



# Board gender diversity and performance in family firms: exploring the faultline of family ties

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## Abstract

Using a sample of 1134 firm-year observations of non-financial family firms listed on the Spanish stock market in the period 2003–2020, we explore how women directors affect company performance, distinguishing between family and non-family female members on the board. We believe there might be faultlines between family and non-family women on boards that may well impair performance due to differences in agency conflicts and socioemotional links with the family firm. As the number of female family directors grows, we reveal that conflicts with non-family sub-groups become more prevalent, impairing firm performance. Opening boards to non-family women does, however, seem to be an effective way of enhancing firm performance when there is a critical mass of female directors. The results are robust to alternative measures of board gender diversity and different econometric specifications.

**Keywords** Board of directors · Gender diversity · Female directors · Family firms · Family ties · Critical mass

**Mathematics Subject Classifications** 91-XX

## 1 Introduction

Despite the number of regulations and voluntary initiatives designed to increase board gender diversity, academic literature provides conflicting evidence on the role that women play in firm performance. Some research finds a positive

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influence and argues that women directors increase stakeholder empathy, ethical behavior, innovation, and creativity, while other studies report worse decision making in gender diverse boards or even no difference between female and male behavior when women reach high leadership positions (Wellalage et al. 2020; García-Meca et al. 2022). Family firms,—where there are more women in top management teams compared to their non-family counterparts (Ernst and Young 2015)—are also affected by the lack of conclusive evidence on board gender diversity and performance. In addition, women are increasingly being appointed to key roles (Barret and Moores 2009). In these companies, the analysis is even more complex since family ties affect the role of female directors and may create faultlines between them. The faultline perspective is a useful theoretical framework to analyze board composition and dynamics (Kaczmarek et al. 2012) and states that, even within an apparently uniform group of people, dividing lines may be found that can split the group (Pearsall et al. 2008). The idea of exploring faultlines is particularly interesting in family firms, where from a SEW approach, women's incentives may differ from profit maximizing objectives and may involve maintaining family control and preserving family reputation (Sciascia et al. 2014).

We extend this literature and study the impact of familiness in boards in terms of how it contributes to the existence of faultlines in groups of female directors. We assume the existence of two simultaneous faultlines when studying board diversity in family firms: one demographical (gender), and another factual (familiness). As regards the gender faultline between family male and family female directors, socio-emotional theory holds that women directors who have family ties have a particular incentive to hand their business on to coming generations. They are also seen to display long-term commitment as well as unique psychological qualities such as family instincts, together with a desire to protect the family's reputation (Cole and Cole 1997; Miller et al. 2007). In addition, we suggest there are relation-based faultlines among family female and non-family female directors, since women with family ties share a common culture, business values and socio-emotional goals (Cruz et al. 2010). This emotional attachment to the family firm is not shared by non-family female directors, who have different perceptions of the firm, as well as different goals and expectations, which encourages a common feeling of non-inclusion from the dominant family (Minichilli et al. 2010; Calabro et al. 2021).

As well as the faultlines that exist between family and non-family female directors, the link between gender diversity and family firm performance can evidence major differences across firms because of the lack of a critical mass. The critical mass theory holds that only when there is a high enough number (or proportion) of women on the board (Shahab et al. 2020) can women directors constitute a critical mass that can have a significant influence on board discussions. It is therefore not just family ties but also board visibility and power that can give rise to diverging viewpoints and incentives between family and non-family women directors. As our second objective we look at whether the association between family and non-family women directors and performance might depend on female strength in the boardroom and we identify the point at which female directors, with and without family ties, may prove to be influential. We thus address three main research questions:

(1) Do family women directors impact performance differently to non-family female directors? (2) Is this conditional on the number of women directors in each group? (3) Where is the break point at which the impact of female directors changes?

We set this paper in the Spanish context and use a dataset of Spanish boards between 2003 and 2020 with 1134 firm-year observations. Spain, like most countries in continental Europe, provides an interesting setting since it has a weak legal system (Djankov et al. 2008; Bona-Sánchez et al. 2014). Moreover, the corporate governance structure is characterized by a high concentration of voting rights in the hands of the dominant owners, a high separation of voting and cash flow rights, and a significant presence of family-held ownership (Ruiz-Mallorquí and Santana-Martín 2009; Capela et al. 2020). Results are consistent with the posited effects. Our findings are also seen to be robust to alternative measures of board gender diversity, family control and different econometric specifications in addition to procedures that avert problems of endogeneity.

Our study offers a number of contributions. First, this research provides further evidence concerning corporate governance in the literature addressing family firms, where studies dealing with female leadership are still fairly scarce (Campopiano et al. 2017; Nelson and Constantinidis 2017; Rovelli et al. 2022). Most existing studies into gender diversity are grounded on widely held corporations and do not include firms in which there is high ownership concentration and a strong family presence (Sarkar and Selarka 2015). Moreover, among the few studies that do analyze what role boards play in family firms, only a limited number explore the link between women directors and performance in family firms (Cabrera-Suarez and Martín-Santana 2015; Gonzalez et al. 2020). Second, because we examine curvilinear relationships, we help to shed light on previous research's rather unclear findings (De Massis et al. 2015) and we center on determining what level of family female board involvement proves to be optimal. The breakpoints provided offer an initial and useful reference point for families in terms of comparing their situation to others, which might help to achieve higher levels of firm performance. Third, this paper offers clearer insights into the role played by non-family directors in family firms. Studies into what impact the non-family component might have remain scarce and have usually been restricted to the management team (Binacci et al. 2016) or CEO position (Miller et al. 2014) and have failed to look at the different impact of non-family ties on family boards of directors (Rovelli et al. 2022). Finally, this paper extends the faultline perspective in family firms, which states that said perspective is more readily understood if the influence of diversity dimensions as a whole are considered (Vandebeek et al. 2016).

## 2 Background and hypotheses

### 2.1 Familiness and gender faultlines in family firms

The faultline perspective is a useful theoretical framework to analyze board composition and dynamics (Kaczmarek et al. 2012), and states that even within an apparently uniform group of people, dividing lines may be found that can split the group

and affect board cohesiveness (Pearsall et al. 2008). According to the faultlines approach, it is possible to identify a group faultline between male and female directors. Early studies found that men convey and deal with problems in a different manner to women (Haberman and Danes 2007). In addition to encouraging participation and sharing to a greater degree than men, women also tend to adopt a more interactive and participatory style. As a result, women can enhance a firm's ability to be flexible and address ambiguity (Rosener 1995; Betinelli et al. 2019). Furthermore, women curb the likelihood of excess risk-taking when strategic decisions are being adopted, since they display greater risk aversion when making financial decisions compared to their male counterparts (Faccio et al. 2016). They are also prone to adopt more ethical and socially responsible decisions (López-González et al. 2019). Increasing board gender diversity by appointing women directors can therefore enhance a board's ability to exercise its control and strategic roles, since management decisions are less likely to be rubber-stamped (Selby 2000; Adams and Ferreira 2009). This increased diversity also expands the knowledge pool used to make group decisions and can fast-track innovation and creativity (Bilimoria and Wheeler 2000). Diversity can thus help a board to deal with complex problems by creating a greater number of alternatives that enhance decision-making effectiveness (Binacci et al. 2016; Midavaine et al. 2016). Yet gender diversity may trigger disagreements and conflicts that can negatively impact boards (Adams and Ferreira 2009; Böhren and Ström 2010; Ahern and Dittmar 2012) or even company performance (Haslam et al. 2010). However,—and approached from a different perspective—since they are more concerned with non-financial goals (Bona-Sánchez et al. 2014; Vandebeek et al. 2016), women might affect the agency conflict between stakeholders and intergroups in a different way.

Previous studies have, nevertheless, posited that women are not a homogeneous group. This has led to an analysis of the socio-contextual factors that may shed light on what mechanisms explain female leadership in firms (Chadwick and Dawson 2018; Hoobler et al. 2018). Taking this context—and from a SEW approach—familiness faultlines might impact the achievement of family goals (Basco et al. 2019). This faultline could shape female behavior because women's incentives could differ from profit maximizing objectives and could involve preserving family reputation and maintaining family control (Berrone et al. 2012; Sciascia et al. 2014).

Our first hypothesis states that the role played by women in family firms differs to that of their non-family firm counterparts because of the family ties which give rise to contrasting viewpoints and interests between family and non-family females (Bammens et al. 2011; Vandebeek et al. 2016; Filser et al. 2018). Family women are quite often involved in their businesses from the outset, with the family firm forming a vital part of their personal life (Deephouse and Jaskiewicz 2013; Murphy and Lambrechts 2015). Family women may therefore be seen as a subgroup that differs from other female directors, given that women with family ties display a shared culture, business values and socioemotional goals (Sundaramurthy and Kreiner 2008; Cruz et al. 2010). As a consequence, family women identify closely with the business and hold distinctive social and human capital (Zellweger et al. 2010; Vandebeek et al. 2016). As a result—and from a SEW perspective—family women are more involved in non-financial aspects, such as seeking to ensure family control and

pursuing long-term objectives, when compared to non-family women. They also emerge as more risk averse, added to which they support trans-generational succession and the family reputation far more than their non-family counterparts are seen to do (Gómez-Mejía et al. 2007; Chua et al. 2011; Berrone et al. 2012; Sciascia et al. 2014). Family women share certain incentives to hand down their businesses to future generations and to maintain a long-term involvement. They possess unique psychological traits such as family instincts, together with an interest in protecting the family reputation (Cole and Cole 1997; Miller et al. 2007). Moreover, they exhibit greater confidence in and also share more common interests with other family directors compared to their non-family counterparts, which leads to cohesion and superior board performance (Uhlaner et al. 2007; Vandebeek et al. 2016).

