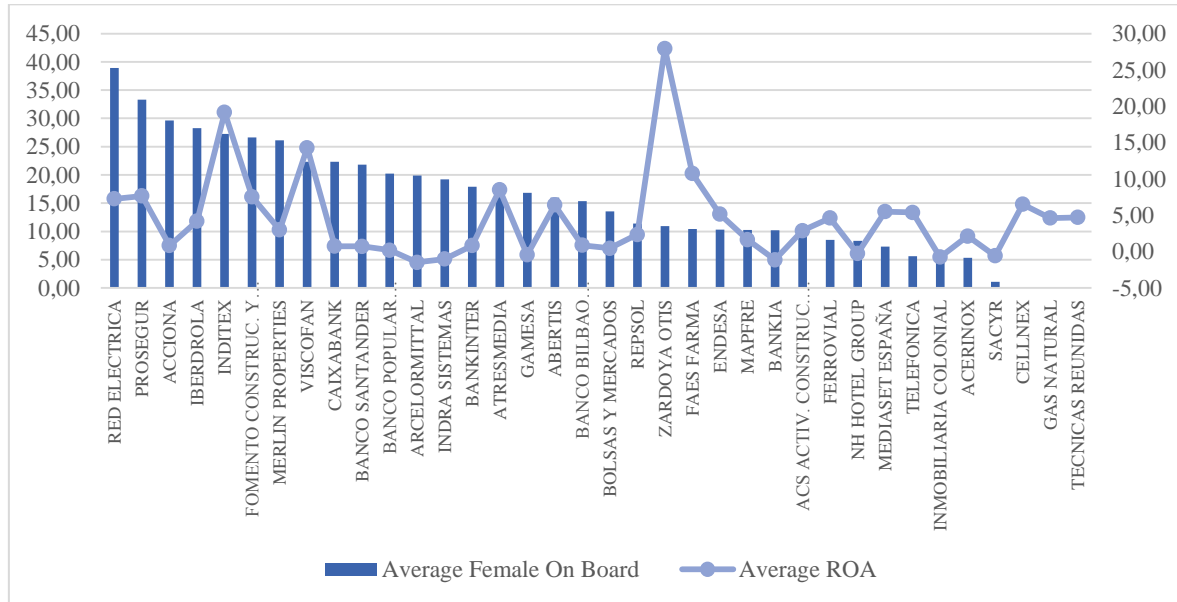
Source: made by the author, based on information downloaded from Datastream

Although it is soon to draw former conclusions, at first glance it seems that the amount of female on boards does not necessarily influence financial performance and vice versa, as observed below in Figure 10.

Some of the companies sustaining the leading positions in terms of WOCB turn out to be the ones with the highest Return On Assets (e.g Inditex, Viscofan). Nonetheless, the case of Zardoya Otis clearly cancels out this trend, as it has a minor fraction of women in the boardroom but the biggest ROA. Therefore, outstanding performance from an accounting perspective appears to be independent from the number of women in the boardroom according to our data, which would reinforce several contributions from

researchers all over the globe²¹ characterized by supporting neither the resource dependency nor the human capital theory.

Figure 10. Female On Board and ROA for each firm (2011-2015).



