



GENDER DIVERSITY IN THE BOARDROOM: EFFECTS ON FINANCIAL STRUCTURE

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Abstract:

In this study, we shed a light about the relevance of gender diversity on board as driver to understand whether and to what extent the presence of women is relevant to the financial structure of the firms. Based on past contribution, we provide empirical evidence on the relationship of female directors and financial structure by revealing the role of female stereotype. Our empirical analysis is focused on Italy, a developed country with a male-dominated society, by undertaking the first direct study of woman on board and firm financial aspects in Italy in both listed and not listed firms.

Key words: Gender, Token, Critical mass, Boardroom, Financial structure

1 Introduction

We live in global and competitive economies and the ability of the firms to grow is imperative. To reach this goal, the fundamental role is played by the board members who are the apex of firm's decision making. They are in charge for the strategic decision-making, and, day-by-day, interpret the external threats and opportunities to reach the competitive advantage and remains successful in the market (Hambrick and Mason, 1984). Thus, the understanding of the board impacts on firm's performance is strategic in the management field. Focusing on board effectiveness, literature suggests that demographic diversity, defined as the degree to which a work group is heterogeneous with respect to demographic attributes (which generally include immutable characteristics such as age, gender, and ethnicity) increases the board effectiveness such as creativity and higher quality decision-making (D'Agostino & Levine,

2010; Adams, Haan, Terjesen, & van Ees, 2015; Hillman, 2015). Thus, the understanding of the relationship between the board's gender diversity and firm's strategic decision needs a increasing of analysis. Our aims is to make a step forward in this direction.

Even if female presence in apex roles in recent years can be evaluated substantial, business leadership remains fundamentally male dominated. According with Fortune 500, in the last two decades, women's share of corporate officer positions in firms has grown from 8.7 to 15.7 percent; board roles from 9.6 to 15.2 percent; CEO positions from 0.2 to 3.0 percent (Catalyst, 2019). In the last few years, policymakers in Europe supported women's growth in business leadership by adopting gender quotas for corporate boards of directors. Early adopters are France, Spain and Norway (Sara de Masi, 2018) while only recently, Italy introduced gender quotas to all publicly listed companies in 2011 (Golfo-Mosca, 2011). Enforcing gender quotas by law raises many interesting issues. First, is the presence of women in board desirable from a governance and performance perspective? In other words, there are measurable differences in the governance structure or in the performance of firms when gender diversity is reached? Second, if the presence of woman on the board affects firm performance, are there economic implications that need to be understood?

Focusing to the specific case of financial structure, we consider that the dominant coalition of the firm determines the strategic course of action (Hambrick and Mason, 1984) being the financial structure one of these. Firms can be financed through a combination of debt and equity.

A proper understanding of the relationship between female presence in board and firm financial structure have important implications for both public policy and the governance of business firms. Specifically, we aim to explore how the financial structure of the firm changes in case of the presence of female in the board. Even if the progress has been significantly documented and examined, little is known about how financial decision in terms of capital

structure (i.e. debt versus equity) would be different if women were better represented on the board of the firm. The upper echelons of the firms (such as the members of the board) decide and operate in environment that present incomplete information, time pressure, ambiguity, and uncertainty (Hambrick & Mason, 1984). Thus, differences need to be explored in order to improve our understanding about what is relevant and what is not. Further, gender diversity have been studied in psychology and many other fields, but it has been almost ignored in corporate finance (Huang and Kisgen, 2013). Furthermore, there is a call also in management and governance literature in order to understand how the leading role of the upper echelons may be influenced by gender diversity (D'Allura, 2019).

This paper aims to make a step forward and tries to empirical verify if female presence in the board of directors may influence the financial structure of the firm. In particular, we consider if and how the female stereotype can influence the financial structure of a firm. Our main claim is that the influence from the women on the decision process about the composition of financial structure does not occurs even if they reach a significant number of female. We argue that previous findings were biased by lenders view about female presence in the board: the stereotype of female caused, in past, a different debt concession to firms with gender diversity in the boardroom . In particular, we test the impact of gender diversity measure through token and critical mass and we shed a new light about the lenders view about the women stereotype. Tokenism is when women are the minority and they may be automatically categorized as out-group by male that dominate the board while critical mass is the critical number of board member needed to affect firm's decision and make a change not as the token but as an influential body.

In order to test if and when gender diversity impact on financial structure, we used a sample of italian firms. Due to data limitations, prior empirical results are based on analysis of the largest, and perhaps unrepresentative, firms across countries (Beck et al. 2008). In our paper,

we consider all firms in term of size and we consider both listed and not listed firm, while previous studies have been addressed exclusively to listed companies. Improving our understanding on financial structure of small and medium firms has important policy and resource implications. Finally, we also search for the case of crises as different situation that may modify the role of female in the financial patterns of the firms (Vermoesen et al., 2013).