In contrast, family women might be seen to exert a different effect to non-family women vis-à-vis the agency conflict between family and other stakeholders (Shulze et al. 2001; Bona-Sánchez et al. 2014). Family women on boards might be the origin of conflicts with other stakeholders, given that a board which lacks the independence needed to be an effective control mechanism may well add to a family's ability—and indeed its incentive—to engage in opportunistic behavior. In this sense, a greater number of non-family female directors may lessen the strength of faultlines, family conflicts, schisms and opportunistic behavior, and could increase the number of shared company objectives, which would then center more on financial rather than socioemotional goals.

The concept of familiness as a faultline has been approached by some studies including Ensley and Pearson (2006) and Minichilli et al. (2010), who explore the topic in the top management team (TMT), and Basco, Campopiano et al. (2017), who examined faultlines between executive and non-executive family board members. Other papers have combined the effect of several faultlines including familiness and gender. García-Meca et al. (2022) and Herdhayinta et al. (2021) analyzed familiness and gender faultlines in the context of dividend policy, Vandebeek et al. (2016) studied the effect of three faultlines simultaneously (family-membership, type of directorship, and gender), while Gonzalez et al. (2020) studied gender, human capital and familiness in the performance of Colombian family firms.

Considering the above, we suggest that family ties affect the presence and the role played by women on boards of directors and we posit the following hypothesis:

*H1. The family ties faultline leads to a different influence of female directors on family performance.*

### 2.1.1 Critical mass, gender, and the family ties faultline

Having family and non-family female directors can help to explain the link between gender diversity and company performance. Family ties can give trigger contrasting viewpoints and interests between family and non-family women (Bammens et al. 2011; Vandebeek et al. 2016) and can affect their role on the board and thereby have a different impact on company performance. In this sense, the degree to which family board members are involved can affect the level to which the family impacts company behavior. Consequently, the weight of socioemotional goals can vary across family firms (De Massis et al. 2015; Sciascia et al. 2014). When carrying

little weight on the board, family women can improve performance because of their desire to hand on the business to coming generations and because of their interest in long-term involvement together with their wish to safeguard the family's reputation (Gomez-Mejía et al. 2007). We anticipate that a low to moderate presence of family female directors will enhance financial performance, given that family women know how to cope with the conflicts that emerge between socioemotional and financial objectives (Cruz et al. 2012). In line with this view, the principal function of female family directors in firms involves monitoring managers' actions so as to safeguard the family's interests (Bettinelli 2011). Furthermore, in line with the faultline perspective, low levels of family female directors can help reduce conflicts with other sub-groups (Li and Hambrick 2005; Minichilli et al. 2010), which positively impacts financial performance.

Nevertheless, the linkage between performance and family female directors is more multifaceted than initially believed, and there are different arguments that defend both a positive and a negative influence. We conjecture that this link might also be dependent upon how many family women directors sit on the board. The second hypothesis we put forward is that only when there are enough (or a high enough proportion of) family and non-family female directors on the board, can they create a critical mass which can exert a significant influence on board discussions and, thereby, on family firm performance.

Following on from this theory, family and non-family female representation is not only different but is also conditional upon the level of representation. We posit that, as the level of female women directors with family ties rises from the optimal point to reach higher levels, the strength of family faultlines might also increase and thereby negatively impact firm performance, given that conflicts with other non-family sub-groups become more prevalent and more acute. Following Lau (2018) and van Knippenberg et al. (2010), faultline strength impacts firm communication and exacerbates task and emotional conflict. Family values such as nepotism, altruism towards relatives or preserving harmony also drive family women to take decisions which may debilitate a family firm's financial interests (Singal and Gerde 2015). In this vein, Minichilli et al. (2010) report that strong faultlines between family and non-family members in top managerial positions could well damage performance. In addition, family female presence on the board beyond the optimal level could trigger conflicts with other stakeholders because the board would not have the necessary independence required to act as an effective control mechanism, which would further a family's ability and incentive to undertake opportunistic behavior (Cuervo 2002; Bona-Sánchez et al. 2014). Following the faultline perspective as well as the agency and SEW theories, family women might therefore impact firm performance differently. There might be a turning point where their presence on the board exceeds the threshold. Exploring this non-linear relationship could account for the inconsistencies reported in previous research concerning gender diversity and family firm performance and it might help to pinpoint at which point female involvement becomes optimal for the firm.

Taking into account the influence of non-family female directors, we believe that there are different incentives with regard to family women directors as well as a different influence on family decisions which depends on the power they have

in the board. We posit that when there is a low number of non-family women directors the role they play in the family board is insignificant, and that they exert no substantial influence on family board discussions. This could diminish the effectiveness of the board and, thereby, company performance. In spite of their knowledge and independence, these women are faced with the difficulty of at the same time being women and non-family members in a family board. Here the critical mass theory (Joecks et al. 2013) maintains that adding one woman to the boardroom makes no significant difference, and that only by securing a sufficient number of women on boards are female directors able to create a critical mass that can exert any substantial influence on board decisions (Liu et al. 2014; Torchia et al. 2011). Adding one non-family woman to the board might also be deemed a family policy aimed at legitimizing itself to other directors. In this situation, independent women might act as mere tokens, and a reduced number of these women in a male-dominated board will reflect no shift in firm policy, such that a critical mass of these non-family women must exist.

Nevertheless, we contend that as the number of non-family women rises, the board increases the number of shared company objectives, which now focus more on financial rather than on socioemotional objectives. A larger number of non-family women enables family firms to benefit from the industry-specific expertise and objective advice that these women possess, which ultimately serves to complement family knowledge. Such non-family women might be considered better advisors than female family directors, since they are better able to recognize problems and also encourage new options to be explored. A board containing experienced, outside, non-family directors could also be vital when seeking to overcome a family's lack of resources and to complement management with experience, skills and knowledge, and so provide a valuable source of competitive advantage (Castaldi and Wortmann 1984). In addition, a greater presence of non-family women directors might curb the strength of faultlines, conflicts and splits and could have a positive effect on family performance. This increased board diversity triggers the creation of weak family faultlines and greater cohesion among sub-groups because more functional interests are represented (Goyal et al. 2008). Moreover, and according to van Kineppenberget al. (2010), when the global team (board) share common goals, the negative impact of faultlines is tempered. In spite of differences among sub-groups, members will probably identify with the team as a whole in this idea of common goals (Goyal et al. 2008). When there are enough non-family women on the board, they can also overcome hurdles linked to their gender and non-family position, since they will more likely feel supported and free to raise key issues (Terjersen et al. 2009). Having a minority position of non-family women directors may prevent the latter from making any substantial contribution to corporate decisions since they are part of the board's "out-group". Amore et al. (2014) also found that companies perform better when there is a high number of women directors, particularly when they are not family members, and Lopez-Delgado and Dieguez-Soto (2020) evidence a critical mass effect of female directors on indebtedness in family firms. Additionally, García-Meca et al. (2022) reported that non-family female directors only influence dividend pay-out when they gain sufficient power, visibility, authority, and legitimacy. Summing up, a positive influence of

non-family women directors in family firms is only seen when independent female voices can be heard and when women do not act as mere tokens (which occurs beyond the critical mass point).

In this sense, we posit a non-linear link between family and non-family directors and company performance, and we contend that the critical mass theory can also impact the consequences of family tie faultlines. In line with García-Meca et al. (2022), we maintain that not only family ties but also board power and visibility can give rise to divergent viewpoints and incentives between family and non-family female directors. We thus propose the following hypothesis:

*H2: The effect of the family ties faultline in the impact of women directors on firm performance is moderated by the existence of a critical mass.*

*H2a: There is an inverted U-shaped relationship between family female directors and firm performance.*

*H2b: There is a U-shaped relationship between non-family female directors and firm performance.*

### 3 3. Research design

#### 3.1 Sample

The initial sample comprises 136 non-financial firms listed on the Spanish stock market at the end of 2020. We thus obtained an unbalanced sample of 1729 firm-year observations, with 88.23% of the firms having six or more observations during the period from 2003 to 2020. Our sample commences in 2003, when a law requiring Spanish listed firms to issue a corporate governance report was passed. In order to define a company as a family firm, we identify the ultimate owner. We use control chain methodology to draw the total control structure through which dominant family owners control firms (Ruiz-Mallorquí and Santana-Martín 2011; Sacristán-Navarro and Gómez-Ansón 2007; Pindado et al. 2014). As a result, we obtain a final sample of 88 family firms and 1,134 firm-year observations, with 86% of the firms having six or more observations between 2003 and 2020. In our regression analysis, the variables are winsorized at 1% to eliminate outliers.

Spain provides an interesting context since, like most countries in continental Europe, it has a weak legal system in terms of minority shareholder protection (Djankov et al. 2008; Bona-Sánchez et al. 2014). The Spanish governance structure is characterized by a high concentration of voting rights in the hands of the controlling shareholders, the separation of voting and cash flow rights, and a significant presence of family-held ownership (Ruiz-Mallorquí and Santana-Martín 2009, Capela et al. 2020).

#### 3.2 Family firms

Data on family firms are taken from Bona-Sánchez et al. (2019), who apply a control chain method to identify dominant or ultimate owners of Spanish listed companies



between 2003 and 2016. This paper adds data from 2017 to 2020. The control chain method enables us to identify the full control structure through which the ultimate or dominant owner has control over the firm (La Porta et al. 1999; Claessens et al. 2000; Faccio and Lang 2002; Ruiz-Mallorquí and Santana-Martín 2011; Sacristán-Navarro and Gómez-Ansón 2007; Pindado et al. 2014). The control chain method provides an accurate specification of ownership structure where the use of pyramids prevails (La Porta et al. 1999; Francis et al. 2005; Bona-Sánchez et al. 2011). A company is therefore defined as a family firm when the ultimate shareholder is an individual or family who –directly or indirectly– holds a voting rights stake equal to or above an established control level. In line with previous literature, this level is set at 10%. Using this method to identify a family as the dominant owner therefore avoids the errors commonly found in pyramidal ownership contexts, such as assigning a voting and cash flow rights level to shareholders which does not reflect their real holding. Moreover, this method does not enable researchers to pinpoint shareholders as dominant owners when they do not occupy the final position in the chain of control. On average, the same family controls family firms for 95% of the eighteen years studied (100% in terms of the median), and 100% of these companies have family members on the board.