Source: made by the author, based on information downloaded from Datastream

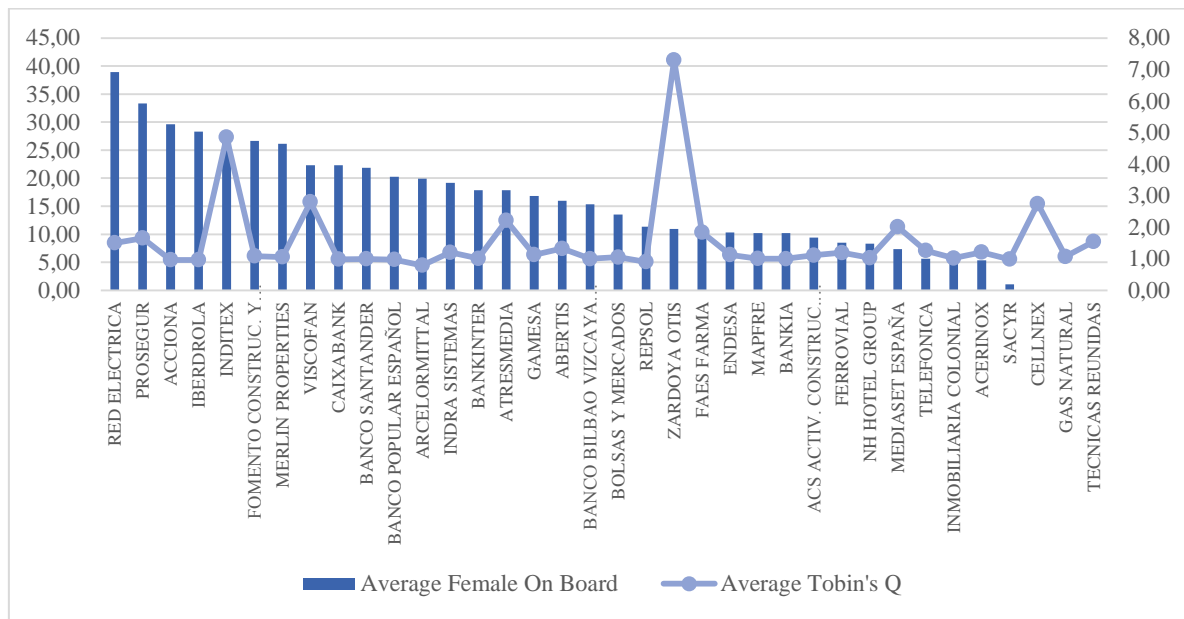
From a market valuation's point of view (see Figure 11), the trends are pretty similar and suggest as well that financial performance and female board members do not seem to be interconnected.

Out of the top 5 companies in terms of female on board, just Inditex shows remarkable results, whilst the first 4 display quite low ones. Additionally, companies with a small share of women in the boardroom do not register a significant performance either. All these observations, together with the fact that Zardoya Otis registers again the peak for Tobin's Q, lead us to think that the above-mentioned predictions could fit.

Notwithstanding the foregoing, this association needs to be explained by means of more solid findings, so we cannot conclude the effect WOCB have on business results yet.

²¹ See page 12 "1.2 Review of empirical literature"

Figure 11. Female On Board and Tobin's Q for each firm (2011-2015).

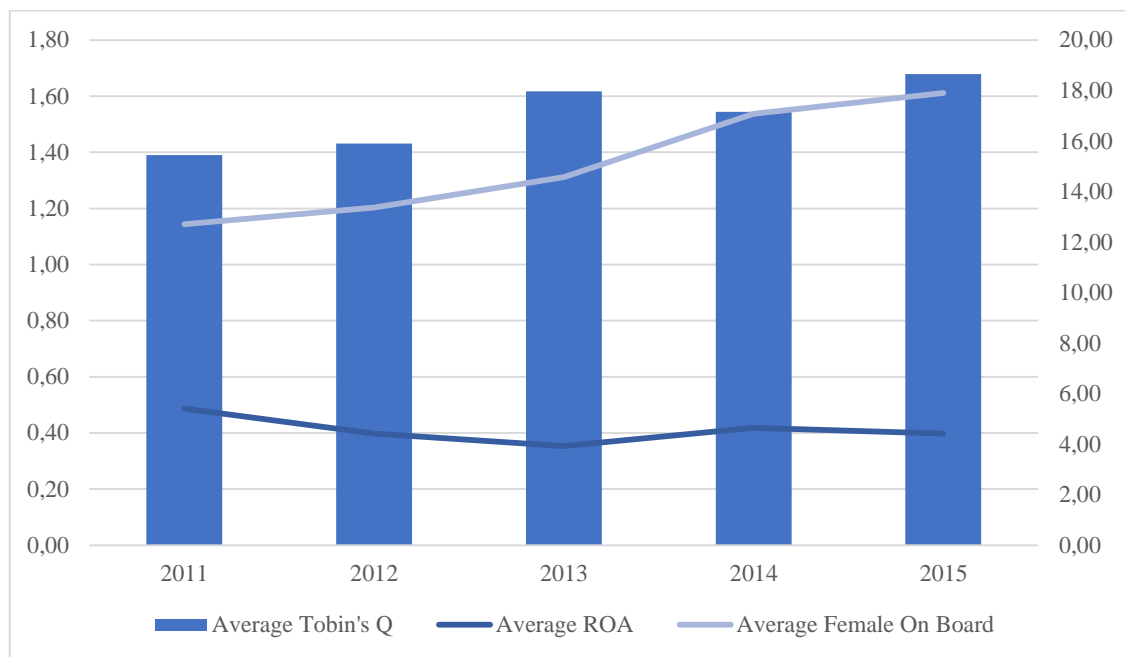


Source: made by the author, based on information downloaded from Datastream

Figure 12 provides a better grasp of the yearly average evolution of female on board and financial performance for all the firms during the concerned period.

