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Family firms, women and innovation

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Abstract

Objectives. *The paper investigates the impact of board gender diversity on innovation in Family Businesses (FBs). We assume that the presence of women, due to new generations with the presence of daughters or due to marriages involving third parties, could be wider than in non-FBs.*

Methodology. *We test our hypotheses on a sample of 751 Italian FBs through a count data model.*

Findings. *Our findings show how and when the invisible women became visible and their effect on innovation performance. Prejudice against women in FBs is detrimental to innovation. However, both the presence of family women in control positions and the presence of a critical mass helps in mitigating the effect of prejudice on innovation.*

Research limits. *The sample is limited to Italian firms only. The social dynamics and the role of women in the entrepreneurial arena are strongly influenced by the institutional system in which the firm operates.*

Practical implications. *Our findings will be relevant to family business owners and managers with regard to their innovation strategy. A greater understanding of the relationship between gender diversity on the board and innovation may contribute to increasing the number of women in these important roles.*

Originality of the study. *We move forward our understanding of the effects of female family involvement in the board of directors on innovation. We discuss about the invisibility of female family member. We enhance our growing knowledge on gender diversity in family businesses, by studying women's roles as CEO, in relationship with innovation.*

Key words: *gender; invisible women; family business; innovation*

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1. Introduction

The study of women as managers and/or owners is not new to the management literature (Terjesen *et al.,* 2009). Specifically, prior contributions focused on the relationship between women presence in the board and firm's behavior and/or results (Fagenson, 1993; Vinnicombe and Colwill, 1995). Some studies investigated the relationship between the presence of women in management roles and firm's strategic choices (Post and Byron, 2015; Sila *et al.,* 2016; Smith *et al.,* 2006). Others focused on the differences in firm's performance as the female presence in top roles increases.

From a theoretical point of view, these contributions are part of a more general stream of research investigating the relationship between diversity and the firm's performance (Carter *et al.,* 2003; Cox, 1994; Erhardt *et al.,* 2003; Torchia *et al.,* 2015). Diversity refers to the differences that exist between people in terms of age, ethnicity, nationality, gender, educational background or work career, and their effects on the firms' results are investigated. These studies originate from the so-called Upper Echelons Theory (Hambrick and Mason, 1984), according to which the cultural, psychological and cognitive characteristics underlying the observable demographic variables constitute important factors influencing the decisions taken by the top management team and consequently on the behaviors and results of the firms.

While in the specific domain of family business there are only few papers investigating the effects on innovation of women presence in leadership positions (Campopiano *et al.,* 2017), this issue has long been investigated in the management literature.

This literature is often quantitative, comparing the tendencies of women and men to contribute to innovation. Whittington (2011) suggests that "academic mothers" are less likely to patent because "family responsibilities" impede women's ability to innovate. As a consequence, the intersection of gender and innovation appears to be favourable for man. Other studies show that male researchers are more likely than female researchers to be involved in industry cooperation (Bozeman and Gaughan, 2007). Further, public support for innovation or R&D is mainly given to science and engineering, and there is a strong association between masculinity, science and engineering, and innovation and that these processes are intertwined (Dautzenberg, 2012; Marlow and McAdam, 2012). As a consequence, it is not surprising to find in the literature that the concept of innovation is highly gendered, with a strong male connotation (Marlow and McAdam, 2012).

If women are present in every firms, their presence in managerial roles is relevant in the case of family business (Campopiano *et al.*, 2017). Thus, family businesses scholars call for further investigation on those topics (Cesaroni and Sentuti, 2014; Gallucci, 2010; Gallucci *et al.,* 2015). The main goal of those contributions is to build a bridge between studies in the management literature and the specific case of family businesses. Our paper follows this path taking inspiration from both streams of literature. On the one hand, we consider management studies relating board gender diversity and its implications in terms of management and innovation and, on the other, we consider the family business studies that analyze the presence of women in the BoDs.