### 3.3 Board gender diversity and family ties

We hand-collected information on the presence of women on the boards of family firms for the period 2003–2020 using a number of sources. We examined board composition through annual corporate governance reports published by the Spanish Security Exchange Commission (CNMV). When we identified a woman as a director, we examined her family link to the dominant family owner through family names, company websites and the media or by asking the firms themselves.<sup>1</sup> When we identified a direct family relationship –or one that had been acquired through marriage– the woman was classified as family, and otherwise as non-family.

### 3.4 Variables

In order to examine the effect of gender diversity on firm performance, we use Tobin's *Q* and *ROA*. We define *QTOBIN* as the ratio of the firm's market value to the book value of its assets, while *ROA* is computed as earnings before interest, taxes, depreciation, and amortization divided by total assets (Morck et al. 1988; McConnell and Servaes 1990; Cho 1998; Demsetz and Villalonga 2001; López and Rodríguez 2001; Claessens et al. 2002; Villalonga and Amit 2006; Ferreira and Matos 2008; Ruiz-Mallorquí and Santana-Martín 2011; Bona-Sánchez et al. 2014; Guerra-Pérez et al. 2015). Moreover, in order to further explore the relationship

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<sup>1</sup> Latin countries have two advantages that make it easy to identify family relationships. Firstly, there are two surnames, the first being the father's and the second, the mother's. Secondly, married women keep their maiden names.

between female directors and firm value, we define *FAM\_WD* and *NONFAM\_WD*, respectively, as the percentages of family and non-family female directors sitting on boards of directors.

In addition, we check for certain family control characteristics recognized by earlier research that might affect firm performance. In continental Europe, the use of pyramidal structures is prevalent (La Porta et al. 1999; Claessens et al. 2000; Faccio and Lang 2002), with these structures allowing dominant owners to retain control, thus facilitating the stability of that control (Cuervo 2002). Demsetz and Villalonga (2001) argue that the relationship between family control and firm performance cannot be analysed without disentangling the voting and cash flow rights in the hands of dominant family owners. For this reason, we control the effect of the use of pyramidal structures on firm performance by using the variable *PYRAMID*, measured as the difference between the voting and cash flow rights in the hands of dominant family owners. Given the mixed theoretical and empirical evidence (Johnson et al. 2000; La Porta et al. 2002; Shleifer and Wolfenzon 2002; Friedman et al. 2003; King and Santor 2008), the relationship between pyramids and firm performance becomes an empirical matter. Earlier research suggests that founders and descendants may impact firm performance differently (Morck et al. 1988; Pérez-González 2006; Villalonga and Amit 2006). We therefore include the variable *GENERATION* as a measure that identifies which family generation controls the firm. This variable takes the value of one to four depending on whether the family firm is first, second, third or fourth generation, respectively.<sup>2</sup> Consistent with Villalonga and Amit (2006), we expect this measure to negatively affect firm performance. In addition, previous literature shows that family presence in governance has implications for firm performance (McConaughy 2000; Anderson and Reeb 2004; Pérez-González 2006; Villalonga and Amit 2006; Cucculelli and Micucci 2008). This paper on family firms has yielded mixed evidence on the relationship between family involvement and firm performance. We therefore include the variable *CEO\_HIRE* as a dummy variable that takes the value of one if the president of the board is not a family member, and zero otherwise, and *FAM\_MD*, measured as the percentages of family male directors sitting on boards of directors.

To control for the effect of other firm characteristics that might impact the relationship studied, we include variables generally used in corporate governance literature. We include the variable *SIZE*, measured as the natural logarithm of total assets and *DEBT*, which we measure as total debt divided by total assets, to consider the effect of agency costs on firm performance. Moreover, the board of directors plays a central role in corporate governance. Whereas a larger number of directors might initially facilitate board functions, an excessive number of directors might suffer coordination and communication problems; hence, board effectiveness declines (Jensen 1993; de Andrés et al. 2005; Guest 2009; Martínez-Ferrero and García-Meca 2020). We thus include the variable *BOARD*, measured as the natural logarithm of total directors. In addition, to capture the influence of other large shareholders we include the Herfindahl concentration index (*HERFINDAL*). We also use

<sup>2</sup> We identify the generation through the firms' websites and by directly asking the firms themselves.

annual betas as a control of risk market measure (*BETA*), and firm age (*AGE*) to control the effect of the firm's lifecycle on performance. Finally, to control the effect of information asymmetry on firm performance, we include the presence of the firm in the main Spanish stock market index (Odriozola and Baraibar-Diez 2017; Peña et al. 2022) through the variable *IBEX35*, measured as a dummy variable that takes the value of one if the firm is included in the Ibex-35, and zero otherwise. Research on corporate governance has yielded mixed evidence on the relationship between these firm characteristics and firm performance. The description of the variable is summarized in the Appendix.

## 4 Results

### 4.1 Descriptive statistics

Table 1 (Panel A) shows the evolution of gender diversity in Spanish listed family firms during 2003–2020. The panel details the percentage of family businesses and the presence of women as board members. Results show that most Spanish listed companies have a family member as a dominant owner, which is consistent with earlier research focusing on the Spanish market (Sacristán-Navarro and Gómez-Ansón 2007; Ruiz-Mallorquí and Santana-Martín 2009, 2011; Bona-Sánchez et al. 2011; Pindado et al. 2014; Guerra-Pérez et al. 2015).

As regards the presence of women on the boards of family firms, results show an increase in the number board of directors that have at least one female member. In 2003, 31.11% of family firms had at least one female director. By 2020, the percentage had risen to 93.10%. Panel B of Table 1 shows that board size has remained constant at around ten directors during the period 2003–2020, and with a greater presence of female directors. Thus, while in 2003 the mean number of women on the boards of family businesses was one, the mean number of female directors was almost three in 2020. When analyzing the percentage of female directors and their family ties with the dominant owner, we note that the increase in women directors is due to the fact that the number of non-family women directors has grown. Panel C of Table 1 reports the tests of the mean comparisons between firms with and without gender diversity in their boards. Mean comparisons show that family and non-family companies with gender diversity on their boards are significantly bigger, have a larger number of directors and display greater divergence among the dominant owners' voting and cash flow rights. Moreover, family firms without women directors have a significantly greater presence of male family directors. However, firms with and without gender diversity on their boards do not differ with regard to performance, ownership concentration, debt, age, and stock market risk. Table 1 (Panel D) shows how over half of the family firms are in their first generation, around 40% have a non-family member CEO, and that 18.23% are included in the Ibex-35. Finally, Panel E reports the correlations among the variables and suggests that multicollinearity does not affect subsequent regressions. Nevertheless, we conducted a formal test to ensure that multicollinearity was not present in our regressions. Specifically, we calculated the variance inflation factor (VIF) for each

**Table 1** Descriptive statistics and matrix correlation

	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
<i>Panel A. Family firms and gender diversity</i>																		
Family firms (%)	54.22	57.14	60.67	65.98	70.64	67.89	69.81	71.84	71.00	67.35	67.74	67.68	62.50	62.63	63.73	63.53	64.37	66.67
Family firms with at least one female director	31.11	27.08	29.63	50.00	50.65	56.76	60.81	60.81	60.56	63.64	65.08	65.67	73.33	79.03	78.46	85.19	91.07	93.10
<i>Panel B. Board of directors and women directors</i>																		
<i>Board size</i>																		
Mean	11.20	11.07	10.83	10.72	10.81	10.98	10.76	10.80	10.64	13.31	9.92	10.14	10.11	10.11	9.97	10.32	10.02	9.89
Median	11.00	11.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00
S.D	4.41	3.93	3.85	3.65	3.75	3.59	3.28	3.34	3.26	3.53	3.34	3.17	3.15	3.18	3.12	3.09	3.13	3.13
1st Q	8.00	8.00	8.00	9.00	9.00	9.00	9.00	9.00	9.00	8.00	8.00	8.00	8.00	8.00	7.00	8.00	7.00	7.00
3rd Q	14.00	13.00	12.00	13.00	13.00	13.00	13.00	13.00	12.00	13.00	12.00	12.00	13.00	12.00	13.00	13.00	13.00	12.00
<i>Women directors<sup>d</sup></i>																		
Mean	1.26	1.34	1.35	1.42	1.53	1.56	1.59	1.61	1.74	1.81	1.79	1.82	1.88	2.12	2.30	2.51	2.75	3.00
Median	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	3.00
S.D	0.54	0.77	0.91	0.96	1.00	0.96	0.85	0.89	1.00	1.08	1.03	1.01	0.98	1.24	1.19	1.29	1.31	1.31
1st Q	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00
3rd Q	1.00	1.00	1.00	1.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	3.00	3.00	4.00	4.00
<i>Family women directors<sup>d</sup></i>																		
Mean	1.00	1.15	1.37	1.09	1.15	1.04	0.91	0.88	0.93	0.95	0.93	0.77	0.79	0.74	0.69	0.66	0.62	0.62
Median	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.50	0.00	0.00
S.D	0.87	1.21	1.25	1.11	1.08	1.12	1.08	1.02	1.09	1.18	1.14	0.93	0.88	0.74	0.89	0.86	0.85	0.85
1st Q	0.00	0.00	1.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3rd Q	1.00	1.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Table 1** (continued)