The share of female in the boardroom shows a modest increasing pattern, so our results are consistent with the data extracted from the European Commission in Figure 2. Similarly, Tobin's Q is also growing throughout the years, even though in 2014 we appreciate a slight decline. This financial outline is pretty different from ROA though, which exhibits a decreasing trend until 2013 but a rising one afterwards, and therefore seems to be explained by the Spanish crisis effects.

Figure 12. Evolution of Female On Board and Financial Performance.

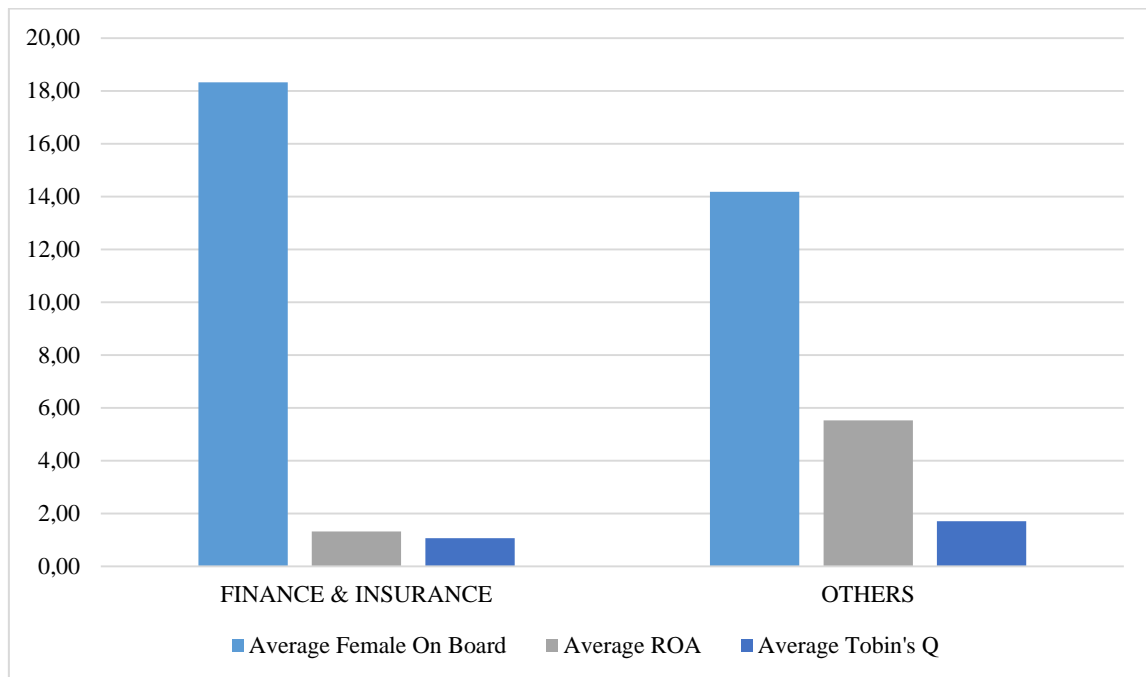


Source: made by the author, based on information downloaded from Datastream

Given that financial performance is measured differently for firms in the financial and insurance industry, in Figure 13 we check how financial performance relates to female on board focusing on 2 subsamples: finance and insurance, and the rest of the companies.

On average, the financial and insurance sector disclose a superior number of WOCB but a poorer business performance than the other industries. Their low financial results might be due to the recent financial crisis together with the European sovereign debt crisis. Indeed, the Spanish banks were very exposed to the real estate bubble and the following mortgage defaults (Royo, Steinberg, Otero-Iglesias, 2016). The difference could also be due to the different accounting standards that financial firms are subject to (Rose, 2007).

Figure 13. Female On Board and Financial Performance by Sectors (2011-2015).