Summarising, even in the context of financial structure, the influence of women on board required some reflection. First, social barriers they face in the boardrooms and the stereotype discrimination about their risk taking. Second, we should consider the chance of female director to impact an established firm financial strategy and, more generally, interactions between board members in case of diversity. Thus, further research to shed a light on this relevant topic seems to be necessary.

2. Theory background and hypothesis development

2.1 Women presence on board: insight from prior contributions

Gender has been a long-standing and debated element of board composition (Mahadeo, Soobaroyen & Hanuman, 2012). Gender based behavioral differences have been studied in psychology and many other fields which found that women influence is contingent upon their knowledge, experience, and values that are different than their male counterparts (Huang and Kisgen, 2013; Hillman, Cannella, & Harris, 2002). Those contributions highlighted the differences in terms of traits between man and women. Women has been described to have an intimate knowledge of consumer markets and customers. Compared to man, women are more innovative, they are also socially and community minded. Contextually, woman has been described as risk averse and not self confident (Speelman et al. 2013; Huang and Kisgen, 2013; Carter et al. 2015). Summarising, many specific characteristics have been associated with

women and past literature found a general trait describing them, where this trait is defined as a general predisposition which is stable across time and situations (Bromiley and Curley, 1992). All these characteristics were employed to interpret and explain different results associated to the presence of woman in firm's board.

In this paragraph we review the characteristics that have been associated to women traits when referring to strategic decisions and to decisions on financial structure in particular.

Literature is not unanimous in defining woman characteristics. On the one side many scholars argue that women presence in boards has an influence on strategic decisions such as innovation and investments (Sun et al., 2015). On the other side scholars found that women participation is simply considered as a legitimating device for internal and external stakeholders¹ (Adams and Ferreira, 2008). Other contributions found that women were more conservative than males (Pettigrew, 1958). Specifically, Johnson and Powell (1994) argue that women (compared to men) are more cautious, less confident, less aggressive, easier to persuade, and have inferior leadership and problem solving abilities. Moreover, literature tells us that women experience emotions (both negative and positive) more strongly than men do, (Fujita et al., 1991).

When looking at financial decision, behavioral corporate finance literature draws a distinction between optimism and overconfidence. Optimism is usually defined as a subjective overvaluation of the likelihood of favourable future events, while overconfidence relates to underestimation of the risk or variance of future events (see, e.g. Goel and Thakor 2000; Barros and Di Miceli De Silveira, 2007). More specifically, overconfidence refers to the manager's overestimation of his ability to affect the successful outcome of his firm's projects. Previous finance and psychology literature found that men are overconfident relative to women (Huang

¹ Even if Catalyst (2004) found that companies with the highest representation of women on their top management teams had a 35% better return on equity and 34% better total return to shareholders than those companies with the lowest female representation.

and Kisgen, 2013). Women have a higher risk aversion which may constrain lower levels of demand for business finance (Croson and Gneezy 2009; Huang and Kisgen 2013). Overconfidence ends up in a higher propensity in using debt as opposed to equity to support firm growth. Conversely, a pessimistic attitude ends up in a preference for equity over debt. Scholars state that a construct that may explain optimistic and pessimistic orientation is the overconfidence of the managers. Since the uncertainty of entrepreneurial outcomes, risk toleration is a central point in the context of entrepreneurship (Block et al. 2015). Thus, past literature assume that women feeling of financial risk aversion are disadvantageous in terms of financial structure. In this direction, Speelman et al. (2013) state that gender and risk tolerance are the dominant factors in explaining investment behaviours with women favouring less -risky options, and men favouring, due to their greater self-confidence, more risky financial choices (Odean, 2001). In summary, previous studies argue that women have a lower toleration for risk in terms of financial behaviour across a range of activities including investment, salary enhancement, and general money management (Beckmann and Menkhoff 2008; Hastings et al. 2013). Men tend to interpret risky situations as challenges that stimulate their desire for involvement and participation, while women tend to interpret them as threats and are so induced to avoid them (Arch, 1993). Previous studies thus relate men-overconfidence with a higher use of debt instead of equity for financing firm's projects. Risk-aversion influences demand for bank loans and, coherently, women business owners exhibit greater reluctance to assume debt (Huang and Kisgen 2013; Carter et al. 2015). Furthermore their risk aversion would be exacerbated during periods of financial uncertainty (Prügl 2012).