<i>Panel B. Board of directors and women directors</i>																			
<i>Non-family women directors<sup>a</sup></i>																			
	Mean	0.35	0.38	0.25	0.50	0.53	0.59	0.75	0.75	0.72	0.85	0.92	0.84	0.97	1.04	1.23	1.50	1.60	1.77
Median	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00
S.D	0.49	0.50	0.44	0.62	0.75	0.70	0.77	0.82	0.88	0.88	0.87	0.95	0.80	0.76	0.91	1.15	1.14	1.18	1.17
1st Q	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	1.00
3rd Q	1.00	1.00	0.50	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	2.00	2.00	2.00
<i>Panel C. Gender diversity and firm characteristics in family firms and non-family firms</i>																			
<i>Non-family firms with board gender diversity N=367</i>													<i>Non-family firms without board gender diversity N=228</i>					t-Student	
	Mean	Median	S.D	1st Q	3rd Q	Mean	Median	S.D	1st Q	3rd Q									
QTOBIN	1.46	1.25	0.67	1.07	1.62	1.40	1.15	0.74	0.96	1.51									
ROA	0.06	0.06	0.06	0.03	0.09	0.05	0.06	0.06	0.02	0.09									
BOARD	2.41	2.39	0.32	2.30	2.63	2.30	2.30	0.35	2.19	2.48									
SIZE	15.11	15.20	1.97	13.34	16.61	14.00	13.63	1.88	12.50	15.37									
DEBT	0.64	0.66	0.18	0.53	0.76	0.62	0.64	0.17	0.51	0.73									
PYRAMID <sup>b</sup>	2.71	0.00	3.83	0.00	2.41	1.46	0.00	5.71	0.00	0.00									
AGE	52.27	41.00	30.39	29.00	79.00	53.48	46.00	29.28	31.00	79.00									
HERFINDAL	0.10	0.04	0.15	0.01	0.09	0.10	0.04	0.15	0.01	0.13									
BETA	0.90	0.98	0.72	0.87	1.09	0.92	1.02	0.92	0.94	1.08									
<i>Family firms with board gender diversity N=713</i>													<i>Family firms without board gender diversity N=421</i>					t-Student	
	Mean	Median	S.D	1st Q	3rd Q	Mean	Median	S.D	1st Q	3rd Q									
QTOBIN	1.50	1.22	0.79	1.00	1.63	1.52	1.22	0.79	1.00	1.70									
ROA	0.04	0.04	0.07	0.01	0.08	0.04	0.05	0.07	0.01	0.08									

**Table 1** (continued)

	Family firms with board gender diversity $N=713$				Family firms without board gender diversity $N=421$				t-Student
	Mean	Median	S.D	3rd Q	Mean	Median	S.D	3rd Q	
BOARD	2.29	2.30	0.32	2.07	2.18	2.19	0.35	2.39	5.52***
SIZE	13.68	13.91	1.91	12.08	13.13	13.00	1.64	14.07	4.89***
DEBT	0.63	0.64	0.21	0.48	0.64	0.63	0.20	0.79	0.91
PYRAMID	5.96	0.00	9.10	0.00	3.28	0.00	5.93	3.63	5.39***
FAM_MD	16.53	14.28	12.36	8.33	18.19	14.28	17.42	25.00	-1.86*
AGE	47.15	42.00	28.78	24.00	49.03	47.00	30.59	67.00	-1.03
HERFINDAL	0.21	0.15	0.18	0.07	0.20	0.13	0.19	0.30	0.91
BETA	0.86	1.01	0.93	0.86	0.89	1.02	1.40	1.10	0.32

<i>Panel D. Descriptive statistics of count variables</i>				
	1st	2nd	3rd	4th
GENERATION (%)	53.30	26.11	15.36	5.24
CEO_HIRE (%)	38.39			
IBEX35 (%)	18.23			

<i>Panel E. Matrix correlation</i>														
	QTOBIN	ROA	FAM_WD	NON_FAM_WD	BOARD	SIZE	DEBT	PYRAMID	FAM_MD	AGE	HERFINDAL	BETA	GENERATION	CEO_HIRE
ROA	0.27***													
FAM_WD	-0.03	0.04												
NON_FAM_WD	-0.005	-0.04	-0.11***											
BOARD	-0.18***	0.13***	-0.01	0.006										

Table 1 (continued)

Panel E. Matrix correlation

	QTOBIN	ROA	FAM_WD	NON_FAM_WD	BOARD_SIZE	DEBT	PYRA-MID	FAM_MD	AGE	HERFIN-DAL	BETA	GENERATION	CEO_HIRE
SIZE	-0.23***	0.14***	0.04	0.09***	0.63***								
DEBT	-0.10***	-0.35***	-0.08***	0.01	0.09***	0.25***							
PYRA-MID	0.11***	0.14***	0.19***	0.02	0.06**	0.05*	0.02						
FAM_MD	0.02	0.06**	-0.05**	-0.10***	-0.24***	-0.13***	-0.04						
AGE	-0.11***	0.009	0.009	-0.03	0.16***	0.15***	-0.13***	-0.007					
HERFIN-DAL	0.09***	0.02	0.16***	-0.04	-0.22***	0.06**	0.09***	0.23***	-0.08***				
BETA	-0.18***	-0.01	0.02	-0.05*	0.09***	0.05*	0.05**	-0.02	0.04	-0.06**			
GENERATION	-0.13***	0.08***	0.13***	-0.01	0.13***	0.02	-0.10***	0.22***	0.32***	0.01	0.05**		
CEO_HIRE	-0.05**	0.005	-0.02	0.07**	0.04*	-0.05*	-0.08**	-0.22***	-0.10***	-0.04	0.03	0.12***	
IBEX35	0.08***	0.20***	-0.004	0.008***	0.43***	0.61***	0.07**	-0.09***	0.11***	-0.01	0.05*	0.05*	0.01
VIF													
BOARD	2.11												
SIZE	2.67												
DEBT	1.16												
PYRA-MID	1.17												
FAM_MD	1.34												
AGE	1.26												

Table 1 (continued)

*Panel E. Matrix correlation*

	QTOBIN	ROA	FAM_	NON	BOARD	SIZE	DEBT	PYRA-	FAM_	AGE	HERFIN-	BETA	GENER-	CEO_
			WD	FAM_				MID	MD		DAL		ATION	HIRE
HERFIN-	1.35													
DAL														
BETA	1.02													
GENER-	1.38													
ATION														
CEO_	1.16													
HIRE														
IBEX35	1.67													

\*\*\*, \*\*, \* statistically significant at 1%, 5% and 10%, respectively. <sup>a</sup> Percentages calculated in firms with female directors. <sup>b</sup> Voting rights and divergence between voting and cash flow rights in the hands of the dominant owner in non – family firms.



independent variable included in the estimated model. The highest VIF for our models was well below five, indicating that multicollinearity was not a problem in our sample.

## 4.2 Gender diversity on boards and performance in family firms

We use the panel data methodology known as the generalized method of moments (GMM) to estimate the link between board gender diversity and firm performance. This technique allows us to address potential problems of endogeneity and reverse causality. Panel data enable us to control for individual heterogeneity by modelling it as a single effect. We are therefore able to reduce the risk of biased results caused by the correlation between the error term and the explanatory variables (Pindado et al. 2014). As a result, we split the error term into four elements: (1) firm-specific effect, (2) year effect captured with dummy variables so as to control the impact that macroeconomic factors have on company performance and to alleviate the issue of cross-sectional correlation (Petersen 2009), (3) industry effect captured by using industry dummy variables, and 4.) random error. The second problem concerns reverse causality (Adams and Ferreira 2009; Pindado et al. 2014). In this regard, the composition of the board can influence firm performance. Nevertheless, dominant family owners may be more likely to alter the composition of the board in low-performing firms (Hermalin and Weisback 2001; Carter et al. 2003; Villalonga and Amit 2006). In order to test our hypothesis, system GMM may be viewed as the most suitable method for estimating firm performance that is related to board gender diversity. This technique is able to account for the endogeneity of all time-dependent explanatory variables (Wintoki et al. 2012; Pindado et al. 2014). As these authors argue, GMM employs a set of internal instruments (lags of explanatory variables) and eliminates the need for external instrumental variables, since it is hard to find an external instrument which can comply with the conditions that are critical for any given instrument. The variables on the right-hand side of the model lagged two to five times are used as instruments, with the exception of year and industry effects variables, which are deemed exogenous. The consistency of GMM estimates depends on the absence of second-order serial autocorrelation in the residuals and on instrument validity. The Hansen statistic of over-identifying restrictions is used to test for possible model misspecification. We then examine the m2 statistic developed by Arellano and Bond (1991) in order to test for the absence of second-order serial correlation in the first difference residual. Finally, we perform three Wald tests; a Wald test of the joint significance of the coefficients reported ( $z_1$ ), a Wald test of the joint significance of industry dummies ( $z_2$ ), and a Wald test of the joint significance of time dummies ( $z_3$ ). The general model used to test our hypothesis can be expressed as follows:

$$\begin{aligned} FIRM PERFORMANCE_{it} = & \beta_0 + \alpha_1 WD_{it} + \beta_2 WD_{it}^2 + \beta_3 GENERATION_{it} \\ & + \beta_4 FAM\_MD_{it} + \beta_5 SIZE_{it} + \beta_6 DEBT_{it} + \beta_7 PYRAMID_{it} \\ & + \beta_8 BOARD_{it} + \beta_9 IBEX35_{it} + \beta_{10} CEO\_HIRE_{it} + \beta_{11} AGE_{it} \\ & + \beta_{12} HERFINDAL_{it} + \beta_{13} BETA_{it} + \delta_k + \theta_j + \mu_{it} \end{aligned}$$

Models 1 to 4 (Table 2) show the effects of family and non-family female directors on firm performance (QTOBIN and ROA). Specifically, results indicate a