Source: made by the author, based on information downloaded from Datastream

3.2 Methodology

We use two statistical methods to run the regressions in the software Stata: Ordinary Least Squares (OLS) and panel data. This provides us with a more reliable picture, since longitudinal data allows us to control for hidden variables, thereby avoiding unobservable heterogeneity (Wooldridge, 2012).

As highlighted by many influential authors, endogeneity and reverse causality must be addressed when examining the diversity-performance relationship of a set of companies over a given period of time (Adams and Ferreira, 2009; Campbell and Mínguez-Vera, 2008; Carter et al., 2010; Laffarga et al., 2015). The first problem can be easily overcome by using panel data, which partly mitigates endogeneity concerns caused by omitted variables, such as unobservable firm or board characteristics. However, we are not able to control for reverse causality, due to the additional advanced techniques out of the scope for an undergraduate level, such as 2SLS and instrumental variables (IV).

An estimation by fixed effects is performed whenever unobservable heterogeneity is correlated with the predictor variable, whilst the random effects methodology is undertaken whenever the effects are not correlated with the explanatory variable. For

each model, we select the most convenient estimation approach thanks to the Hausman test, which states as null hypothesis that the coefficients of both methods are similar, meaning that if it is rejected we must apply fixed effects (Campbell and Mínguez-Vera, 2008). Besides, we apply robust standard errors in our OLS and panel data regressions in order to control for potential heteroskedasticity in the dataset (Wooldridge, 2012).

We run the following regression models:

$$\text{OLS: } Y_{it} = \beta_0 + \beta_1 X_{it} + \beta_2 Z_{it} + \varepsilon_{it} \quad ; \quad \text{Panel data: } Y_{it} = \beta_0 + \beta_1 X_{it} + \beta_2 Z_{it} + \eta_i + \varepsilon_{it}$$

As explained previously, our dependent variable (Y) stands for Tobin's Q or ROA, whereas the independent variable (X) denotes Female On Board. Moreover, "Z" refers to our control variables, which include a selection of firm and board characteristics. There are two types of error terms: "ε" describes the one that varies over time and therefore it is included in both models, whilst "η" represents the firm fixed effects, which stay constant over time and hence can only be considered in the panel data equation. Finally, "i" and "t" stand for firm and time period (in years) respectively.

3.3 Results and discussion

Before running the regressions we compute the correlations between the variables in order to check for multicollinearity. The pair-wise correlation matrix can take values from -1 (perfect negative correlation) to 1 (perfect positive correlation), and it indicates multicollinearity whenever this value is too high (e.g. >0,8).

As observed in Table 2, the correlations between our variables are low in general so they do not display any multicollinearity problem. The most significant relation takes place between Tobin's Q and ROA, but this high value was already expected since both are proxies for financial performance. Hence, we can include all the variables in the regressions. We notice that the number of female directors shows a positive correlation with financial performance, and the same trend holds with independent board members and firm size. On the other hand, it is not correlated with women employees, whilst board size and specific skills are negatively associated with the explanatory variable, as predicted in "2.4 Trends".

Table 2. Pair-Wise Correlation Matrix.

Variables	Women Employees	Board Specific Skills	Female On Board	Independent Board Members	Board Size	ROA	Tobin's Q	Firm Size
Women Employees	1							
Board Specific Skills	0,26	1						
Female On Board	0,00	-0,16	1					
Independent Board Members	0,11	-0,11	0,33	1				
Board Size	0,04	-0,02	-0,14	-0,33	1			
ROA	0,04	0,04	0,12	-0,06	-0,23	1		
Tobin's Q	-0,05	0,15	0,06	-0,15	-0,35	0,73	1	
Firm Size	0,30	0,20	0,09	0,20	0,46	-0,40	-0,46	1

Source: made by the author, based on information downloaded from Datastream

We present the results of our regressions in Tables 3-5. Thus, in Tables 3 and 4 we exhibit how the percentage of women in the boardroom relates to Tobin's Q and ROA respectively, starting by univariate regressions (models 1 and 2) to compare how the outcomes differ when undertaking multivariate regressions (models 3 and 4). Yet, in Table 5, we perform a robustness check of the previous results based on the research carried out by Adams and Ferreira (2009) (models 5 and 6). For all the models, we check how the effects vary when controlling for industry and/or year dummy variables. In the panel data regressions, we exclude the industry dummies since they are redundant, captured by the fixed effects.

