5. WOMEN DIRECTORS IN THE BOARD OF ITALIAN LISTED COMPANIES: A REVIEW OF TEN YEARS' EXPERIENCE

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5.1. Introduction

Over the last ten years, the topic of corporate governance, especially the structure of the board of directors, has become more important and has aroused the interest of many academics because they recognized in it an important value ever for the market (Esposito De Falco, 2014).

Recently, following the regulatory interventions that have introduced *gender quotas* into the Boardroom of listed companies, academic and independent researchers have been focusing their interest on the relationship between gender diversity and performance (Liu, Wei, & Xie, 2014; Iacoviello, Mazzei, & Riccardi, 2015).

Equal opportunities in top management is a subject that has become increasingly important at the global level, causing the issuing of laws and voluntary initiatives to reduce the gender gap in companies. Considering the low level of participation in voluntary measures, many countries have adopted legislative measures to destroy the *"Glass Ceiling"* in corporate governance, some with a sanctioning system (Norway, France, Italy, Belgium, and Germany), others without introducing any coercive restrictions (the Netherlands and Spain).

Italian Law 120/2011 (Golfo-Mosca) obligates listed companies to reserve a predetermined percentage of board seats to women. Its validity is ten years, a deadline within which women's representation on the board and in top management should be introduced into companies' culture.

Numerous studies in the literature examine empirically the effect of women's presence in the boardroom on the performance of the company (Campopiano, De Massis, Rinaldi, & Sciascia, 2017). However, the results are very contrasting. Also, many studies analysing the Italian context focus their interest on the mere presence of women on the board and refer to a limited period, not allowing the real early effect of the above-mentioned regulatory initiative to emerge.

This chapter aims to analyse the relationship between gender quotas and the performance of Italian listed companies in the period from 2006 to 2015. The period considered is new in the context of Italian studies because it allows evaluating both the period before the introduction of the law and the first three years of its application. In addition, we investigate not only the percentage of women directors on the board but also the different roles that women directors can fulfil on the board, such as independent and executive.

Whether it is true that with Law 120/2011 (Golfo-Mosca) Italy has seen an increase in the number of women on the board of directors; it is also true that the presence of women alone may not be enough to improve business performance and to appreciate their quality. Thus, we want to test whether the different results in the literature can also be accounted for by the personal characteristics of the women.

Our study contributes to the literature on board gender diversity and firm performance in several ways. First, we extend the literature by providing the first empirical evidence on board gender diversity and firm performance from Italy, which aims to investigate the effect in two different periods, before and after the introduction of the Law 120/2011 (Golfo-Mosca). Second, we disentangle the main and general effect of female directors into the executive effect and the monitoring effect, showing that in the Italian context the monitoring role outweighs the executive effect. Lastly, we provide empirical evidence that the effect of female directors on firm performance is contingent by different firm size.

The chapter is divided into four main sections: the first part describes the main characteristics of the Italian context; the second part reviews the main literature on gender diversity, focusing on the relationship between female directors and firm performance, and develops the research hypotheses; the third section illustrates the empirical method and the econometric model; finally, the results of the empirical analysis are illustrated, and the conclusions presented.

5.2. The Italian context

Italy is a "civil law" country, and it is well known in the literature that "civil" countries are characterized by lower investor protection (La Porta, Lopez-de-Silanes, Shleifer, & Vishny, 1999). Therefore, over the last few years, the authorities in charge of the supervision of listed companies and the institutions that manage the financial markets have been suggesting improving corporate governance practices, in line with international best practices provisions.

Specifically, the Italian context provides an interesting institutional setting to examine the effect of female directors on firm performance. Indeed, apart from being characterized by weak legal protection of minority investors (Belcredi & Enriques, 2014), inefficient law enforcement (Volpin, 2002) high private benefit (Sancetta, Cucari, & Esposito De Falco, 2018) and high ownership concentration (Lepore, Paolone, & Cambrea, 2018), the Italian government has approved a law on gender quotas, which forces the Italian listed companies to respect a minimum percentage of the less represented gender (Bianco, Ciavarella, & Signoretti, 2015). Thanks to the new regulation, the corporate board of listed companies must reserve at least one-fifth of the seats in 2012 and one-third from 2015 for women.