From a theoretical point of view, paper focuses on the role of women presence in the board and on its impact on FBs innovation. The study of the role of women in the context of family business starts in the 80s (Campopiano *et al.*, 2017). We contribute to recent family business literature in three ways. First, we add to the growing literature on family business heterogeneity (e.g., Dibrell and Memili, 2019) by addressing how innovation output of family businesses varies depending on the composition of the board of directors, specifically with regard to the presence of women directors. Second, we move forward our understanding of the effects of female family involvement in the board of directors on innovation. In particular we discuss about the invisibility of female family member. Third, we enhance our growing knowledge on gender diversity in family businesses (e.g., Campopiano *et al.*, 2017; Chadwick and Dawson, 2018), by studying women's roles as CEO, in relationship with innovation.

From an empirical point of view, our paper investigates the impact on innovation of the presence of women in a sample of 755 Italian FBs. We analyze in depth the women role in the board.

Our research also contributes to practice because our findings will be relevant to family business owners and managers with regard to their innovation strategy, specifically in connection to the composition of the board of directors and its gender diversity. A greater understanding of the relationship between gender diversity on the board and innovation may contribute to increasing the number of women in these important roles.

2. Theoretical framework

2.1 Female presence in family firms

In their recent review, Campopiano *et al.* (2017) underline that contributions analysing the role of women within family businesses are still limited.

Available research suggests that family businesses offer a relatively favourable environment for women to cover key roles (Bianco *et al.*, 2015; Chadwick and Dawson, 2018). For example, small and medium sized family businesses offer a more advantageous context for women to join the board of directors (Songini and Gnan, 2009). Family connections with the controlling shareholder are conducive to joining the board, especially in small firms with concentrated ownership (Bianco *et al.*, 2015). Indeed, in developed countries, family businesses generally have more women on the board than non-family businesses and this is often because female directors are part of the owning family (Bettinelli *et al.*, 2019).

Even if women are more present in family businesses, they usually occupy an informal role (Dumas, 1992). From the literature, it is not clear whether the family environment supports or obstacles the female presence in key roles. On the one hand, family businesses seem to represent the most suitable place to offer opportunities to women, on the other hand, they can be an obstacle, as traditional family roles are perceived as inconsistent with corporate hierarchies and, consequently, the spaces available for women are marginal or invisible (Montemerlo, 2016). The female presence could still be inhibited by the work-family conflict (Vera and Dean, 2005): women can have problems looking after the family if they work too many hours a day (Cadieux *et al.*, 2002). Therefore, the family tends to protect the primary role of caring for the woman's family at the expense of her presence in the firm. This also affects how daughters and sons are prepared for succession (Haberman and Danes, 2007). In this regard, usually daughters spend less time in the family business than the sons. Consequently, the daughters inevitably develop to a lesser extent the firm specific knowledge, and this will be a limit later, in the identification processes of the successor.

According to what emerges from the family business literature, as well as historical and current anecdotal evidence, it is clear that the preferred route in family succession is to identify the heir in the male child. In fact, even if there is an increase in women-led enterprises, there has always been a greater propensity not to consider daughters as possible successors (Dumas, 1998). Keating and Little (1997) identified the gender factor of the successor, explaining the rule according to which the daughters could not become the chosen heir to lead the company following the generational change, except in the absence of other possible heirs.

The reasons, why women are rarely chosen as successors, are manifold and linked to a set of stereotypes attributable to their supposed lower working capacity and to their reluctance to sacrifice the family, in which the female role is certainly central. In this regard, Dumas (1998), investigating the challenges and opportunities that women must face and seize respectively, and considering that the contribution of women in family businesses is recognized, but not evident, identifies the barriers to participation and hiring leadership in the social structure, in the family role expected of the woman, in the relationship with parents, siblings and unfamiliar members, as well as in problems

related to the assumption of power and authority. Furthermore, female leaders tend to favor the family over the company's performance (Gherardi and Perotta, 2016) and this could lead to a negative assessment of the presence of women in key roles by relatives and other stakeholders. It is often the case that women are considered by their family less legitimate than males to manage the family business, and thus they do not plan a real career within the firm, but participate when needed or during a crisis (Dumas, 1998). The need to ensure the dynastic continuity of the firm is one of these cases and can contribute to the start of female entrepreneurship (Cassia *et al.,* 2011).