At first glance, the regressions with Tobin's Q in Table 3 show divergent results regarding the coefficient of Female on Board when controlling for the year dummies. This could be due to the appreciated decline of Tobin's Q in the year 2014²². Anyway, the coefficient of Female On Board appears to be positive in the rest of the cases, and it is significant in the multivariate regressions, though at different levels. Therefore, this is in line with the results of Campbell and Mínguez-Vera (2008) when analyzing a Spanish dataset too.

As for the control variables, Firm Size as expressed by the value of assets is negatively and significantly associated with Tobin's Q, which implies that large companies in our sample have a lower performance than smaller ones. Similarly, the coefficients of

²² See Figure 12

Independent Board Members and Board Size are also negative, but they are significant just in the OLS regressions, which might be due to a lack of variation over time.

On the contrary, Board Specific Skills has positive coefficients and it turns out to be statistically significant. As expected, it is only significant when including the industry dummy, meaning that directors' expertise in the company's sector is positive when controlling for the type of industry. However, Women Employees is not statistically significant, so we reject the hypothesis that a more gender-diverse staff influences the company's market valuation.

Table 3. Regression results with Tobin's Q as dependent variable.

VARIABLES	Tobin's Q						
	Model 1	Model 1	Model 3	Model 3	Model 3	Model 3	Model 3
Female on Board	0.00810 (0.00689)	-0.00120 (0.00470)	0.0220*** (0.00725)	0.0154** (0.00616)	0.0156** (0.00703)	0.00672* (0.00397)	-0.000214 (0.00580)
Firm Size			-0.266*** (0.0511)	-0.144** (0.0610)	-0.143** (0.0614)	-0.262* (0.139)	-0.254* (0.146)
Board Specific Skills			0.0155 (0.00980)	0.0197** (0.00891)	0.0198** (0.00917)	0.00627 (0.00542)	0.00572 (0.00578)
Women Employees			0.00823 (0.0106)	0.00805 (0.00782)	0.00844 (0.00838)	-0.000856 (0.00655)	-0.00318 (0.00695)
Independent Board Members			-0.0107* (0.00642)	-0.0152*** (0.00563)	-0.0152** (0.00594)	-0.00459 (0.00346)	-0.00498 (0.00394)
Board Size			-0.0726** (0.0331)	-0.0485** (0.0232)	-0.0478* (0.0250)	-0.0152 (0.0173)	-0.000519 (0.0144)
Constant	1.402*** (0.143)	1.968*** (0.234)	(0.870)	2.438*** (0.630)	2.381*** (0.643)	4.193*** -1.525	4.018** -1.602
Observations	170	170	149	149	149	149	149
R-squared	0.004	0.447	0.336	0.693	0.695		
Industry dummies	No	Yes	No	Yes	Yes	No	No
Year dummies	No	Yes	No	No	Yes	No	Yes
Regression type	OLS	OLS	OLS	OLS	OLS	Random effects	Random effects

Robust standard errors in parentheses

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

Source: made by the author, based on information downloaded from Datastream

In Table 4, when we take ROA as the dependent variable, the coefficient of Female On Board is positive for all the considered scenarios. Furthermore, it appears to be robust and statistically significant at 1% and 5% levels for all multivariate regressions, as well as for the first univariate model. Thus, this implies female directors in our sample

positively influence firm performance from an accounting perspective, which is consistent with the results obtained from Carter et al. (2010) in the US. In particular, our panel data regression accounting for year dummies indicates that when the proportion of female representation increases by 10 percentage points, ROA is predicted to change by about 1.49 percentage points.

Again, Firm Size is negatively and significantly associated with firm performance, whilst Board Specific Skills shows a positive and significant relationship when including the industry dummy.

As before, Women Employees is not statistically significant. Moreover, Independent Board Directors and Board Size are not statistically significant either, not even for the OLS regressions.

Table 4. Regression results with ROA as dependent variable.