As stated previously, in recent years the researchers of corporate governance have focused their attention on the analysis of the structure of the board (Minichilli, 2014; Rubino, Tenuta, & Cambrea, 2017; Cucari, 2019). Meanwhile, there was the alternation of various versions of the "Autodisciplina Code," the code that recommends the best practices of Italian listed firms. These innovations allow us to compare some aspects of governance already widely investigated, such as the number and heterogeneity of members but most importantly allow us to examine new features of corporate governance, such as the protection of minority shareholders, through the presence of independent directors, and female directors. Table 5.1 presents the evolution of the main characteristics of the board of directors, which occurred during the last decade in Italy. The descriptive statistics refer to the sample object of the analysis in the current research.

Table 5.1. Evolution of board structure in the period 2006-2015

Year	*Board size*	*CEO Duality*	*Independent directors*	*Busy directors*	*Female directors*
2006	9.33	0.281	.385	.342	.060
2007	9.41	0.284	.379	.361	.068
2008	9.46	0.241	.366	.347	.069
2009	9.60	0.240	.380	.340	.072
2010	9.62	0.296	.384	.348	.077
2011	9.50	0.279	.388	.345	.084
2012	9.45	0.257	.409	.325	.112
2013	9.45	0.257	.412	.302	.171
2014	9.34	0.275	.418	.275	.219
2015	9.41	0.242	.430	.235	.268
Total	*9.46*	*0.266*	*.393*	*.328*	*.120*

Concerning the size of the board, there were small changes from 2006 to 2015. Differently, the presence of CEO duality and the participation of independent and busy directors has considerably changed. Specifically, CEO duality has decreased by 4% compared to 2006. While, independent and busy directors show an increase of 5% and a reduction of 11% respectively, confirming the fact that the audit bodies aspire to have a governance structure more open to minority shareholders, closely related to independent directors, and with directors less otherwise committed, so they can devote more time to the firms. At the same time, there is a substantial increase in female participation on the board of directors. In 2012, the presence of women on boards of Italian listed companies grew by 6% in 2006 to 11.2%. In 2015, the last year of observation, this percentage rose almost to 27% and the number of female directors was four times larger than in 2006.

5.3. Literature review and hypotheses

Gender diversity on the board and in top management is attracting the attention of the policymakers in the Italian socio-economic system (Cambrea, Lussana, Quarato, & Capello, 2018). Legislative actions increasing the female presence on the boards of directors led researchers to verify whether the gender quotas have caused a positive or negative effect upon the economic and financial conditions of the companies.

As a result, research contributions on the subject are growing vertiginously, giving rise to bright and interesting debates between academics and policymakers. It often happens that the empirical results are conflicting and heterogeneous. On the one hand, researches find a positive effect of female directors on business performance (Conyon & He, 2017; Liu et al., 2014; Terjesen, Couto, & Francisco, 2016). On the other hand, some studies show negative results (Adams & Ferreira, 2009; Ahern & Dittmar, 2012) and highlight the disadvantages associated with the presence of female directors in the boardroom. Finally, some empirical research does not reveal a relationship between women and performance (Lückerath-Rovers, 2013; Marinova, Plantenga, & Remery, 2016; Rose, 2007).

In light of agency theory, one of the main tasks of the board of directors is to monitor top management. For this purpose, the diversity of the board could be a useful tool to use to minimize potential agency problems (Erhardt, Werbel, & Shrader, 2003). Indeed, it seems that women have an impact like that of the independent directors (Adams & Ferreira, 2009). At the same time, they appear to monitor more severely on the activity of top management, to have greater involvement than the directors do in decision-making and to have better conformity with the interests of shareholders (Adams & Ferreira, 2009). Also, female directors are more present at the board of directors' meetings (Adams & Ferreira, 2004), contributing not only to solving the problems arising from the absences of the directors but above all to improving the efficiency of the board through participation in the decision process.

According to resource dependence theory (Pfeffer & Salancik, 1978), board members represent resources for all businesses and work to create value for all shareholders, not just for the majority. From this perspective, female directors are considered particularly valuable in improving the management of an enterprise. They have different personal and relational skills than the men, which allow them to contribute to having a heterogeneous and comprehensive board. Also, as Huse and Solberg (2006) suggest that female directors appear to be more prepared than male counterparts and appear to be very interactive, which makes them less dependent on management. To understand what benefits women bring to the boardroom Hillman, Canella, and Harris (2002) have highlighted that most of them come from non-business occupations, so they are skilled in a variety of areas, such as marketing, public relations, and law. Moreover, they have more wisdom and diligence than men and have excellent ability to make alliances with the most influential actors (Huse & Solberg, 2006), have a better capacity to relate to the external environment and to join their second board faster than the male directors (Hillman et al., 2002). Finally, they invest more in R&D by promoting business innovation and send positive business signals to the public regarding the company's ethical behaviour (Terjesen et al., 2016).