2.2 Hypotheses development

To develop our hypotheses, we take insights from the gender role theory (Eagly 1987). Gender role theory predicts that men and women have a strictly predetermined behavior with regards to communication and to influence tactics. Specifically, women are expected to present typical attributes of feminine roles such as sympathy and kindness (Eagly 1987); men, on the contrary, are expected to be more assertive and aggressive. Women are expected to have more flexibility which leads to a greater ability to manage ambiguous situations (Rosener 1995). We adopt this theory, considering that gender roles are relevant for the board understanding because male or female as directors must use communication tactics that are effective in terms of influence. As such, we expect to see a positive relationship between the board gender diversity and innovation output.

Family businesses are unique institutions. They represent a context in which two superficially different social units (i.e., families and businesses) are substantially integrated (D'Allura, 2019). There is an "intimate connection between family and business" that is "natural and compatible" (Davis, 1968). This connection covers the succession across generations. One of the result of this connection is that family businesses generally have more women on the board than non-family businesses, because female directors are part of the owning family. The main consequence is that that they are often selected because of their family ties rather than for their competencies (Bettinelli *et al.*, 2019). However, even if normally involved directly in the daily operations of the family business, women do not receive recognition for their contribution, neither for a formal position in the company nor for a salary and, in short, they do not receive the same consideration as their male relatives within the enterprise due to the motivation they are selected (Hollander and Bukowitz, 1990). This phenomenon has been recognized in the literature as the invisibility of women (Cole, 1997). What we argue is that there is further kind of invisibility, in particular we argue that even if female family member are recognised in the Board, they cannot exercitate their role because they are a token for the family and because of the connection covers the succession across generations.

For all these reasons, we expect that:

HP1: The relationship between family women presence and level of innovation is negative

Considering social barriers family and non family female face in the boardrooms, previous contributions suggested that women minorities need to have other qualities to be influential: directors, specific prior board experience and network ties (Westphal and Milton, 2000), interlinks with other boards (Cook and Glass, 2015), individual power as CEO (Triana *et al.*, 2013). Others argue that they should reach a critical mass (Kanter, 1977; Konrad *et al.,* 2008), which the literature identifies as three members (e.g. Torchia *et al.,* 2011). What we argue there is expanded for family woman, in particular:

HP2: The relationship between family women presence and level of innovation became positive when women are CEO.

3 Methodology

3.1 Data and sample

Family businesses play a primary role within the global context both in terms of social impact and with respect to the importance assumed within the economic dynamics (Tapies and Ward, 2008). According to estimates by the Family Firm Institute, two out of three companies are family businesses. They produce an annual gross domestic product share of approximately 70% to 90% and, in most countries, create more than half of the jobs available (between 50% and 80%). The predominant role of family businesses is also confirmed in the European context and, in particular, in the Italian one (Cesaroni and Sentuti, 2010; Colli, 2002; Corbetta, 2011; Gallucci and Gentile; 2009; Giacomelli and Trento, 2005), where 82% of family businesses out of total businesses. In the Italian context, a further peculiarity is attributable to the fact that even large companies are for the most part familiar (Corbetta *et al.,* 2011). These characteristics of the industrial fabric justify and support the use of a sample of Italian origin to conduct empirical analyzes.
Our sample is made up of Italian family businesses. The sample for this study comprises 755 Italian firms. The dataset, updated to 2018, was randomly gathered by merging data from the following datasets: Espacenet, Aida (Bureau Van Dijk), Borsa Italiana and Reprint. We operationalize family business through the key dimensions of ownership. We control for the representativeness of the sample according to relevant dimensions. Further test were conducted by comparing the representativeness of family dimension and firm dimension.

We select Family Business as a binary variable equal to 1 if either a non-listed firm is majority owned by the family or no less than 20% of a listed firm is owned by the family, and zero otherwise (Anderson and Reeb, 2003).The variable describing the family nature of the firm were constructed by crossing data from the Aida database and from Borsa Italiana databases.

3.2 The variables and the Models

Given the count nature of the dependent variable, for the main effect we adopt Poisson models to estimate the influence of the independent variables on the dependent variables (Greene, 2018; Wooldridge, 2015; Kennedy, 2003).