**Table 2** Board gender diversity and firm performance

	Dependent variable: QTOBIN		Dependent variable: ROA	
	(Model 1)	(Model 2)	(Model 3)	(Model 4)
FAM_WD	0.026*** (2.97)		0.028*** (10.19)	
FAM_WD <sup>2</sup>	-0.0005*** (-5.67)		-0.0006*** (-11.02)	
NONFAM_WD		-0.010*** (-4.12)		-0.031** (-2.03)
NONFAM_WD <sup>2</sup>		0.0003** (1.96)		0.0009*** (2.59)
GENERATION	-0.040 (-1.42)	-0.101*** (-8.18)	-0.005 (-1.34)	-0.013 (-1.04)
FAM_MD	-0.002** (-2.21)	-0.0007 (-0.87)	-0.0003 (-1.59)	-0.0003 (-0.54)
SIZE	-0.182*** (-7.69)	-0.201*** (-22.92)	-0.004* (-1.74)	-0.016*** (-4.59)
DEBT	0.406*** (5.69)	0.108** (2.04)	0.147*** (11.04)	0.073** (2.55)
PYRAMID	-0.001 (-1.26)	0.0009 (0.65)	0.0007*** (56.21)	0.0009 (1.54)
BOARD	0.032 (0.48)	0.230*** (5.72)	0.007 (0.70)	0.038* (1.85)
IBEX35	0.653*** (10.57)	0.573*** (17.59)	0.035*** (4.04)	0.053*** (3.38)
CEO_HIRE	0.053 (1.48)	0.120*** (5.17)	-0.005 (-0.90)	-0.006 (-0.59)
AGE	0.01 (0.80)	-0.001*** (-3.42)	-0.001 (-0.94)	-0.0006 (-0.85)
HERFINDAL	0.689*** (7.94)	0.042 (0.82)	-0.001 (-0.21)	-0.024 (-1.20)
BETA	-0.063 (-5.27)	-0.102*** (-13.56)	-0.003*** (-5.48)	-0.006 (-0.85)
Industry effect	Yes	Yes	Yes	Yes
Year effect	Yes	Yes	Yes	Yes
Constant	3.260*** (19.14)	3.582*** (29.01)	0.055* (1.78)	0.028* (1.79)
M <sup>2</sup>	1.30	1.28	1.23	0.57
Z <sup>1</sup>	36.58***	198.84***	75.84***	5.02***
Z <sup>2</sup>	28.08***	36.84***	11.76***	2.07***
Z <sup>3</sup>	172.16***	92.96***	244.33***	36.24***
Hansen test	97.34 (418)	94.77 (415)	94.67 (418)	53.17 (546)
Sasabuchi test (Utest). Fam_WD	2.97***		10.19***	
Sasabuchi test (Utest). NonFam_WD		2.98***		2.98***

Generalized method of moments estimates

Hansen; the test of over-identifying restrictions, under the null hypothesis that all instruments are uncorrelated with the disturbance process. The Sasabuchi test confirms a quadratic relation.  $m^2$  is the statistical test for lack of second-order serial correlation in the first-difference residual.  $z^1$  is the Wald test of the joint significance of the reported coefficients.  $z^2$  is the Wald test of the joint significance of time dummies.  $z^3$  is the Wald test of the joint significance of industry dummies. \*\*\*, \*\*, \* statistically significant at 1%, 5% and 10%, respectively. In parentheses, t-statistics based on robust standard errors

nonlinear relationship (+/−) between the percentage of family female directors on the board and firm performance. However, results also show a nonlinear relationship (−/+ ) when we focus on non-family female directors. Results are therefore consistent with our hypothesis.

As regards the control variables, the results in Table 2 show that the succession of generations, the percentage of family male directors, firm size, firm age, and stock market risk negatively affect firm performance. However, the level of debt, the number of directors, the use of pyramidal structures, the ownership concentration and the presence of a non-family member as president positively affect family firm performance.

To determine the (IP) of quadratic relationships, we derive the optimal percentage of family and non-family female directors at the point of maximum or minimum firm performance, respectively (see Fig. 1). The inflection points at which the percentage of family female directors begin to negatively impact *QTOBIN* and *ROA* are 26% and 23.33%, respectively ((IP *QTOBIN*. *FAM\_WD* =  $\beta_1 / 2 \times \beta_2$ ;  $0.026 / 2 \times 0.0005$ ; IP *ROA*. *FAM\_WD* =  $\beta_1 / 2 \times \beta_2$ ;  $0.028 / 2 \times 0.0006$ ), while the break-points at which the influence of the percentage of non-family female directors turns from negative to positive are 16.6% and 17.22%, respectively (IP *QTOBIN*. *NON-FAM\_WD* =  $\beta_1 / 2 \times \beta_2$ ;  $0.010 / 2 \times 0.0003$ ; IP *ROA*. *NONFAM\_WD* =  $\beta_1 / 2 \times \beta_2$ ;  $0.031 / 2 \times 0.0009$ ). Figure 1 shows that the majority of companies in the sample are in the positive interval of the inverted U-shaped relation between family female directors and firm performance. Figure 1 also shows that most family firms are in the negative interval of the U-shaped relation between non-family female directors and firm performance.

### 4.3 Sensitivity analysis

In this section, we extend our analysis concerning how family and non-family women directors might impact family firm performance. In order to test whether our results are sensitive to the definition of family firms, we define a family firm as a company where the main owner is a family or an individual who directly or indirectly owns a voting rights stake equal to or above 25% and where family members sit on the board<sup>3</sup> (Models 5 to 8 in Table 3). Results do not differ from those shown in Table 2.

In addition, although the GMM estimation limits the problems derived from endogeneity, we alternatively use another of the methods most frequently employed in the previous literature to address this problem; the estimation of ordinary least squares in two stages (2SLS). Specifically, in Table 4, we employ the instrumental variable approach to obtain the exogenous element from gender diversity and then use it to estimate firm performance. Previous literature establishes a positive relationship between the presence of women on the boards of directors and a firm's reputation and good public image (Brammer et al. 2009; Bear et al. 2010;

<sup>3</sup> This definition of family firms is consistent with the definition of family listed firms established by the European Commission.

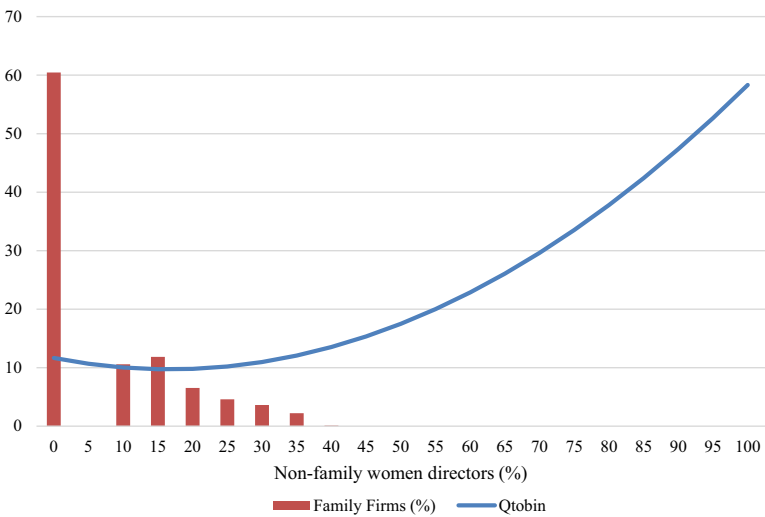
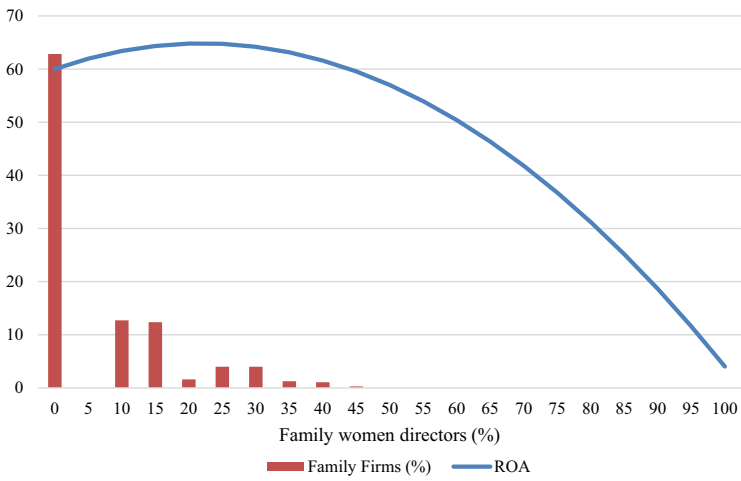
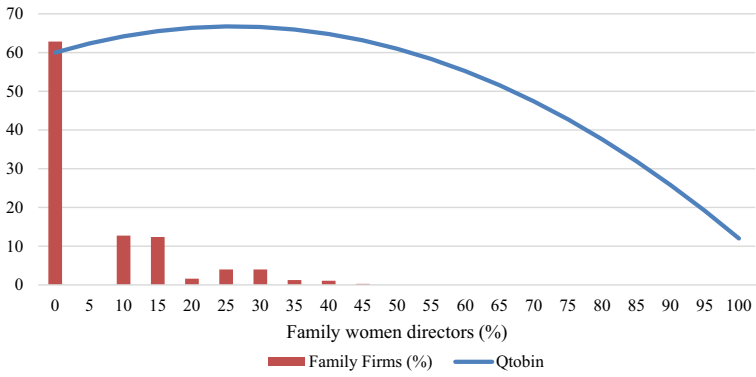
**Fig. 1** The quadratic relationship between board gender diversity and firm performance. This figure shows the inverted U-shaped relation between family female directors and firm performance. The figure also shows the U-shaped relation between non-family female directors and firm performance

Mallin and Michelon 2011; Baselga-Pascual et al. 2018). Following earlier research (Fernández-Sánchez and Luna-Sotorrio 2007; Delgado-García et al. 2010; Odriozola and Baraibar-Díaz 2017). We use the Spanish Monitor of Corporate Reputation (MERCOS) reputational assessment tool as a measure of public reputation. MERCOS has annually measured the reputation of firms that operate in Spain, as done by Fortune or the Financial Times, since the year 2000. MERCOS takes the main role of ranking corporate reputation in Spain by considering the perceptions of all stakeholders and by collecting data from different sources of information (interviews with directors, assessment by experts, direct assessment and MERCOS tracking on corporate reputation from the population as a whole). We use *REPUTATION* as a dummy variable that takes the value of one if the firm is included in MERCOS, and zero otherwise. Table 4 (Panel A) shows the results of the first-stage regressions where the dependent variable is the percentage of family women directors and non-family women directors. For the sake of brevity, we report the coefficient estimates for the main variable *REPUTATION*, which is seen to positively affect board gender diversity. In addition, we report the Anderson LM and the Cragg-Donald Wald F statistics test for lack of under-identification and weak-identification, respectively, rejecting the null hypothesis in both. Table 4 (Panel B) shows the second-stage regressions, where the dependent variables are *QTOBIN* (Models 9 and 10) and *ROA* (Models 11 and 12). Results are consistent with the results in Table 2.