The analysis of the literature shows the presence of conflicting results. Generally, the thesis emerges that companies characterized by board diversity are distinguished by an effective and efficient board of directors, which can help to avoid opportunistic behaviours from managers and to increase the company value.

In light of the literature review, we develop the following research hypotheses.

5.3.1. Female directors and firm performance

After the entry into force of Law 120/2011, which aims to increase the number of women in the corporate governance and to make them more involved in decision-making processes within companies, many researchers have focused their attention on the analysis of the consequences on company performance. Many empirical researchers are studying the relationship between female directors and performances in Italy (Amore & Garofalo, 2016; Amore, Garofalo, & Minichilli, 2014; Bronzetti, Mazzotta, & Sicoli, 2010).

Despite the numerous researches on the subject, the empirical results do not allow a clear definition of the effects of gender quotas on the value of companies. On the one hand, some studies emphasize the benefits that female directors can bring to the enterprises (Carter, Simkins, & Simpson, 2003; Conyon & He, 2017; Dezsö & Ross, 2012; Lückerath-Rovers, 2013). On the other hand, some papers underline the less favourable aspects of the compulsory introduction of women on the boardroom and show negative results in terms of business performance (Adams & Ferreira, 2009; Ahern & Dittmar, 2012). Especially, the latter empirical analysis, employing a sample of Norwegian companies, shows that imposing a quota has forced many firms to appoint female directors who in some cases did not have any experience.

However, despite it being possible to identify in the literature studies with conflicting results, the recent meta-analysis by Post and Byron (2015) highlights the existence of a positive relationship between women on the board of directors and business performances. Women are perceived as a precious resource for businesses, where they are a source of unique skills and different points of view within the board, so they contribute to improving the quality of decision-making.

Conflicting results come to light from the literature that does not allow defining the sign of the relationship. Therefore, it is assumed that the presence of female directors can influence business performance in both ways:

H1: The presence of female directors affects firm performance.

5.3.2. *Independent female directors and firm performance*

The concept of independence finds its origin in the agency theory, whose supporters believe that the task of independent directors is to control the work of top management to protect the interests of shareholders and to avoid possible conflicts that might reduce the value of the companies. Many studies acknowledge that when the board of directors is characterized by gender diversity, there is more independence (Adams & Ferreira, 2009; Terjesen et al., 2016).

The presence of women in the boardroom should increase the profits of a company, both through a reduction in agency problems and by a different ability to observe internal issues (Rubino et al., 2017). However, in some cases, more independence can reduce the performance of companies. As shown by Adams and Ferreira (2009), boards with many women could engage in over-monitoring activities and could ultimately decrease shareholder value in firms with strong governance.

Contrary to these results, Terjesen et al. (2016) suggest that the independence of the board has a positive effect on the value of the enterprise when the board is more diversified in gender. On the contrary, when there are few or no female directors, the results show that the presence of independent directors is damaging to company performances. The same opinion is taken by Bøhren and Staubo (2016), who have seen an increase in the independence of the boardroom because of a mandatory gender quota.

Although we believe that female independent directors may affect firm performance, given all contrasting opinions, the sign of the expected relationship between the presence of independent female directors and firm performance cannot be hypothesized *a priori*. Therefore, we leave the following generic provision:

H2: The presence of independent female directors affects firm performance.

5.3.3. Executive female directors and firm performance

Several studies show that women directors do not cover executive positions on the board (Lückerath-Rovers, 2013; Smith, Smith, & Verner, 2006). Ahern and Dittmar (2012) clarify that newly appointed female directors have a greater probability of assuming non-executive positions than male directors. Also, they consider that women have significantly less CEO experience and are more likely to be employed as non-executive managers.

However, Smith et al. (2006) show, despite the low percentage of executive board members in their sample, that woman in top management positions tend to have a positive impact on company value. Also, Liu et al. (2014), comparing the impact of female independent and executive directors on business performance, highlight the greater effect of the latter. When the CEO is a woman, in addition to managing companies in another way, they are perceived differently by financial markets (Jalbert, Jalbert, & Furumo, 2013). Faccio, Marchica, and Mura (2016), studying the relationship between the gender of the CEO and the assumption of business risks, reveal that women might reduce corporate risk-taking after they become CEOs. In addition, firms run by female CEOs have lower leverage, less volatile earnings, and a higher chance of survival than otherwise similar firms run by male CEOs.