The dependent variable is the number of patent (Innovation).

We measure the female presence as the number in BoD (Female Board). We measure the variable Family Women as a dummy variable indicating whether they are part of the family or not. We measure the variables women's power, as a dummy variable depending on the role in the BoD, the dummy take value 1 if the female is a CEO, zero otherwise (Female CEO).

According to previous research on the factors affecting firm's degree of innovation, we controlled for several firm-specific characteristics: firm size and age, firms' internationalization, financial constraints, profitability, productivity, geographical localization, listed and industry (e.g., De Rassenfosse, 2010; Chabchoub and Niosi, 2005; Arundel and Kabla, 1998; Mansfield, 1986; Horstmann *et al.,* 1985).

Firm size and firm age are proxies for accumulated knowledge and managerial experience (Brouwer and Kleinknecht, 1999). Thus, we measured Size as the logarithm of total sales and Age as the logarithm of the number of years since the firm foundation. We controlled for Profitability, measured as the return on equity, and Productivity as the value added per employee (Hanel and St-Pierre, 2002). We further controlled for Internationalisation which is measured by the logarithm of the number of total FDIs made by the parent company in foreign markets. Past literature suggests that by acting in international markets, firms can better capitalize the exclusive rents of innovation. Multinational firms offer products to a larger number of potential buyers, thereby enhancing profits from innovation efforts and spreading innovation costs. Internationalization lowers the risk of R&D by avoiding fluctuations and business cycles specific to a single market (Kafouros *et al.,* 2008). Furthermore, international investments enhance a firm's knowledge about the environment and the

competition in different countries. This knowledge drives the firm's efforts into the most promising innovative objectives (Filippetti *et al.,* 2009). We proxy international presence through the variable Internationalisation, here measured as the logarithm of the number of firm's foreign subsidiaries.

To take into account if the firm is exposed to financial restrictions a firm needs adequate capital to develop its innovative ideas, we control for Financial Constraints (ratio of current assets net of inventory to current liabilities). The binary variable Localisation takes the value one when the firm is located in the South of Italy, and zero otherwise; indeed, regional location of the headquarter in Southern Italy vs. other regions entails differing services and resource availability. The variables Listed is a dummy, in this case it is equal to 1 if the firm is listed, 0 otherwise. Finally, we include industry dummies as further controls not only because of the significant impact of the industry on innovation capacity (Scherer, 1983), but also because patenting is more extensively used as an intellectual-property protection tool in science-based industries. The analysis monitored the industry by using the Pavitt taxonomy (1984). Four binary variables identify whether the firm belongs to a traditional sector, a scale-intensive sector, a specialized supplier sector, a science-based sector or any other sector (the variables are Pavitt traditional, Pavitt scale intensive, Pavitt specialised supplier, Pavitt science based and Pavitt other, respectively).

To test our hypothesis, we develop five econometric models that relate the innovation output of the firm with the different kind of presence of women in the boardroom.

We then estimate other four conceptual models to further elaborate on the idea of female presence in family firms. First, we consider the simple presence of female family member in the board.

Then, we consider the presence of female family member in the board under three different scenario. The first scenario (Model 3) concerns the case where Female Family are in the board with other female. The second scenario (Model 4) concerns the case where Female Family are in the board as CEO. The last scenario (Model 5) concern the synthesis of the previous.

3.3 Descriptive analysis

The overall descriptive statistics reported in Table 1 show that the average Innovation is equal to 36 patents. The average size is equal to 3.26 logarithm of total sales and almost nine out of ten firms are localised in the North of Italy. The average profitability is more than 8% revealing a good sample of profitable family firms.