2.2 Hypothesis development

Our hypothesis considers the relationship between the presence of women on board and financial structure. We argue that previous findings are due to female stereotype generated by

previous interpretation and do not actually depend on the different characteristics of women and men. Specifically, interpretation influences the vision of lenders about women. Consequently, the financial structure of the firm is not the result of different female attitude but is due to the lender aversion. In particular we argue that gender differences should not be interpreted as general traits and that they are context specific.

The main stereotype about female concerns risk attitude. Preconceptions concerning the risk propensity seem to affect women access to debt. From our point of view, past studies simply reinforced stereotypical views that women were less capable managers (Grable, 2000; Jianakoplos e Bernasek, 1998; Powell, 1997). This turns in a different story, known among the female entrepreneurs as “lenders aversion”. A lender is an individual, a public or private group, or a financial institution that makes funds available to another with the expectation that the funds will be repaid. They are responsible of this process in order to make money. Past literature state that women as client do not appear to have aggressive growth objectives even if they are not different in term of motivation, such as the desire for independence or self-achievement, or the tendency to have an internal locus of control (Sarri and Trihopoulou 2005; Littunen 2000; Scott 1986). But on the how and when they will reach their goal and these may have important growth implications (Morris et al., 2006). Past studies argue that women do not consider relevant the growth as they care greater balance among the demands of work, family, and their personal lives. The results of this interpretation of the reality is that lenders think that women may also potentially transfer this idea into the organization, affecting the attitude and ways in which growth is pursued (Brush et al. 2004). Moreover, many authors argue that female entrepreneurs tend to set lower business size thresholds beyond which they prefer not to expand their business, and to be more concerned with risks attached to fast growth (Huang and Kisgen 2013; Carter et al. 2015). They state that women reach the firm’s size that allows them to maintain control and to devote a proper amount of time and energy to the business, in order to

easily balance work and family (Cliff, 1998). As such, and according to their mission in the economic system, lenders need to make profit from their investment and will prefer male borrowers.

Furthermore, in past, women faced less favorable financing conditions, such as collateral requirements, co-signatory requirements, interest rates on loans (Riding & Swift, 1990). In terms of entrepreneurship, it has been acknowledged that there were a preference about the entrepreneurial profile that reflect masculine traits such as competitiveness, aggression and risk taking (Cowling et al., 2019; Jennings and Brush 2013). Lenders perception is based on some consideration that should justify the preference of the men instead of the women when they locate resource. Thus, unfavorable debt market conditions may constraint women to rely on equity instead of debt financing (Heynes et al. 2000).

Research, however, has shown that women's preferences with regard to financial investments are not the result of their psychological characteristics, but they are affected by certain circumstances relating to their social status (Cesaroni et al., 2015). Instead, following more recent studies, we consider that men and womens are equally capable in terms of achieving desired outcomes from decision-making under risk. We argue that those are all possible motivations for past findings where stereotype existed, while now they are no longer plausible. We argue that in developed countries lenders aversion due to stereotype no longer exist. Consequently, board with women would reflect any differences in establishing credit when compared to board that are all composed by men.

Thus, our idea is that the positive or negative features of women participation in boards does not consistently emerge from empirical studies, at least not in a statistically significant way and in relation to financial outcomes. Accordingly, we expect that:

*Hypothesis 1: Women presence in the board
does not affect the share of debt in firm's financial structure*

3. Empirical analysis

3.1 Sample and sources

The sample for this study comprises 1,206 Italian firms. The dataset, updated at to 2018, was gathered through a merging process involving the following datasets: Aida (Bureau Van Dijk), Borsa Italiana, Reprint and Espacenet.

The variable describing board composition and the variable describing the family nature of the firm were constructed by crossing data from the Aida database and from Borsa Italiana databases. We also obtained balance sheet data from the Aida database.

Borsa Italiana is responsible for the organisation and management of the Italian stock exchange, and collects information about listed firms.

Reprint² provides a census of Italian firms making outward FDIs since 1986 and was employed to define the variables that describe internationalisation. The criteria to identify FDI were based on principles of economic materiality, rather than being formal and/or legal- administrative in nature. Thus, the FDIs made by financial institutions were not considered (for additional details, see Mariotti & Mutinelli, 2017).

Finally, the Espacenet³ database provides information from approximately 90 million patent documents worldwide, including information about inventions and technical developments from 1836 to the present. Espacenet, and provided us the number of patents owned by each firm.