#### 4.4 Further analysis

In order to shed more light on previous explanations, we performed additional analyses. Johnson et al. (2013) argue that female director attributes, such as experience or skills, affect their role on boards. We use the tenure of women directors to capture relational board capital through the experience of female board members (Bennouri et al. 2018). The tenure of women directors reflects the knowledge about the strategy and functioning of the firm (Harris and Shimizu 2004; McDonald et al. 2008). However, longer tenure may be associated with greater inflexibility and increased resistance to innovation (Katz and Allen 1982) and is more likely to result in less effective monitoring, as proposed by the friendliness hypothesis (Vafeas 2003). These effects of director tenure could lead to a non-linear relationship between tenure and the role of the board (Johnson et al. 2013). In line with Hillman et al. (2011) and Bennouri et al. (2018), we analyze the effect of female director tenure by using the variables *TENURE\_FAMILY\_WD* and *TENURE\_NONFAMILY\_WD*, measuring the average number of years that family and non-family women directors have spent on the board, respectively.

Models 13 to 16 (Table 5) show the effects of tenure of family and non-family female directors on firm performance. Specifically, results indicate a nonlinear



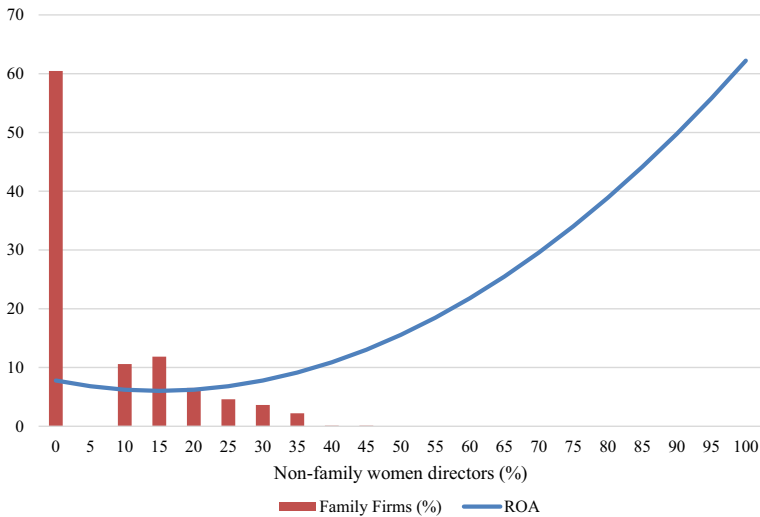


Fig. 1 (continued)

relationship (+/−) between the tenure of family female directors on the board and firm performance. However, results also show a nonlinear relationship (−/+ ) when we focus on non-family female directors. Results show that the relational capital of family and non-family women directors has a similar effect on firm performance to the proportion of women directors.

To determine the (IP) of quadratic relationships, we derive the optimal tenure of family and non-family female directors at the point of maximum or minimum firm performance, respectively (see Fig. 2). The inflection points at which the tenure of family female directors begins to negatively impact *QTOBIN* and *ROA* are 12.5 and 10 years, respectively ((IP. *QTOBIN*. *FAM\_WD* =  $\beta_1/2 \times \beta_2$ ;  $0.025/2 \times 0.001$ ; IP. *ROA*. *FAM\_WD* =  $\beta_1/2 \times \beta_2$ ;  $0.006/2 \times 0.0003$ ), while the breakpoints at which the influence of the percentage of non-family female directors turns from negative to positive are seven and three years, respectively (IP. *QTOBIN*. *NONFAM\_WD* =  $\beta_1/2 \times \beta_2$ ;  $0.104/2 \times 0.001$ ; IP. *ROA*. *NONFAM\_WD* =  $\beta_1/2 \times \beta_2$ ;  $0.002/2 \times 0.0003$ ). Figure 2 shows that the majority of the companies in the sample are in the positive interval of the inverted U-shaped relation between tenure of family female directors and firm performance. Figure 2 also shows that most family firms are in the positive interval of the U-shaped relation between tenure of non-family female directors and firm performance.

**Table 3** Board gender diversity and dominant family owner. Sensitivity analysis I

	Dependent variable: QTOBIN		Dependent variable: ROA	
	(Model 5)	(Model 6)	(Model 7)	(Model 8)
FAM_WD	0.030*** (2.59)		0.022*** (3.06)	
FAM_WD <sup>2</sup>	-0.0006*** (-2.76)		-0.0005*** (-3.24)	
NONFAM_WD		-0.014*** (-4.12)		-0.003*** (-8.41)
NONFAM_WD <sup>2</sup>		0.0005*** (2.61)		0.0001*** (10.08)
GENERATION	-0.160 (-1.05)	-0.087*** (-4.87)	-0.005 (-1.14)	-0.004* (-1.80)
FAM_MD	-0.005 (-0.61)	-0.005*** (-5.37)	-0.006** (-2.45)	-0.002 (-1.51)
SIZE	-0.103 (-1.50)	-0.131*** (-10.71)	-0.011*** (-4.24)	-0.017*** (-11.43)
DEBT	0.025 (0.50)	0.383*** (6.04)	0.176*** (11.88)	0.152*** (18.78)
PYRAMID	0.015*** (3.37)	0.004*** (2.60)	0.002*** (5.68)	0.002*** (10.50)
BOARD	-0.012 (-0.30)	-0.073 (-1.16)	0.001 (0.13)	0.044*** (5.51)
IBEX35	0.770*** (3.46)	0.704*** (13.55)	0.038*** (3.33)	0.0008 (0.12)
CEO_HIRE	0.028 (0.21)	0.100*** (3.62)	0.0008 (0.12)	0.025*** (7.18)
AGE	-0.008 (-0.20)	-0.001* (-1.62)	0.002 (0.13)	0.006 (0.81)
HERFINDAL	0.228 (0.75)	0.069 (1.18)	-0.001 (-0.10)	0.008*** (11.66)
BETA	-0.198*** (-10.66)	-0.104*** (-10.44)	-0.007*** (-3.65)	-0.011*** (-11.66)
Industry effect	Yes	Yes	Yes	Yes
Year effect	Yes	Yes	Yes	Yes
Constant	3.950** (2.13)	3.172*** (17.06)	-0.021 (-0.57)	0.041* (1.74)
M <sup>2</sup>	0.86	1.09	0.90	0.45
Z <sup>1</sup>	23.78***	48.92***	30.91***	40.45***
Z <sup>2</sup>	24.70***	26.06***	26.67***	73.85***
Z <sup>3</sup>	28.39***	34.48***	26.29***	59.25***
Hansen test	27.84(247)	32.12 (242)	39.28 (245)	29.83 (247)
Sasabuchi test (Utest). Fam_WD	2.96***		2.81***	
Sasabuchi test (Utest). NonFam_WD		1.69**		13.76***

Generalized method of moments estimates

25% of voting rights threshold to identify a family firm

Hansen; the test of over-identifying restrictions, under the null hypothesis that all instruments are uncorrelated with the disturbance process. The Sasabuchi test confirms a quadratic relation.  $m^2$  is a statistical test for the lack of second-order serial correlation in the first-difference residual.  $z_1$  is the Wald test of the joint significance of the reported coefficients.  $z_2$  is the Wald test of the joint significance of time dummies.  $z_3$  is the Wald test of the joint significance of industry dummies \*\*\*, \*\*, \* statistically significant at 1%, 5% and 10%, respectively

## 5 Discussion

Analyzing family and non-family female directors separately, we examine what effect women directors have on firm performance. Family firms offer a very interesting context to explore the role played by women since there are more women in top management in family than in non-family firms (Ernst and Young 2015) and because they are increasingly being appointed to key roles (Barret and Moores 2009).

Our findings provide support for the idea that women directors should not be deemed a homogeneous group and we also confirm the impact that family faultlines (family ties) have on company performance (H1). We demonstrate the existence of family faultlines among female directors and note that these faultlines do have an impact on family firm performance. Our findings also lend support to hypothesis H2a concerning the inverted U-shaped influence of family women directors on company performance. The results show the socioemotional benefits derived from appointing family women directors and we also evidence how some of these specific female attributes (a desire to hand down the business to future generations, long-term involvement and a wish to protect the family reputation) prove beneficial to family firm performance. Nevertheless, a high number of family female directors could place greater emphasis on socioemotional goals. The results also confirm stronger family faultlines as the number of family female directors exceeds the optimal level, which may trigger disputes and communication problems. As the number of family female directors exceeds a specific breakpoint, conflicts with other non-family sub-groups thus become more evident and serious, thereby damaging family firm performance. Viewed from an agency perspective, lower level family female directors exhibit a greater capacity as well as a greater incentive to limit managers' opportunistic actions. Nevertheless, conflicts with other stakeholders might arise when there is a greater presence of family women on boards, since this increases the family's ability as well as its incentives for opportunistic behavior. The results also indicate that virtually all the family firms in the sample are in the positive interval of the relationship. The results evidence that family firms might appoint family female directors in order to benefit from the positive aspects they offer, although we also find that too many family women directors may increase conflicts or weaken the financial goals pursued. These results concur with the findings of Sciacia et al. (2014), who report a non-linear link between a family's involvement on the board and sales internationalization. The results also follow García-Meca et al. (2022), who reported that family female directors reduce dividend payouts when their presence on the board exceeds a critical mass threshold. The results also confirm and show that non-family women on boards are prone to take decisions geared towards enhancing performance as their presence on the board increases. Our study also furthers current understanding of the impact these directors have –based on their family ties– and which was also reported by Minichilli et al. (2010) and Bianco et al. (2015).