As concern the female variables, if we consider the whole sample, there is an average female presence in important decision-making roles of just over 11%, a percentage that rises to 31% if instead we only refer to the subgroup where actually at least one family woman takes part in the Board (Table 1). A first significant figure is found by considering the female presence in the whole sample that is more than 70%, while for the other they are significantly less and equal to about 59%. As for the other descriptive statistics, what appears evident is how companies with the presence of women in decision-making roles are larger and more structured companies. Consistently, since the listing on the Stock Exchange necessarily requires a certain corporate solidity from both an organizational-managerial and economic-financial point of view, 39% of companies with women are listed on the Stock Exchange, compared to just under 34% of those without female presence (with significance $p < 0.10$). The analysis of the reference sample shows that the percentage of family members holding the CEO position is very high but, at the same time, the percentage of female CEOs is very low for an average of just over 7%. However, distinguishing between family and non-family businesses, there is a percentage presence of women who hold the CEO position statistically significantly, for $p < 0.10$, higher in the former and equal to more than 7%. There is also a general prevalence of percentages of women in the BoD among family businesses equal to about 14% against about 6% of non-family businesses.

Correlations is acceptable among all variables.

Tab. 2: Empirical results

Statistic	Mean/ Percentage	St. Dev.	Min	Max
Innovation	36.764	312.622	0	7,710
Female Board	0.544	1.005	0	5
Female Family	31.1%	0.463	0	1
Female Power	11.2%	0.316	0	1
Size	3.265	1.917	-5.116	8.079
Age	3.615	0.538	2.079	5.231
Profitability	8.2%	0.174	-1.430	0.790
Internationalization	1.477	1.143	0	4.898
Localization	90.0%	0.300	0	1
Financial Constraints	0.412	0.227	-0.396	1.000
Productivity	7.822	8.042	0.080	98.740
Listed	5.5%	0.228	0	1

4. Empirical results

Table 2 reports the regression results from Model 1 to Model 5, and Figure 1 reports interaction graphs. The econometric results highlight that not all Female variables considered exert the same impact and that only some of the traditional variables included as determinants of innovation have the expected impact.

Results show that the female presence in the board has a negative impact on innovation (Female Board is negative and significant at p<.01 in Model 1) but when controlling for the presence of female family member and introducing the variable Female Family, the variable Female Board became positive and significant at p<.01 in Model 2. This revealing that the presence of family female has a negative impact on innovation (Female Family is negative and significant at p<.01 in Model 2). Female Family shows the same negative coefficient in Model from 2 to 5: we argue that results suggest the existence of the phenomenon of family tokenism from female member. The empirical relationship between the diversity of corporate directors and firm performance has received much more attention in the literature than female presence measured as we propose here. Tokenism, polarization and assimilation all derive from the low proportionate representation of minority group members. Tokenism is defined as "a tendency for minority members to be viewed as representatives of their culture group rather than as individuals, as well as a tendency for their performance, good or bad, to be magnified because of the extra attention that their distinctiveness creates" (Cox, 1994). This can explain the negative role of female family member on innovation.

As explained, literature argues that female should reach a critical mass in order to be effective (Kanter, 1977; Konrad *et al.*, 2008), the literature identifies the critical mass as three members (e.g. Torchia *et al.*, 2011). When looking at the interaction of Female Family and Female Board as a factor in Model 3, results demonstrate that the influence of female family member became positive only when at least three women are in the board, suggesting that the critical mass must be reached in order to make the contribution effective and heard (as.factor Female Board=1*Female Family and as.factor Female Board=2*Female Family are both negative and significant at p<.01; as.factor Female Board=3*Female Family, as.factor Female Board=4*Female Family, as.factor Female Board=5*Female Family are all positive and significant at p<.01 in Model 3). When considering the role as CEO, the impact of female family member became positive and significant (Female CEO is positive and significant at p<.01 in Model 4 and 5). These results confirm the idea that, given the social barriers female family face in the boardroom, women minorities need to have either critical mass or powerful positions to be influential.