3.2 Variables and measures

Table 1 reports the sources and definitions of both the dependent and independent variables

² Banca dati creata nel 1986 ed aggiornata con cadenza annuale che censisce le imprese italiane impegnate in attività oltre i confini nazionali attraverso IDE, nonché le rispettive sussidiarie e le imprese estere che operano sul territorio italiano (Mariotti e Mutinelli, 2017).

³ Servizio online gratuito per la ricerca di più di 90.000 documenti di brevetto in tutto il mondo a partire dal 1836. Tale banca dati è stata sviluppata nel 1988 dallo European Patent Office e dagli stati membri della European Patent Organisation.

Table 1 – Definition and source of variables

Variable	Definition	Source
<i>Dependent Variables</i>		
<i>Financial Structure</i>	Debt	AIDA
<i>Independent variables: Gender Variables</i>		
<i>Token</i>	Dummy variable taking the value 1 if a company is led by a woman or presents at least one woman in its board, and 0 otherwise	AIDA
<i>Critical Mass</i>	Dummy variable taking the value 1 if a company presents at least threewoman in its board, and 0 otherwise	AIDA
<i>Independent variables: Control Variables</i>		
<i>Dimension</i>	Net equity of the firm	AIDA
<i>Experience</i>	Firm age	AIDA
<i>Productivity</i>	Value added per employee	AIDA
<i>Cost of Debt</i>	Financial charges on financial debt	AIDA
<i>Crisis</i>	Dummy equal to 1 if the ROE is negative; and 0 otherwise	AIDA
<i>Bonds</i>	Dummy equal to 1 if the company emitted bonds; and 0 otherwise	AIDA
<i>Innovation</i>	Number of patents held by the company	Espacenet
<i>Internationalisation</i>	Number of FDIs	Reprint
<i>Family Business</i>	Dummy equal to 1 either if a non-listed firm is majority owned by the family, or if no less than 20% of a listed firm is owned by the family; and 0 otherwise	AIDA
<i>Listed</i>	Dummy equal to 1 if the company is listed; and 0 otherwise	Borsa italiana
<i>Localization</i>	Dummy variable equal to 1 if the firm is located in the South of Italy; and 0 otherwise	AIDA
<i>Sector</i>	Dummy variable equal to 1 if the firm belongs to a specific sector; and 0 otherwise	Reprint
<i>Sales</i>	Sales of the firm	AIDA

Dependent variable. The dependent variable is firm debt.

Independent variables. We measure the female presence in two ways, first, as a dummy variable indicating female presence in BoD (*Token*) and, second, as a dummy variable equal to one if at least three women are active in BoD, zero otherwise (*Critical Mass*). The empirical relationship between the diversity of corporate directors and financial performance has received much more attention in the literature than female presence measured as we proposing 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).

Considering social barriers they 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 & Milton, 2000), interlinks with other boards (Cook & Glass, 2015), and individual power (Triana et al., 2013). Others argue that they should reach a critical mass (Kanter, 1977; Konrad, Kramer, & Erkut, 2008), which the literature identifies as three members (e.g. Torchia, Calabro, & Huse, 2011). Finally, we measure the firm crisis with a dummy variable equal to 1 when ROE is negative (*Crisis*).

Control variables. In accord with previous research, we controlled for several firm-specific characteristics. Firm size and firm age are proxies for accumulated knowledge and managerial experience. Thus, we measured *Dimension* as the total sales and *Experience* as the number of years since the firm foundation. Shrivastava & Grant (1985) suggested that small business owners would like to have control of strategic decisions thus they prefer equity instead of debt. Similarly, Kotkin (1984) found that small companies avoid venture capital because they fear losing control of the firm. Finally, the age of the firm impact on the financial structure. In the case of new ventures, managers prefer equity because debt restricts flexibility in decision making. Moreover, as been notice that the credit lines of small businesses and new ventures will not be as strong as those of larger firms. In those case, lenders will be stricter on the terms of the credit agreement. Thus, managers of small and new business are enforced to base their business on equity. In the other side, developing and established businesses tend to leverage their accumulated physical assets and their history in term of success to submit them under the evaluation of the lenders and, then, raise debt to finance their strategic changes. We controlled