In the light of empirical evidence, it is assumed that a greater presence of female executive directors can improve firm performance and, therefore, we formulate:

H3: The presence of female executive directors positively affects firm performance.

5.4. Method

To test the effect of female directors on firm performance, the following empirical model is applied. After conducting the Hausman test, we opted for fixed-effects over the random-effects model. All regressions included year fixed effects, which capture the influence of aggregate (time-series) trends and any variation in the outcome that happens over time and that is not attributed to your other explanatory variables.

$$\begin{aligned} ROA_{t+1} = {} & \beta_0 + \beta_1\,\textit{female variables} + \beta_2\,\textit{firm size} + \beta_3\,\textit{cash holdings} + \beta_4\,\textit{debt} + \beta_5\,\textit{cash flow} + \\ & + \beta_6\,\textit{growth opportunity} + \beta_7\,\textit{capital expenditures} + \beta_8\,\textit{cash flow volatility} + \beta_9\,\textit{board size} + \\ & + \beta_{10}\,\textit{CEO duality} + \beta_{11}\,\textit{male independent directors} + Year_t + \varepsilon_{i,t} \end{aligned} \tag{5.1}$$

The dependent variable used in the study is the ROA, which is a proxy of firm performance, and it is the result of the ratio between total operating income and total assets (Amore & Garofalo, 2016). However, in order to increase the robustness of our findings, we also report our main analyses using an alternative accounting measure of performance ROE (return on equity), computed as pre-tax income to common equity (Ararat, Aksu, & Tansel Cetin, 2015), and a market-based proxy of performance: Tobin's Q, which is calculated as the sum of the market value of equity, the book value of short-term debt, and the book value of long-term debt, scaled by total assets (Belkhir, Boubaker, & Derouiche, 2014; Pinkowitz, Stulz, & Williamson, 2006).

The main independent variable *female variables* refer to the three types of proxies described in the hypotheses: *female directors, female independent directors,* and *female executive directors*. Female variables are continuous variables and computed as the percentage of female directors over the total number of the board of directors' members and as the percentage of independent and female executive directors, respectively (Liu et al., 2014).

Based on prior studies that examine the relationship between female directors and firm performance, and to check the firm-specific effects, we introduced into our analysis several control variables (Adams & Ferreira, 2009; Ahern & Dittmar, 2012). *Firm size* is measured as the logarithm of total assets. *Cash holdings* are the amount of liquidity in the firm. It is calculated as the availability of cash and cash equivalents to total assets. *Debt* is calculated as the long total debt divided by the total assets of the firm. The *cash flow* is derived from the ratio of cash flow from operations to total sales. *Growth opportunity* takes into account the firm's growth investment opportunities and is measured by the rate of sales growth. *Capex* is the ratio of capital expenditures on total assets. *Cash flow volatility* is a proxy for measuring the uncertainty of the cash flows generated from operations. It is the company mean standard deviation of cash flows over the past ten years divided by total assets. We also considered some board variables, which might affect firm performance. *Board size* is the number of members who sit on the board of directors. *CEO duality* and is a dummy variable, which takes value one if the CEO also covers the position of Chairman of the board, and zero otherwise. *Male independent directors* are identified by the ratio of male independent directors on the board. To mitigate the effect of outliers, we winsorize observations at the 1st and 99th percentiles. The variables used are described in detail in the Appendix.

5.4.1. Sample

The hypotheses are tested on a sample of industrial firms listed on the Italian stock exchange in Milan and included in Datastream for the period 2006-2015 (10 years). The timeline allows for capturing the impact of the introduction of the Law 120/2011 in the corporate governance of listed companies. We exclude banks and other financial institutions because their budgets are influenced by exogenous factors (Rubino et al., 2017). From the initial sample 1,871 firm-year observations, we excluded 192 firm-year observations with insufficient governance data and 276 firm-year observations with insufficient financial data. In addition, as our dependent variable is a leading variable, which allows us to mitigate potential endogeneity issues but leads to a reduction of the total observations, the final sample consists of 1,285 observations and 190 firms. The data on the presence of women on the board of directors were collected manually by referring to the annual reports on corporate governance of the individual firms, available on their official websites and the website of the Italian Stock Exchange. Table 5.2 presents the sample distribution across the Borsa Italiana Industry Classification.