Tab. 2: Empirical results

	Dependent variable:				
	Innovation				
	-1	-2	-3	-4	-5
Female Board	-0.124***	0.223***		0.254***	
	(0.007)	(0.012)		(0.013)	
as.factor Female Board=1			-0.598***		-0.721***
*Female Family			(0.020)		(0.024)
as.factor Female Board=2			-1.006***		-1.085***
*Female Family			(0.032)		(0.033)
as.factor Female Board=3			0.072**		-0.084**
*Female Family			(0.033)		(0.036)
as.factor Female Board=4			0.720***		0.766***
*Female Family			(0.045)		(0.044)
as.factor Female Board=5			0.198***		0.196***
*Female Family			(0.048)		(0.048)
Female Family		-0.928***		-1.065***	
		(0.026)		(0.030)	
Female CEO				0.232***	0.293***
				(0.025)	(0.027)
Size	1.207***	1.185***	1.197***	1.184***	1.197***
	(0.009)	(0.008)	(0.008)	(0.008)	(0.008)
Age	0.383***	0.341***	0.332***	0.334***	0.324***
	(0.015)	(0.015)	(0.015)	(0.015)	(0.015)
Profitability	0.110**	-0.374***	-0.076	-0.301***	-0.004
	(0.051)	(0.051)	(0.056)	(0.052)	(0.056)
Internationalisation	0.023***	0.015*	0.014	0.019**	0.021**
	(0.008)	(0.008)	(0.009)	(0.008)	(0.009)
Localisation	0.345***	0.247***	0.276***	0.197***	0.207***
	(0.031)	(0.031)	(0.031)	(0.032)	(0.032)
Financial Constraints	1.709***	1.886***	1.848***	1.897***	1.856***
	(0.035)	(0.036)	(0.037)	(0.036)	(0.037)
Productivity	-0.453***	-0.448***	-0.456***	-0.449***	-0.457***
	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)
Listed	0.538***	0.142***	-0.148***	0.065**	-0.214***
	(0.027)	(0.032)	(0.035)	(0.033)	(0.035)
Sector	YES	YES	YES	YES	YES
Constant	-1.818***	-1.423***	-1.545***	-1.340***	-1.481***
	(0.078)	(0.078)	(0.080)	(0.079)	(0.080)
Observations	755	755	755	755	755
Log Likelihood	-32,483.910	-31,811.770	-31,404.710	-31,768.090	-31,344.770
Akaike Inf. Crit.	65,005.82	63,663.54	62,855.43	63,578.17	62,737.53

Note: *p<0.1; **p<0.05; ***p<0.01

5. Conclusion, limits and future developments

In this paper we investigated the effect of board gender diversity on innovation with a focus on family businesses. From a theoretical point of view, we moved from the invisibility of female family member to build our hypotheses. From an empirical point of view, we tested our hypotheses on a sample of 755 Italian FBs. Our results support the idea that the relationship between family women on the Board and level of innovation is negative due to their invisible condition. Specifically, given the social barriers family female face in the boardrooms, they need to reach a critical mass and/or to hold powerful positions in order to be influential. In that case the relationship between family women on the Board and level of innovation becomes positive because they lose their invisible condition.

The invisibility of the woman is a well-known phenomenon in the literature: women are rarely considered as candidates for the management for the succession at the helm of the business. Still, in family firms, women presence in boards and in control positions (president or vice-president of the BoD) is higher than in non-family firms; however this is often an obligatory choice due to the lack of male successors or due to a crisis looming over the company (Curimbaba, 2002; Dumas, 1992, 1998; Haberman and Danes, 2007). Our findings confirm the idea that the prejudice against women is present in family firms (as it is in non-family firms), and show that this prejudice is detrimental to innovation. However, both the presence of family women in control positions (i.e. as CEO) and the presence of a critical mass (i.e. three or more women in the BoD) helps in mitigating the effect of prejudice on innovation.

Our findings have also impact on practice. Owners and managers can observe how the gender diversity in the board, in general, and the female presence, specifically, positively impact firms innovation strategy. We hope that our results will inspire a new path for women inside family business, increasing the number of women in important roles. Further research is still needed in order to improve our understanding of the relationship between gender diversity on the board and innovation with the goal to support owners and managers practice.

Our paper presents some limitations. First the sample is limited to Italian firms only. The same study may be replicated in countries characterized by different institutional and socio-cultural contexts and could provide different results. The social dynamics and the role of women in the entrepreneurial arena are strongly influenced by the institutional system in which the firm operates. Specifically, a culture more inclined towards the female figure in leadership roles can influence the contribution made by women to those processes.

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