for *Profitability*, measured as the return on equity, and *Productivity* as the value added per employee (Hanel & St-Pierre, 2002). Cost of debt is measured by total financial expenses. We further controlled for *Innovation* and *Internationalisation*, referring to the firm's R&D output, which were respectively measured by the number of patents and as the number of total FDIs made by the parent company in foreign markets (Kotabe, Srinivasan, & Aulakh, 2002; Kafouros et al., 2008; Ietto-Gillies, 1998; Reuber & Fischer, 1997). Literature demonstrate that the nature of the firm can exert an influence over the financial structure by constraining the level of debt (González, Guzmán, Pombo, & Trujillo, 2013; Gottardo & Maria Moisello, 2014). We operationalize family business through the key dimensions of ownership. Thus, we define the variable *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 & Reeb, 2003). The variable *Bonds* is a dummy equal to 1 if the firm has bonds. Also the variables *Listed* is a dummy, in this case it is equal to 1 if the firm is listed, 0 otherwise. 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. Finally, we included industry dummies as further controls because of the significant impact of the industry on the financial structure (Scherer, 1983; Villalonga & Amit, 2006) (*Sector*). Some authors do not agree with the statement that female-owned companies are less efficient due to the characteristics so far attributed to women. Some researchers argue, in fact, that the differences in the registration of financial measures is not a gender issue, but rather dependent on the type of sector and activity. Female businesses often operate in the services sector, in a less dynamic context, with lower revenues, limited growth prospects and lower employment rates (Singh et al., 2001). 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).

3.3 Econometric models

To test our hypothesis, we develop four econometric model that relates the debt of the firm with the presence of women in the boardroom.

Model 1:

Debt = f (Token; Critical Mass; Localisation; Innovation; Control Variables)

We then estimate other three conceptual models to further elaborate on the idea of lenders aversion. First, we consider localisation: in southern Italy stereotypes about womens are still present.

Model 2:

Debt = f (Token; Critical Mass \times Localisation; Innovation; Control Variables)

We further consider that innovative firms need to invest more than non-innovative firms in order to support innovation. We thus consider the following model:

Model 3:

Debt = f (Token; Critical Mass × Innovation; Localisation; Control Variables)

Finally, we consider a three-way interaction including woman presence in the boardroom, firm localisation and innovativeness.

Model 4:

Debt = f (Token; Critical Mass × Innovation × Localisation; Control Variables)

To test our hypothesis and given the continuous nature of the dependent variable, we performed ordinary least squares (OLS) regression analysis (Greene, 2018).

3.4 Descriptive statistics

The dataset used to conduct this research is composed of 1,206 Italian companies where only 39% of companies register at least one woman among the members of the Board (Table 2).

Table 2 – Descriptive statistics

Variables	Average / % full sample (1,206 firms)	Std. Dev.	Min	Max
Financial Variables				
<i>Financial Structure</i>	1.609	4.768	0.010	122.130
Gender Variables				
<i>Token</i>	39.0%	0.488	0	1
<i>Critical Mass</i>	12.8%	0.334	0	1
Control Variables				
<i>Dimension</i>	3.675	1.717	-4.665	10.274
<i>Experience</i>	3.614	0.554	1.790	5.230
<i>Crisis</i>	17.1%	0.377	0	1
<i>Productivity</i>	7.084	5.249	0.080	38.000
<i>Cost of Debt</i>	0.025	0.035	0	0.690
<i>Innovation</i>	1.705	1.720	0	9.060
<i>Internationalisation</i>	1.631	1.179	0	6.140
<i>Family Business</i>	68.5%	0.465	0	1
<i>Localisation</i>	12.0%	0.325	0	1
<i>Bonds</i>	13.1%	0.338	0	1
<i>Listed</i>	8.4%	0.277	0	1
<i>Sector</i>	yes	yes	yes	yes

Table 3 reports correlations for the explanatory variables. The correlation matrix shows acceptable correlation indexes Wooldridge (2013).

Table 3 – Correlation matrix

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1 DEBT	1.000													
2 TOKEN	0.136	1.000												
3 PROFITABILITY	0.012	-0.029	1.000											
4 PRODUCTIVITY	0.008	0.030	0.100	1.000										
5 INNOVATION	0.351	0.033	-0.026	0.032	1.000									
6 FAMILY BUSINESS	-0.102	0.053	0.018	0.023	-0.041	1.000								
7 LOCALISATION	0.057	0.144	0.033	0.063	-0.015	-0.061	1.000							
8 LISTED	0.349	0.300	-0.011	-0.001	0.081	0.002	0.100	1.000						
9 SALES	0.449	0.098	0.044	0.056	0.424	-0.068	0.063	0.148	1.000					
10 DIMENSION	0.661	0.104	0.046	0.017	0.178	-0.104	0.117	0.234	0.697	1.000				
11 EXPERIENCE	0.134	0.044	0.059	0.020	0.145	0.022	0.043	0.212	0.160	0.119	1.000			
12 CRITICAL MASS	0.265	0.472	-0.041	-0.013	0.063	0.024	0.065	0.522	0.123	0.189	0.139	1.000		
13 BOND	0.224	0.109	-0.052	0.017	0.054	0.012	-0.004	0.173	0.101	0.155	0.074	0.130	1.000	
14 COST OF DEBT	0.704	0.084	0.020	0.037	0.217	-0.093	0.058	0.202	0.564	0.751	0.118	0.162	0.154	1.000