From the critical mass perspective, our work supports hypothesis H2b in the sense that when the number of non-family female directors exceeds the optimal



**Table 4** Board gender diversity and dominant family owner

	Dependent variable: family women directors		Dependent variable: non-family women directors	
<i>Panel A: First-stage regressions</i>				
REPUTATION	1.058*** (3.29)		0.690** (2.26)	
Controls	Yes		Yes	
Industry effects	Yes		Yes	
Year effects	Yes		Yes	
Anderson LM statistics	30.17***		5.14**	
Cragg-Donald (CD) Wald F-statistic	10.80***		5.10**	
	Dependent variable: QTOBIN		Dependent variable: ROA	
	(Model 9)	(Model 10)	(Model 11)	(Model 12)
<i>Panel B. Second – stage regressions</i>				
FAM_WD	0.494*** (2.90)		0.023* (1.69)	
FAM_WD <sup>2</sup>	−0.011*** (−2.95)		−0.0004* (−1.77)	
NONFAM_WD	−0.491** (−2.06)		−0.003*** (−3.24)	
NONFAM_WD <sup>2</sup>	0.017** (2.05)		0.0001*** (3.02)	
GENERATION	−0.197*** (−3.21)	−0.07 (−1.14)	−0.018*** (−2.67)	−0.003* (−1.64)
FAM_MD	−0.007** (−2.00)	−0.002 (−0.73)	−0.0001 (−0.30)	−0.002* (−1.80)
SIZE	−0.164*** (−4.56)	−0.145*** (−2.79)	0.011 (1.60)	0.003 (0.20)
DEBT	0.171** (2.31)	0.305** (2.29)	0.438*** (4.06)	0.010 (1.33)
PYRAMID	0.005 (1.06)	0.018** (2.39)	0.001** (1.98)	0.008*** (3.65)
BOARD	0.752** (2.49)	0.381 (1.35)	−0.006 (−0.28)	0.017** (2.42)
IBEX35	0.960*** (6.91)	0.683*** (3.86)	0.023 (1.39)	0.229*** (4.23)
CEO_HIRE	0.106 (1.24)	0.262** (2.03)	−0.012 (−1.04)	0.003 (0.81)
AGE	0.001 (0.90)	0.003 (1.43)	−0.005*** (−3.11)	0.003 (0.53)
HERFINDAL	0.411 (1.14)	−0.437 (−0.89)	0.065* (1.85)	−0.016 (−1.28)
BETA	−0.111*** (−3.21)	−0.227*** (−3.30)	−0.013*** (−2.64)	−0.002 (−1.59)
Industry effect	Yes	Yes	Yes	Yes
Year effect	Yes	Yes	Yes	Yes
Constant	5.022*** (10.80)	3.830*** (6.76)	0.167** (2.54)	0.028 (1.40)
F test	7.86***	4.63***	3.56***	9.14***

**Table 4** (continued)

Sensitivity analysis I. (Ordinary least squares in two stages, 2SLS)

Anderson LM and Cragg-Donald (CD) Wald F statistic test for lack of under-identification and weak identification, respectively. \*\*\*, \*\*, \* statistically significant at p.01, p.05 and p.10, respectively

point high levels of diversity are reached which result in large homogenous sub-groups and superior performance. This increased number of non-family ties reduces family faultlines and improves cohesion among sub-groups of females, as there is a greater representation of functional interests. Another opinion emphasizes that when sub-groups are balanced, common and shared interests gain in importance. This common view shared by the board, and which places the focus on financial rather than on socioemotional goals, may positively impact family firm performance. Yet in spite of the positive impact that non-family directors have on firm performance, results demonstrate that the majority of the firms in the sample are found in the negative range of the relationship. Results indicate that in most family businesses, women who lack any family ties tend to act as mere tokens, as they do not represent a critical mass which can positively impact firm performance. The results concur with the literature, which contends that nominating non-family directors can help to stave off tensions and dispel conflicts and so promote family firm performance (Anderson and Reeb 2004). The results also agree with Binacci et al. (2016), who maintain that the non-family component of high-level management leads to superior performance. These results also demonstrate that family and non-family female director tenure has a similar non-linear impact on company performance to the proportion of female directors, which indicates that female directors' relational board capital is a key aspect of the role they play on the board.

This paper extends the faultline theory, which states that diversity is more easily understood when taking the impact of its different dimensions as a whole. Other boardroom faultlines linked to educational or functional background (industry background heterogeneity) or to demographic attributes (such as nationality, race, age) might also impact board discussion, and offer key avenues for future inquiry.

This paper also makes a contribution to the socioemotional wealth perspective by providing support for the “dark side” of SEW when there is an excess of family ties amongst women directors. In addition, the paper contributes to the agency theory—both principal-principal conflict and intra-family conflict. We specifically suggest that family ownership levels affect intra-family agency costs. This is due to the fact that—when compared to non-family women directors—family women are keen to keep the peace within family firms so as to avoid any conflicts among relatives. Our study also indicates that agency costs between minority and controlling shareholders (principal-principal agency problem) could rise when there are too many family women directors in family firms (beyond the optimal point), given that it could hinder the independence needed to act as an effective control mechanism. This might therefore increase a family's ability—and indeed its incentive—to undertake opportunistic behavior. Furthermore, the under-representation of non-family female directors could show that dominant family owners take advantage of board composition for their own ends by implementing largely symbolic governance changes that curb the loss of social

**Table 5** Tenure of women directors and firm performance

	Dependent variable: QTOBIN		Dependent variable: ROA	
	(Model 13)	(Model 14)	(Model 15)	(Model 16)
TENURE_FAM_WD	0.025* (1.86)		0.006** (2.38)	
TENURE_FAM_WD <sup>2</sup>	-0.001** (-2.18)		-0.0003** (-2.16)	
TENURE_NONFAM_WD		-0.014* (-1.93)		-0.002** (-2.42)
TENURE_NONFAM_WD <sup>2</sup>		0.001* (1.66)		0.0003*** (3.80)
GENERATION	-0.013 (-0.19)	-0.162 (-1.24)	-0.003 (-0.23)	-0.002 (-1.08)
FAM_MD	-0.010*** (-2.92)	-0.002 (-0.68)	-0.004 (-1.58)	-0.004*** (-3.43)
SIZE	-0.191*** (-6.24)	-0.322*** (-4.41)	-0.003 (-0.83)	-0.009*** (-6.45)
DEBT	0.392*** (2.72)	0.631*** (2.92)	0.098*** (3.52)	0.146*** (17.04)
PYRAMID	0.001 (0.30)	0.017*** (4.19)	0.002*** (4.16)	0.001*** (5.68)
BOARD	0.345*** (3.10)	0.053 (0.38)	0.005 (0.28)	0.012* (1.64)
IBEX35	0.197** (2.24)	0.487*** (2.70)	0.029** (2.04)	0.016*** (2.84)
CEO_HIRE	0.135* (1.75)	0.290*** (3.15)	0.006 (0.54)	-0.004 (-1.18)
AGE	-0.010*** (-4.88)	-0.009 (-0.21)	0.0002 (0.92)	0.001 (1.44)
HERFINDAL	0.193 (1.25)	0.254 (1.56)	0.076*** (3.26)	0.027*** (3.12)
BETA	-0.062*** (-4.76)	-0.222*** (-9.95)	-0.002 (-1.01)	-0.002* (-1.70)
Industry effect	Yes	Yes	Yes	Yes
Year effect	Yes	Yes	Yes	Yes
Constant	3.299*** (6.81)	5.026*** (5.16)	0.365 (1.18)	0.018 (0.92)
M <sup>2</sup>	1.01	0.40	0.21	0.66
Z <sup>1</sup>	40.85***	22.25***	10.66***	57.40***
Z <sup>2</sup>	34.79***	9.27***	23.50***	76.33***
Z <sup>3</sup>	53.67***	34.30***	32.61***	25.90***
Hansen test	37.13 (294)	36.67 (253)	56.64 (287)	49.63 (287)
Sasabuchi test (Utest). Fam_WD	1.86**		1.92**	
Sasabuchi test (Utest). NonFam_WD		1.43*		1.99**