Table 5.2. Sample composition by Borsa Italiana industry classification

Industry description	*Frequency*	*Percentage (%)*
Oil & Gas	67	3,21%
Chemicals	20	0,93%
Basic Materials	10	0,50%
Construction & Materials	137	7,91%
Industrial Goods & Services	400	22,31%
Automobiles & Parts	83	4,06%
Food & Beverage	86	4,85%
Personal & Household Goods	214	11,26%
Health Care	67	3,71%
Retail	50	2,57%
Media	153	8,20%
Travel & Leisure	76	4,28%
Telecommunications	30	1,78%
Utilities	160	9,34%
Real Estate	99	4,49%
Technology	186	10,62%
Total	*1403*	*100%*

The industries with the largest representation include Industrial Goods & Services (22.31%), Personal & Household Goods (11.26%), Technology (10.62%), Utilities (9.34%), and Media (8.20%).

5.4.2. Descriptive statistics

Table 5.3 presents the main descriptive statistics of all variables for our 1,285 firm-year observations.

Table 5.3. Descriptive statistics

Variables	*Mean*	*Standard deviation*	*First quartile*	*Median*	*Third quartile*
ROA	0.020	0.094	-0.015	0.028	0.065
ROE	0.021	0.697	-0.021	0.097	0.212
Tobin's Q	0.894	0.534	0.558	0.768	1.059
Female directors	0.121	0.117	0.000	0.111	0.214
Female independent	0.052	0.090	0.000	0.000	0.091
Female executive	0.029	0.057	0.000	0.000	0.000
Firm size (mil €)	4.073.534	16.229.357	135.654	368.374	1.574.432
Cash holdings	0.107	0.100	0.040	0.078	0.142
Debt	0.173	0.156	0.048	0.136	0.254
Cash flow	-18.849	543.489	2.550	7.390	14.050
Growth opportunity	0.044	0.321	-0.072	0.021	0.116
Cash flow volatility	0.050	0.083	0.021	0.033	0.055
Capex	0.040	0.059	0.011	0.025	0.049
Board size	9.458	3.130	7.000	9.000	11.000
CEO Duality	0.266	0.442	0.000	0.000	1.000
Male independent	0.312	0.200	0.200	0.300	0.429

Concerning explanatory variables, the results show that the percentage of women on the board is about 12% and the median is 11%. Regarding the characteristics of female directors, the results show that 5.2% of the members of the board of directors are independent female, whereas almost 3% of directors are identified as female executive directors. Regarding the board variables, the results show that, on average, the CEO duality condition is present in almost 27% of the cases. The average percentage of male independent directors on the boards is 31.2%. The average number of directors on the board is comprised of nine and ten members.

Figure 5.1. Evolution of the different types of female directors on Italian listed companies: 2006 to 2015

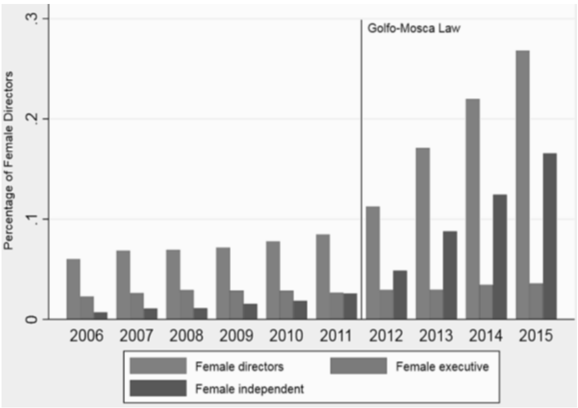

Figure 5.1 shows that although the number of women has grown increasingly over the years, not all different types of directors have grown proportionally. Only the percentage of independent women follows the growing trend of the total percentage of female directors. On the contrary, the proportion of executive women has remained constant over the years. We conclude that thanks to the application of Law 120/2011 (Golfo-Mosca) the percentage of women on Italian boards has experienced an upward trend in recent history, but not uniformly distributed across the role.

Table 5.4 shows the correlations among all independent variables.