3.5 Empirical results

Table 4 – Results

	DEBT			
	(1)	(2)	(3)	(4)
TOKEN	0.015 (0.05)	0.001 (0.05)	0.004 (0.03)	-0.009 (0.03)
CRITICAL MASS	0.144* (0.08)	0.235*** (0.08)	0.136** (0.06)	0.193*** (0.06)
LOCALISATION (SOUTH)	-0.061 (0.06)	0.045 (0.07)	-0.036 (0.05)	0.039 (0.05)
CRITICAL MASS × LOCALISATION		-0.656*** (0.17)		-0.430*** (0.12)
CRITICAL MASS × INNOVATION			1.037*** (0.03)	1.041*** (0.03)
LOCALISATION × INNOVATION				-0.046 (0.10)
CRITICAL MASS × LOCALISATION × INNOVATION				-1.039*** (0.36)
PROFITABILITY	0.001 (0.00)	0.001 (0.00)	0.0002 (0.00)	0.0003 (0.00)
PRODUCTIVITY	-0.003 (0.00)	-0.002 (0.00)	-0.001 (0.00)	0.001 (0.00)
INNOVATION	0.260*** (0.02)	0.257*** (0.02)	-0.057*** (0.02)	-0.063*** (0.02)
COST OF DEBT	0.426*** (0.03)	0.413*** (0.03)	0.269*** (0.02)	0.243*** (0.02)
FAMILY BUSINESS	-0.058 (0.04)	-0.06 (0.04)	-0.044 (0.03)	-0.041 (0.03)
LISTED	0.538*** (0.09)	0.577*** (0.09)	0.378*** (0.06)	0.424*** (0.06)
SALES	-0.200*** (0.03)	-0.201*** (0.03)	0.031 (0.02)	0.038 (0.02)
DIMENSION	0.360*** (0.03)	0.386*** (0.03)	0.274*** (0.03)	0.327*** (0.03)
EXPERIENCE	-0.01 (0.02)	-0.01 (0.02)	0.005 (0.02)	0.005 (0.02)
BOND	0.229*** (0.06)	0.236*** (0.06)	0.165*** (0.04)	0.169*** (0.04)
SECTOR	yes	yes	yes	yes
CONSTANT	-0.083 (0.11)	-0.107 (0.11)	-0.101 (0.08)	-0.121 (0.08)
Observations	1,062	1,062	1,062	1,062
R2	0.638	0.643	0.809	0.813
Adjusted R2	0.63	0.635	0.804	0.809
Residual Std. Error	0.634 (df = 1039)	0.629 (df = 1038)	0.461 (df = 1038)	0.456 (df = 1035)
F Statistic	83.186*** (df = 22; 1039)	81.368*** (df = 23; 1038)	190.786*** (df = 23; 1038)	173.426*** (df = 26; 1035)

Note:

*p<0.1; **p<0.05; ***p<0.01

The models differ with regard to the statistical significance of the variables connected to gender. In all the models the variable that detects only female presence (*Token*) is never

statistically significant (Model 1, 2,3 and 4). This indicates that the female presence alone is not sufficient to determine a state, but what, eventually, determines the effect is the *Critical Mass* which is statistically significant in all models. In model 1 *Critical Mass* is positively correlated with *Debt*, this result supports our hypothesis showing that lender aversion is no longer present nowadays. Innovation is positively and strongly related to the level of debt ($p < 0.01$) providing strong support for the idea that innovative firms require a higher financial support.

Model 2 reports the interaction effect of *Critical Mass* and *Localisation*. Regression results report a negative and significant coefficient for the interaction ($p < 0.01$), providing strong support for the idea that in southern Italy, where stereotype about women is still present, the lenders aversion effect may still take place. Thus, if a firm is located in southern Italy and there is a strong presence of women in the boardroom, due to lenders aversion, firm debt will be lower compared to a firm located in the northern Italy.

Model 3 reports the interaction effect of *Critical Mass* and *Innovation*. Regression results report a positive and significant coefficient for the interaction ($p < 0.01$), supporting the idea that female *Critical Mass* in the boardroom of innovative firms leads to an higher amount of debt. Again this supports the conclusion that lenders aversion is no longer present and investors are more likely to provide financial support to innovative firms with a gender diverse boardroom.