VARIABLES	ROA						
	Model 2	Model 2	Model 4	Model 4	Model 4	Model 4	Model 4
Female on Board	0.0902** (0.0446)	0.0685 (0.0476)	0.158*** (0.0582)	0.135** (0.0541)	0.149** (0.0604)	0.127** (0.0548)	0.149** (0.0701)
Firm Size			-1.452*** (0.392)	-0.860* (0.510)	-0.866 (0.538)	-1.713*** (0.589)	-1.717*** (0.593)
Board Specific Skills			0.0831 (0.0520)	0.103* (0.0531)	0.106** (0.0513)	0.0624 (0.0479)	0.0689 (0.0472)
Women Employees			-0.0246 (0.0602)	0.0240 (0.0814)	0.0324 (0.0862)	-0.0278 (0.0972)	-0.0266 (0.0993)
Independent Board Members			-0.00818 (0.0379)	-0.0408 (0.0369)	-0.0473 (0.0389)	0.00773 (0.0510)	-0.00214 (0.0548)
Board Size			-0.0326 (0.323)	0.0785 (0.366)	0.0528 (0.360)	0.208 (0.318)	0.190 (0.312)
Constant	3.085*** (0.834)	7.121*** -1.653	14.66*** -4.835	4.164 -4.992	5.554 -5.082	14.62* -8.407	16.09* -8.570
Observations	167	167	146	146	146	146	146
R-squared	0.015	0.326	0.176	0.450	0.463		
Industry dummies	No	Yes	No	Yes	Yes	No	No
Year dummies	No	Yes	No	No	Yes	No	Yes
Regression type	OLS	OLS	OLS	OLS	OLS	Random effects	Random effects

Robust standard errors in parentheses

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

Source: made by the author, based on information downloaded from Datastream

In Table 5, we do not consider Women Employees and Board Specific Skills, as we aim at running the same models as Adams and Ferreira (2009)²³.

Unlike their results, our sample does not show a significant association between Female On Board and Tobin's Q when we suppress these two control variables, and in particular Board Specific Skills. However, we do find a positive and significant relationship at a 10% level between Female On Board and ROA. Therefore, this suggests that there exists an omitted variable problem. Indeed, when accounting for Board Specific Skills (which is negatively correlated with Female On Board) we obtain positive and statistically significant coefficients.

Regarding Board Size, we obtain negative and significant coefficients but only with Tobin's Q and OLS regressions. Thus, whether a smaller or larger board influences firm gains in our sample is not clear.

As for the variable Independent Board Members, they find a positive relationship that is just significant with ROA. For us, it is still negative as in the previous tables, but in this case significant with Tobin's Q. This indicates that a smaller number of independent board members can add economic value to Spanish firms, but this association is not meaningful when controlling for additional variables or considering ROA.

Finally, Firm Size is again negative and significant in all scenarios, suggesting that smaller companies in our sample are the ones performing the best.

²³ They consider fewer variables than we do in Models 1-4. Instead of Firm Size expressed as the logarithm of total assets they use the logarithm of total sales. They do not control for year dummies either.

Table 5. Regression results for the Robustness Check.

VARIABLES	Robustness Check: Adams & Ferreira (2009)					
	Tobin's Q			ROA		
	Model 5	Model 5	Model 5	Model 6	Model 6	Model 6
Female on Board	0.00592 (0.00421)	0.00556 (0.00482)	-0.00227 (0.00414)	0.0758 (0.0515)	0.0881 (0.0570)	0.126* (0.0641)
Independent Board Members	-0.0186** (0.00786)	-0.0183** (0.00816)	-0.00551** (0.00267)	-0.0559 (0.0390)	-0.0603 (0.0403)	-0.0120 (0.0538)
Board Size	-0.0714** (0.0276)	-0.0701** (0.0305)	-0.00412 (0.0122)	-0.0112 (0.302)	-0.0399 (0.293)	0.0983 (0.321)
Firm Size	-0.159*** (0.0511)	-0.159*** (0.0511)	-0.227* (0.130)	-1.384*** (0.424)	-1.374*** (0.431)	-1.615*** (0.482)
Constant	4.696*** (0.691)	4.601*** (0.757)	3.914*** -1.472	17.94*** -4.826	19.50*** -5.130	18.62** -8.629
Observations	161	161	161	158	158	158
R-squared	0.587	0.589		0.391	0.401	
Industry dummies	Yes	Yes	No	Yes	Yes	No
Year dummies	No	Yes	Yes	No	Yes	Yes
Regression type	OLS	OLS	Random effects	OLS	OLS	Random effects

Robust standard errors in parentheses

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

Source: made by the author, based on information downloaded from Datastream

4. CONCLUSIONS

In this study, we provide new insights into the relationship between women in the boardroom and firm performance, by focusing on recent data from Spanish firms listed on the Spanish stock market. Thus, we contribute to the literature on this topic by analyzing the results obtained from a different sample, period and set of variables.