Table 5.4. Correlation matrix

	Variables	***1***	***2***	***3***	***4***	***5***	***6***	***7***	***8***
1	ROA	1.000							
2	ROE	0.300*	1.000						
3	Tobin's Q	0.182*	0.042	1.000					
4	Female directors	-0.083*	-0.041	-0.048*	1.000				
5	Female Independent	-0.040	-0.029	0.005	0.656	1.000			
6	Female Executive	-0.067*	-0.003	-0.122*	0.378*	-0.127*	1.000		
7	Firm size	0.280*	0.124*	-0.169*	-0.125*	0.080*	-0.208*	1.000	
8	Cash holdings	-0.019	0.012	0.153*	0.020	0.008	0.081*	-0.050*	1.000
9	CEO Duality	-0.086*	-0.004	-0.003	0.000*	-0.053*	0.025	-0.174*	0.062*
10	Debt	0.001	-0.055*	0.013	0.016*	0.085*	-0.161*	0.341*	-0.189*
11	Cash flow	0.147*	0.167*	-0.015	-0.068*	-0.063*	-0.044	0.081*	-0.089*
12	Growth opportunity	0.187*	0.073*	0.063*	-0.070*	-0.054*	0.005	0.006	-0.027
13	Board size	0.002	0.001	0.150*	0.019	0.019	-0.061*	0.109*	0.037
14	Male independent	0.038	0.010	0.003	-0.389*	-0.294*	-0.100*	0.267*	-0.080*
15	Capex	0.039	0.069*	0.073*	-0.022	-0.034	-0.005	0.012	-0.067*
16	Cash flow volatility	-0.335*	-0.138*	0.137*	0.094*	0.074*	0.059*	-0.267*	0.185*
	Variables	***9***	***10***	***11***	***12***	***13***	***14***	***15***	***16***
1	ROA								
2	ROE								
3	Tobin's Q								
4	Female directors								
5	Female Independent								
6	Female Executive								
7	Firm size								
8	Cash holdings								
9	CEO Duality	1.000							
10	Debt	-0.151*	1.000						
11	Cash flow	-0.037	-0.002	1.000					
12	Growth opportunity	0.004	0.002	0.108*	1.000				
13	Board size	-0.167*	0.102*	-0.022	0.016	1.000			
14	Male independent	-0.136*	0.145*	0.058*	0.013	0.039	1.000		
15	Capex	-0.013	0.081*	0.017	0.082*	-0.001	0.069*	1.000	
16	Cash flow volatility	0.064*	-0.065*	-0.361*	-0.135*	-0.016	-0.058*	0.001	1.000

In general, problems of correlations due to multicollinearity are negligible, as obtained from the correlation matrix and VIF test, not shown for reasons of brevity.

5.5. Empirical results

Table 5.5 shows the results of the analysis that examines the role of female directors in determining firm performance in the total sample of companies. Because, the estimates based on the least squares (OLS) may be distorted, and to avoid problems of heterogeneity, a fixed effects panel model is applied (Dezsö & Ross, 2012). The Hausman test suggests a preference for the fixed-effect model rather than the random-effect model. Also, all explanatory and control variables are lagged by one year to mitigate endogeneity concerns (Amore et al., 2014; Chen, Leung, & Goergen, 2017).

Table 5.5. An empirical analysis of the relationship between female directors and firm performance

	Return on Assets (ROA) $_{t+1}$			
	(1)	***(2)***	***(3)***	***(4)***
Variables	***Whole period***	***Whole period***	***Before Law <2012***	***After Law ≥2012***
Female directors	0.0646***			
	(0.0240)			
Female independent directors		0.0631**	0.104*	0.0459
		(0.0299)	(0.0571)	(0.0430)
Female executive directors		-0.0595	-0.00894	0.0423
		(0.0597)	(0.0833)	(0.0841)
Firm size	-0.0370***	-0.0339***	-0.000936	-0.00924
	(0.00801)	(0.00809)	(0.0139)	(0.0272)
Cash holdings	0.0996***	0.102***	0.167***	-0.173**
	(0.0266)	(0.0267)	(0.0349)	(0.0708)
Debt	0.0396**	0.0390**	0.0214	0.0544*
	(0.0175)	(0.0176)	(0.0232)	(0.0317)
Cash flow	9.79e-05**	9.97e-05**	-1.16e-05	-1.34e-05
	(4.26e-05)	(4.26e-05)	(5.29e-05)	(0.000166)
Growth opportunity	0.0213***	0.0216***	0.0163***	-0.00944
	(0.00502)	(0.00503)	(0.00553)	(0.00972)
Capex	0.0165	0.0192	-0.0630	-0.140
	(0.0327)	(0.0327)	(0.0430)	(0.123)
Cash flow volatility	-0.425***	-0.397***	0.510**	0.0458
	(0.0713)	(0.0724)	(0.227)	(0.124)
Board size	-0.0134	-0.0145	-0.0145	0.0131
	(0.0167)	(0.0169)	(0.0231)	(0.0359)
CEO Duality	0.000141	0.00104	0.000181	0.00572
	(0.00597)	(0.00598)	(0.00721)	(0.0109)
Male independent directors	-0.0114	-0.0137	-0.0121	0.00917
	(0.0150)	(0.0151)	(0.0199)	(0.0341)
Constant	0.510***	0.477***	-0.0121	0.137
	(0.109)	(0.110)	(0.194)	(0.365)
Fixed effects	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes
Observations	1,285	1,285	865	420
R-squared	0.091	0.089	0.102	0.059
Number of Id	190	190	186	175