## Generalized method of moments estimates

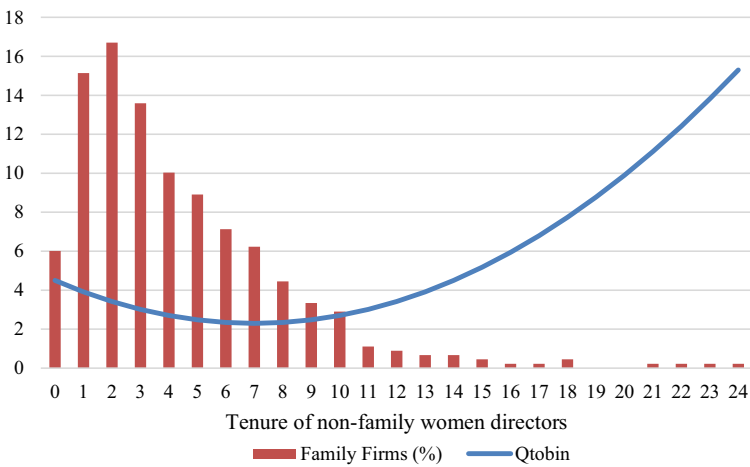
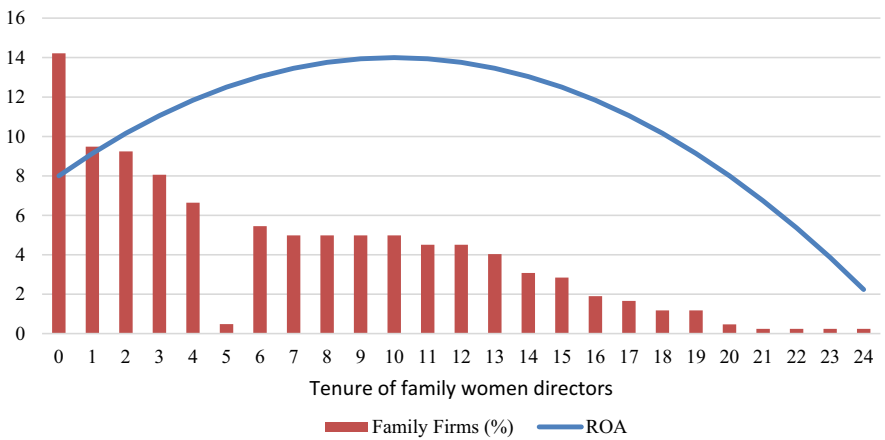
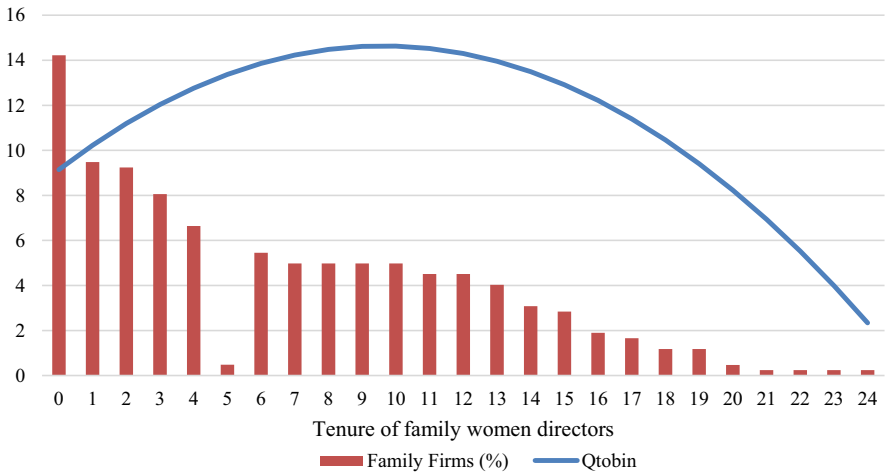
Hansen is the test of over-identifying restrictions, under the null hypothesis that all instruments are uncorrelated with the disturbance process. The Sasabuchi test confirms a quadratic relation.  $m^2$  is the statistical test for the lack of second-order serial correlation in the first-difference residual.  $z^1$  is the Wald test of the joint significance of the reported coefficients.  $z^2$  is the Wald test of the joint significance of time dummies.  $z^3$  is the Wald test of the joint significance of industry dummies. \*\*\*, \*\*, \* statistically significant at 1%, 5% and 10%, respectively. In parentheses, t-statistics based on robust standard errors

**Fig. 2** The quadratic relationship between the tenure of women directors and firm performance. This figure shows the inverted U-shaped relation between the tenure of family female directors and firm performance. The figure also shows the U-shaped relation between the tenure of non-family female directors and firm performance

support and gain positive media coverage so as to enhance their reputation. Dominant owners can thereby encourage the presence of non-family female directors as tokens by creating a "halo effect" designed to enhance their own reputation and public image, yet which might have a negative effect on the role played by corporate governance (Barnea and Rubin 2010; Malmendier and Tate 2009; Borghesi et al. 2014).

With regard to the practical implications to emerge, an understanding of what kinds of diversity might impact family firm performance is a key insight. In this sense, our paper suggests that family firms should give careful consideration to what kind of diversity they wish to promote when seeking to boost performance. We note that managers and dominant shareholders in family firms must consider the consequences of family ties when they appoint new female directors to the board. We contend that dominant shareholders and managers should strive to reach a balance between involving the correct type of gender diversity in order to enhance firm performance on the one hand, whilst also representing family and non-family interests on the other. In this regard, opening up the board to non-family women seems an effective strategy. Moreover, the non-linear relationship and breakpoints found offer an initial and useful reference point for families to draw a comparison between their situation and others, which could help them to achieve superior levels of company performance.

Our research is subject to the limitation concerning the difficulty inherent in evaluating family ties. Information was obtained by examining family relationships with the dominant family owner through family names and was also collected from company websites and the media or by directly asking the firms in question. However, in order to construct the sample of female family-associated directors, we used the Spanish regulatory requirement to publish directors' curricula vitae in the annual corporate governance report. Identifying family relationships also proves easier in Latin countries because; firstly, there are two surnames, the first being that of the father and the second that of the mother, and secondly, because married women maintain their maiden names. It was, however, impossible to measure other family situations which could impact our results (family disputes or lawsuits). Another limitation is that we collected data in Spain, which both limits the possibility of generalizing our findings and also provides promising avenues for future international studies. Further diversity indicators such as age, nationality or differences in educational and functional background might also be considered. Although this paper centers on family and non-family women directors, future inquiry might also delve into general differences between women and men or between family and non-family male directors. This might provide a deeper and richer understanding of how board dynamics function in family firms. We believe that studies which have thus far explored the link between family women directors and innovation remain scant and that they are still in their infancy, such that the linkages in question may be more complex than has hitherto been considered



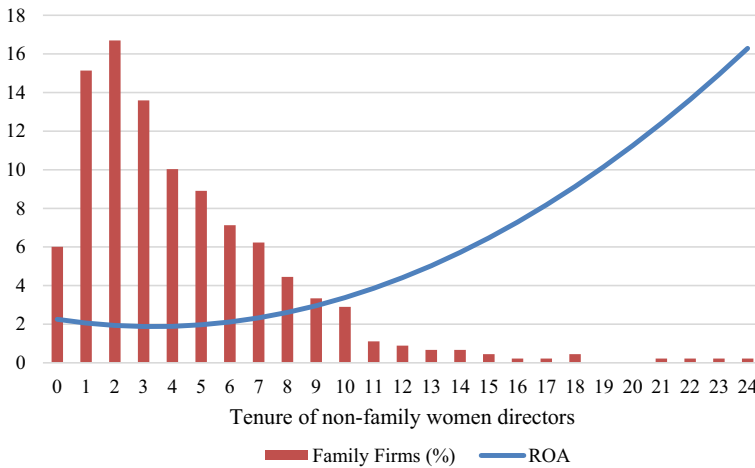


Fig. 2 (continued)

(linear effects). Moreover, there may be significant differences across firms that have different levels of board gender diversity (critical mass theory) and family ties.

## 6 Conclusions

This paper confirms the faultlines that exist between family and non-family females on boards and that impact performance because of differences in agency conflicts and the socioemotional ties of women directors with family firms. Despite finding a positive effect of family female directors on company performance, we also offer evidence concerning the “dark side” of SEW since we note a negative effect on firm performance when there is an excess of family ties amongst female directors. As the number of family female directors exceeds a breakpoint, conflicts with other non-family sub-groups are more evident and serious, and damage family firm performance. The results also show that a positive influence of non-family women directors in family firms only emerges when female independent voices can be heard and when women do not act as mere tokens (which occurs above the critical mass point). Our findings point to the idea that when there are sufficient non-family members on the board, their expertise, knowledge, skills and independence allow them to better manage everyday family problems such as hierarchies, generational conflicts or nepotism, which thus enhances cohesion and alignment of family and non-family shareholder interests. Yet in spite of the positive effect of non-family directors on firm performance, results show that the majority of Spanish companies are in the negative range of the relationship. This suggests that women who have no family ties do not presently represent a critical mass that can positively impact company performance.

## Appendix

See Table 6.

**Table 6** Definitions of variables

QTOBIN	Ratio of the firm's market value to the book value of its assets
<i>Measures of firm performance</i>	
ROA	Return on assets, computed as earnings before interest, taxes, depreciation, and amortization divided by total assets
<i>Board gender diversity</i>	
FAM_WD	Percentage of family female directors sitting on boards of directors
NONFAM_WD	Percentage of non-family female directors sitting on boards of directors
TENURE_FAMILY_WD	Average number of years that family women directors have spent on the board
TENURE_NONFAMILY_WD	Average number of years that non-family women directors have spent on the board
<i>Family control</i>	
PYRAMID	Difference between the voting and cash flow rights in the hands of dominant family owners
GENERATION	Takes the value of one to four depending on whether the family firm is first, second, third or fourth generation, respectively
CEO_HIRE	Dummy variable that takes the value of one if the president of the board is not a family member, and zero otherwise
FAM_MD	Percentage of family male directors sitting on boards of directors
<i>Control variables</i>	
SIZE	The natural logarithm of total assets
DEBT	The sum of short- and long-term debt divided by total assets
BOARD	The natural logarithm of the total number of directors
IBEX35	Dummy variable that takes the value 1 if the company is part of the representative index of the Spanish stock market (IBEX-35), and 0 otherwise
HERFINDAL	Herfindahl concentration index
BETA	Systematic market risk
AGE	Firm's age in a given year
<i>Instrument</i>	
REPUTATION	REPUTATION as a dummy variable that takes the value of one if the firm is included in MERCO, and zero otherwise MERCO has annually measured the reputation of firms that operate in Spain, as done by Fortune or the Financial Times, since the year 2000. MERCO takes the main role of ranking corporate reputation in Spain by considering the perceptions of all stakeholders and by collecting data from different sources of information (interviews with directors, assessment by experts, direct assessment and MERCO tracking on corporate reputation from the population as a whole)

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