As a first approach, we aim at uncovering the characteristics of the few firms in Spain which integrate female board members. By examining our sample, we identify two remarkable trends that support some of our hypothesis: (1) we observe that women directors are usually found in sectors operating close to end customers and (2) they appear to be concentrated on companies with small boards.

Our findings show that in general there exists a positive and significant relationship between WOCB and economic performance, which are consistent with those from Laffarga et al. (2015), Lückerath-Rovers (2013) and Smith et al. (2005) among others. When measuring financial performance by ROA, a positively significant association holds in all panel regressions. The same linkage is found when considering Tobin's Q, though the coefficient becomes insignificant when including year dummies. After performing the robustness check and obtaining no statistically significant relationship, we realize the existence of an omitted variable problem. Indeed, once the control variable board specific skills is included, we get positive and significant coefficients for female on board. Hence, our results suggest that women directors can positively affect firm value once all relevant control variables are accounted for, which underpins resource dependence and human capital theory. Furthermore, our outcomes also indicate that smaller firms in terms of total assets perform better than larger ones, but this may be misleading, due to the fact we are considering banks and insurance companies. We could not draw any other conclusion concerning the rest of control variables, since the results were not significant and the signs changed depending on the chosen financial performance measure.

Future research on this topic would be highly beneficial to overcome current societal, organizational and legislative concerns. Despite we could contribute with some substantial outcomes, our study faced some limitations that should be addressed when carrying out new approaches. Firstly, there is not a substantial amount of Spanish companies that display data on their number of female directors. The lack of time

impeded us using other means to obtain a larger sample, but we believe this should be one of the main points to be arranged. A larger sample size could also allow performing the analysis only on a subsample of non-financial firms, to verify the robustness of our results. Secondly, our initial analysis aimed at including many other interesting variables, such as the director tenure, board and committee meeting attendance, women managers and board cultural diversity among others, which had to be rejected because they exhibited many missing values. Similarly, we believe some variables describing board members' level of education and risk-taking would allow for more noteworthy results, but again it may be too time-consuming. Overall, these variables may be potentially related to the diversity-performance relationship, so we encourage future research to consider them. Finally, despite we used a panel data methodology, further advanced techniques commonly employed to explore this link were beyond the reach for an undergraduate thesis. As stated in previous literature, performing pooled OLS and 2SLS regressions implies greater accuracy, as it mitigates the reverse causality concern. Therefore, when analyzing the direction of causality, we recommend following the path of Adams and Ferreira (2009), Carter et al. (2010) and Laffarga et al. (2015).

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APPENDIX

Appendix 1: EU countries regulation of gender balance on corporate boards

Country	Quota	Other measures
Austria	35% for supervisory boards by 2018. It only applies to state-owned firms	Self-regulation
Belgium	33% for both executives and non-executives in state-owned and listed companies by 2017, as well as in listed SMEs by 2019	Self-regulation
Bulgaria	No	No
Croatia	No	No
Cyprus	No	No
Czech Republic	No	No
Denmark	No	Self-regulation, sanction in case of not submitting any reporting
Estonia	No	No
Finland	No	The Corporate Governance Code for listed companies recommends to have an "equitable proportion of both sexes" in their boards
France	40% by 2017 for non-executive directors in all large companies	The AFEP-MEDEF Corporate Code of 2011 recommends complying with the quota
Germany	30% for supervisory boards of the 110 biggest listed companies	From 2016, the concerned companies must self-regulate
Greece	33% applicable to companies fully or partially owned by the State	Soft and positive actions for the public sector
Hungary	No	Soft and positive actions for the public sector
Ireland	No	Soft and positive actions for the public sector employment: 40% female participation in all state boards
Italy	33% by 2015 for listed and state-owned companies	Applicable to both executive and non-executive boards
Latvia	No	Soft and positive actions for the public sector
Lithuania	No	No
Luxembourg	No	Soft and positive actions, recommendation to have an appropriate representation of both sexes in all boards
Malta	No	No

Netherlands	30% for large companies	Soft mechanism and self-regulation applying to all boards
Poland	No	The Code of good practices contemplates for equally qualified women. Soft mechanism
Portugal	No	A government resolution of 2015 encourages companies to attain 30% of the under-represented sex at their administrative bodies by 2018
Romania	No	Soft and positive actions for the public sector employment
Slovakia	No	No
Slovenia	No	40% representation of each sex for government representatives in all boards. No sanctions.
Spain	40% by 2015 for large companies, no sanctions. 30% recommendation for listed companies from 2016	Soft and positive actions for the public sector employment
Sweden	No	Self-regulation
United Kingdom	No	Self-regulation

Source: made by the author, based on the report of gender balance on corporate boards (European Commission, April 2016).