Notes: The table shows the empirical findings of the relationship between female directors and firm performance. Column (1) and columns (2) show the results considering the entire period under investigation: 2006 to 2015. Column (3) and (4) reports the empirical results in the two sub-periods: before and after the Golfo-Mosca law. The dependent variable is a performance measure (ROA). Temporal dummies are included in the model. In parentheses is the p-value. (*), (**) and (***) indicate the statistical significance of each coefficient at a level of 10%, 5%, and 1%, respectively.

In general, the estimated coefficients of the control variables are in line with the indications from previous studies. Firm performance is positively correlated to cash holdings, bet, cash flows, and growth opportunities. On the contrary, we find a negative relationship between performance and both firm size and cash flow volatility.

Concerning the hypotheses previously formulated, Hypothesis 1 is confirmed because the coefficient of the variable female directors is statistically significant ($\beta = 0.0646$, $p < 0.05$). The empirical results show that the presence of women on the board has a positive effect on business performance. By examining female directors who are independent of shareholder control, the empirical findings show the positive and statistical significance of the *female independent directors* ($\beta = 0.0631$, $p < 0.05$). Differently, from the results shown by Adams and Ferreira (2009), an increase in the gender quota, which is not related to shares holding in the enterprise, leads to better firm performance. Thus, Hypothesis 2 is supported. Our findings are consistent with the empirical researches, which attribute the positive result to the monitoring of female directors on management performance. Over-monitoring of the top management could improve board efficiency and, consequently, financial performance. Finally, regarding Hypothesis 3, which aims to test the impact of female executive directors on firm performance, the results of our regression are not statistically significant ($\beta = -0.0595$, $p > 0.10$). It seems that the presence of women directors in the management of the firm does not improve firm performance. Companies do not benefit from the different capabilities of females and new managerial perspectives, which could allow enhancing firm strategies and increasing firm performance.

Despite our main empirical finding showing that female directors positively affect firm performance, it is possible that the relationship could be affected by the period under investigation. Consequently, to estimate the influence of female directors on firm performance before and after the introduction of Golfo-Mosca Law, we split the entire period based on the year 2012, which is the year the Golfo-Mosca Law entered into force. Column 3 and column 4 of Table 5.5 show the results related to the effectiveness of female directors in determining firm performance before and after the Law. The empirical results show that after the entry into force of the rose quota law, the participation of women on the boards is not able to influence the company's performance. Both coefficients of the variables female independent and executive are not statistically significant. Diversely, a higher proportion of independent women in the pre-law period proves to be able to improve firm performance. The difference in results in the two different periods is very important. Provocatively, it could be linked to the fact that imposing the selection of female directors has determined choice inefficiencies within the companies, which have found themselves facing the request without being able to draw on a specialized and ready human resources market.

5.6. Robustness test

As a robustness test, we repeat our baseline empirical analysis using two alternative measures of corporate performance: accounting and market-based measures respectively. The empirical findings are presented in the following Table 5.6.