Finally Model 4 reports the three way interaction of *Critical Mass*, *Innovation* and *Localisation*. Regression results report a negative and significant coefficient for the three-way interaction ($p < 0.01$) confirming results of model 2. If a firm is located in southern Italy, where the stereotype about women is still present, the lenders aversion effect may still take place. It is worthy to notice that in model 4 the two way interaction between *Critical Mass* and *Innovation* has a positive and significant coefficient ($p < 0.01$) which is consistent with results in Model 3.

Further, considering both coefficients together, our results show that while lenders are willing to support innovative firms more than non innovative firms, if these firms are located in the southern of Italy (where stereotype about women is still present), lenders willingness to support these innovative firms fades away.

The control variables also yield interesting results. Firm size positively impacts and is significantly different from zero at ($p < 0.01$) in all models (*Dimension*). The variable measuring firm profitability and productivity are not significant. The presence of bonds is positively related with debt (*Bond* is positive and significantly different from zero at $p < 0.01$ in all Models. Listed firms are associated with a higher debt level (*Listed* is positive and significantly different from zero at $p < 0.01$ in all Models). Some of the coefficients associated with the industry dummies are significantly different from zero in all models. Finally, *Experience*, *Innovation*, and *Family Business* are not significant in any model.

3.6 Discussion

Firm's financial structure depends on upper echelons (i.e. owner's and board members) which significantly influence funding patterns during all stages of firm's development (see for example. Chaganti et al., 1996 for early stages). Owners and directors personal attitude concerning the viability of the business affect financing decision. This contribution should be positioned in this part of the literature since we explored if gender diversity in the board impact financial structure.

Results make a step forward investigating how the presence of women in board influence capital structure. To the best of our knowledge there is no prior work or findings related to this hot topic in financial and board composition literatures.

The main result of our empirical analysis is that the mere presence of women in the BoD does not have a statistically significant impact. The results show that the way we measure the female

participation is relevant. According with the literature, if women represent a very small minority on the BoD (i.e. one or two women), they are perceived as symbols (i.e. token effect). Instead, if women are at least three (i.e. critical mass) they become a consistent group capable of making their voices. Asch's (1951, 1955) demonstrates that the effectiveness of group increases significantly when the group size is three, but further increases in group size add little to the overall effect. In accordance, other studies develop and tested the same: the number of three usually represents the point (i.e. critical mass) influencing the group setting (Bond, 2005; Nemeth, 1986). If the women presence reaches the number of three, the boards change their working-style and women influences the dynamics and the processes inside the board (Erkut et al., 2008; Konrad et al., 2008). This interpretation is supported by the theory of critical mass, according to which when there is only one or two women they are perceived as 'symbols' (or 'tokens') and this allows stereotypes to prevail damaging group dynamics and performance decision. Instead, as the number of women increases, the likelihood of their voices and ideas being heard is also increased, improving managerial dynamics substantially (Erkut et al., 2008).

We contend that conflicting findings in previous literature about the effect of women critical mass in boards could be explained by lenders aversion: due to the stereotype about women, lenders change their attitude to lend if there is a critical mass of women in the boardroom. We contend that nowadays “lenders aversion” no longer exist, and test our hypotheses in Italy. We further elaborate on the idea of lenders aversion and control for firms localisation: women perception in northern and southern italy is substantially different as far as concerns the stereotype about women abilities when compared to men counterparts. We also control for innovativeness because more innovative firms require more financial support by lenders to support the required investments.

Our results show that in general, women presence in boardrooms no longer is associated with a lower amount of debt. Further our results confirm that innovative firms require and

receive a higher financial support by lenders if woman presence in boardroom is higher (if there is critical mass). That is, when innovative firms are led by womens, lenders are more prone to support them. However, if we control for localisation, given that in southern italy stereotypes about women are still present, the lenders aversion effect comes back and neutralizes the aforementioned positive effects.

4. Conclusion and future research direction

This paper had three main goals. First, it aimed to assess if and to what extent board composition in term of male and female affects financial decision. Second, it aimed to examine the relationship between board composition and firm financial structure both listed and not listed firms, improving upon previous studies which limited their analysis to listed companies. Finally, it provided evidence from Italy, a developed country with a male-dominated society: specifically if we compare the north area and the south area, there are still different perceptions about women capabilities compared to men.

Meeting the aforementioned objectives, this paper contributes to the literature on upper echelons perspective and on the relationship between women on board and financial structure. Specifically, we show that previous research findings may be explained in terms of lenders aversion, rather than in terms of women different attitudes.