Appendix 2: Variable definition

Variable name	Definition
ROA (%)	<p>Datastream computes Return On Assets as a percentage according to each type of firm:</p> <p><i>-Annual Time Series:</i></p> $(\text{Net Income} - \text{Bottom Line} + ((\text{Interest Expense on Debt-Interest Capitalized}) * (1 - \text{Tax Rate}))) / \text{Average of Last Year's and Current Year's Total Assets} * 100$ <p><i>-Banks:</i></p> $\text{Net Income} - \text{Bottom Line} + ((\text{Interest Expense on Debt-Interest Capitalized}) * (1 - \text{Tax Rate}))) / \text{Average of Last Year's (Total Assets - Customer Liabilities on Acceptances) and Current Year's (Total Assets - Customer Liabilities on Acceptances)} * 100.$ <p>Customer Liabilities on Acceptances only subtracted when included in Total Assets</p> <p><i>-Insurance Companies:</i></p> $(\text{Net Income} - \text{Bottom Line} + ((\text{Interest Expense on Debt-Interest Capitalized}) * (1 - \text{Tax Rate}))) + \text{Policyholders' Surplus} / \text{Average of Last Year's and Current Year's Total Assets} * 100$ <p><i>-Other Financial Companies:</i></p> $(\text{Net Income} - \text{Bottom Line} + ((\text{Interest Expense on Debt-Interest Capitalized}) * (1 - \text{Tax Rate}))) / \text{Average of Last Year's (Total Assets - Custody Securities) and Current Year's (Total Assets - Custody Securities)} * 100$
Tobin's Q	<p>$(\text{Market Capitalization} + \text{Total Liabilities}) / \text{Total Assets} \rightarrow$</p> <p>$(\text{BV of Debt} + \text{Market Capitalization}) / (\text{BV of Equity} + \text{BV of Debt}), \text{ where}$</p> <p>Total Liabilities= Total Assets- Book Value of Equity ;</p> <p>and BV Equity= BV per share * Number of Shares</p>

Female On Board (%)	Percentage of Female On Board
Board Size	The total number of board members at the end of the fiscal year.
Independent Board Members (%)	Percentage of independent board members as reported by the company
Board Specific Skills (%)	Percentage of board members who have either an industry specific background or a strong financial background
Women Employees (%)	Percentage of women employees
Firm Size	Logarithm of Total Assets (thousands of Euros), as reported by the company. Includes the reported sum of total current assets, long term receivables, investment in associated companies, other investments, net property plant and equipment and other assets

Source: made by the author, based on information downloaded from Datastream

Appendix 3: Firms in the sample sorted by sector

SECTOR	FIRM
COMMUNICATIONS	MEDIASET ESPAÑA
	ATRESMEDIA
ENERGY	IBERDROLA
	REPSOL
	ENDESA
	RED ELECTRICA
	GAS NATURAL
FINANCE & INSURANCE	BANCO POPULAR ESPAÑOL
	BANCO SANTANDER
	BANKIA
	BANCO BILBAO VIZCAYA
	ARGENTARIA
	CAIXABANK
	MAPFRE
	BANKINTER
	PROSEGUR
	BOLSAS Y MERCADOS

HOSPITALITY	NH HOTEL GROUP
INFRASTRUCTURE	SACYR
	ABERTIS
	FERROVIAL
	ACS ACTIV. CONSTRUCC. Y SERV.
	TECNICAS REUNIDAS
	FOMENTO CONSTRUCC. Y CNTR.
	ACCIONA
ITC	TELEFONICA
	CELLNEX
	INDRA SISTEMAS
MANUFACTURING	ACERINOX
	ZARDOYA OTIS
	ARCELORMITTAL
	FAES FARMA
	VISCOFAN
REAL ESTATE	MERLIN PROPERTIES
	INMOBILIARIA COLONIAL
TEXTILE	INDITEX
WIND	GAMESA

Source: made by the author, based on information downloaded from Datastream