This study is not devoid of limitations. First, since our sample focuses on Italy, our results may not reflect other contexts. National contexts present cultural differences that need to be investigate deeply. First, culture constraint could reduce the presence of women on the boards; second, the regulatory context could have different norm for inclusion. Future research about different national context should improve, in a institutional theory perspective, our understanding on the context impact. Another limitation of our studies is the time of observation. If a firm already has a well-established financial strategy prior to the arrival of a

female director, empirical analysis based on indirect data may be unable to document a positive association between female presence on the board and financial performance. Instead, future research should consider the span of time the women have been in the board. Moreover, also the role of the women should be investigated. Unfortunately, the number of women CEO in our sample was insignificant and we could only observe how the presence of women in leadership roles is still limited.

Second, while this study focuses on female presence, future studies may explore how such presence determine a choice in the BoD. Our empirical analysis is based on indirect data, thus we are not able to measure the role that the women have on the board. The contribution of women to the definition of financial constraints is assessed solely through variables that measure female presence and critical mass, but does not take into account the underlying mechanisms. Future research should be devoted to advance our understanding on those mechanisms such as conflict and negative relationships due to the heterogeneity introduced by the presence of women, prejudices and stereotypes that surely cannot be resolved simply by respecting the law. On the contrary, it is believed that compliance with the regulatory obligation can exacerbate these aspects since the organizations are unprepared for the presence of women in the Board.

Third, our results could be influenced by unobserved firm characteristics, such as corporate culture. If women are involved to respect legal constraints, we will miss their influence; instead, if firms are more likely to appoint women to their boards, we expect that they also encourage women contributions. Kanadli et al., (2017), applying the recategorization theory, argue that what facilitate the women directors' recategorization process is an open atmosphere in the boardrooms. In an open atmosphere, women directors may acquire a more positive attitude from their male counterparts, reducing the level of some of the negative consequences of out-group bias (Sun et al., 2015). Adams and Ferreira (2009) state that for gender diversity to have

an impact on board, it is not sufficient that female directors behave differently than male directors. Their behavior should also affect the working of the board. Moreover, by law, women have equal rights and status with men.

Last, following the contributions of the upper echelon (Hambrick and Mason , 1984) another aspect that need to be investigated is the level of education, the experience background and age of the women on board. Director with a high level of education has a different influence on the decision process than the one with a lower qualification. Moreover, women have been described to take less specialization in finance and this turn in a detrimental effect both in the board and to the externals (e.g. lenders perception).

5. Managerial and policy implications

This study has relevant implications for practitioners and managers. Policymakers in Europe supported women's growth in business leadership by adopting gender quotas for corporate boards of directors. Early adopters include France and Spain, late adopters include Norway (2006) and Italy (2011). The law required all publicly listed companies to increase female representation on their boards of directors and this turns in some interesting observation and analysis as strategic management management and governance scholars. Specifically, we argue about three main points. First, if there is no difference between women and men directors as far as competence and firm performance are concerned, the desirability of a quote of woman on board is primarily a public policy issue. However, if there is a relationship between the presence of woman on the board and firm performance, there are economic implications that need to be understood. If the relationship is negative, the costs of inclusion of women directors become a factor to be considered. Thus, we consider, that a realistic understanding of the nature of any relationship that may exist between the women on board and firm financial performance has important implications for both public policy and the governance of business firms. We

demonstrate in this paper that contextual factors, specifically the stereotype about women's ability, have to be considered in order to assess the effectiveness of such a public policies.

Many policymakers in governmental and international organizations argue that small firms have inadequate access to external finance as a result of market imperfections. We add, for the first time - to the best of our knowledge - the role of women in board, that is another key issue for policymakers. Specifically, the lender aversion should be taken into account when analysing the availability of financial resource.

Moreover, according to country report Italy is lagging behind in the rankings related to the level of financial education, especially with refer to women. Therefore, in the next future the Government needs to invest on economic and financial training. In this direction, best practices can be planned and implemented within companies in order to reduce gender disparity. More in general, it is necessary to provide management advices that aim to overcome the difficulties that women face in the reconciliation of work and private life. Firms are responsible in this direction, especially when the woman is inside the Board of Directors. In this direction, firms need to implement best practices such as mentorship, sponsorship, coaching for women and, at the same time, activities addressed to men in order to improve their understanding in a management process that takes into account the diversity of female perspective, view and potential.

The solution is not to ask women to conform to the masculine style. In our opinion, such behavior reduces the value of inclusion that current regulations aspire to. In this regard, Sustainable Development Goal 5 of the United Nations requires States to make an effort in the direction of real inclusion.

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