Table 5.6. Relationship between female directors and firm performance employing different measures of performance (ROE and Tobin's Q)

	Return on Equity (ROE) $_{t+1}$				***Tobin's Q*** $_{t+1}$			
	(1)	***(2)***	***(3)***	***(4)***	***(5)***	***(6)***	***(7)***	***(8)***
Variables	***Whole period***	***Whole period***	***Before Law <2012***	***After Law ≥2012***	***Whole period***	***Whole period***	***Before Law <2012***	***After Law ≥2012***
Female directors	0.769**				-0.0254			
	(0.337)				(0.133)			
Female independent directors		0.795*	2.104**	0.0396		0.218	0.714**	0.255
		(0.420)	(0.889)	(0.721)		(0.165)	(0.313)	(0.290)
Female executive directors		-0.567	-0.895	-0.242		0.136	0.247	-0.468
		(0.837)	(1.295)	(1.410)		(0.330)	(0.458)	(0.563)
Firm size	-0.497***	-0.463***	-0.711***	-0.461	0.0509	0.0487	-0.0184	-0.144
	(0.112)	(0.113)	(0.217)	(0.456)	(0.0443)	(0.0446)	(0.0764)	(0.182)
Cash holdings	1.034***	1.068***	1.135**	1.368	0.438***	0.447***	0.407**	0.672
	(0.373)	(0.374)	(0.543)	(1.186)	(0.147)	(0.147)	(0.191)	(0.475)
Debt	-0.377	-0.382	-0.331	-1.234**	0.136	0.133	-0.0254	0.138
	(0.246)	(0.246)	(0.360)	(0.526)	(0.0970)	(0.0971)	(0.127)	(0.217)
Cash flow	0.00113*	0.00115*	0.00118	0.00305	-0.000275	-0.000262	-0.000137	0.000141
	(0.000598)	(0.000599)	(0.000825)	(0.00279)	(0.000242)	(0.000242)	(0.000303)	(0.00112)
Growth opportunity	-0.0700	-0.0665	-0.0859	0.0809	0.0287	0.0259	0.0264	-0.0226
	(0.0705)	(0.0706)	(0.0861)	(0.163)	(0.0278)	(0.0278)	(0.0304)	(0.0652)
Capex	-0.883*	-0.853*	-0.916	0.926	-0.293	-0.308*	0.121	1.056
	(0.460)	(0.460)	(0.670)	(2.055)	(0.182)	(0.181)	(0.238)	(0.822)
Cash flow volatility	-6.079***	-5.781***	-7.441**	-10.37***	0.284	0.213	-2.458**	-2.339***
	(1.002)	(1.017)	(3.531)	(2.070)	(0.393)	(0.398)	(1.243)	(0.830)
Board size	-0.300	-0.307	-0.865**	1.510**	0.211**	0.227**	0.240*	0.134
	(0.233)	(0.235)	(0.353)	(0.602)	(0.0939)	(0.0944)	(0.131)	(0.241)
CEO Duality	-0.0361	-0.0251	-0.0380	0.171	0.0494	0.0513	0.0918**	0.0269
	(0.0838)	(0.0840)	(0.112)	(0.182)	(0.0329)	(0.0329)	(0.0395)	(0.0728)
Male independent directors	0.300	0.282	0.382	-0.00575	0.133	0.177**	0.324***	0.106
	(0.210)	(0.212)	(0.308)	(0.571)	(0.0828)	(0.0835)	(0.109)	(0.228)
Constant	6.653***	6.274***	10.19***	5.379	-0.124	-0.155	0.695	2.583
	(1.531)	(1.548)	(3.018)	(6.106)	(0.604)	(0.610)	(1.062)	(2.450)
Fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1,288	1,288	867	421	1,280	1,280	867	421
R-squared	0.061	0.060	0.061	0.214	0.176	0.178	0.282	0.140
Number of Id	190	190	186	175	190	190	186	175

Notes: The table shows the empirical findings of the relationship between female directors and firm performance. Columns (1-2) and columns (5-6) show the results considering the entire period under investigation: 2006 to 2015. Columns (3-4) and columns (7-8) report the empirical results in the two sub-periods: before and after the Golfo-Mosca law. The dependent variables are Return on Equity - ROE (Columns 1 to 4) and Tobin's Q (Columns 5 to 8). Temporal dummies are included in the model. In parentheses is the p-value. (*), (**) and (***) indicate the statistical significance of each coefficient at a level of 10%, 5%, and 1%, respectively.

In columns 1 to 4 of Table 5.6, we regress our empirical model considering Return on Equity (ROE) as the dependent variable. ROE is computed as pre-tax income to common equity (Ararat et al., 2015). The results are unchanged with our main models presented in Table 5.5. The coefficient of the variable female directors is positive and statistically significant ($\beta = 0.769$, $p < 0.05$). The same results are obtained looking at the different role of female directors on the board. In fact, only the variable female independent directors is statistically significant ($\beta = 0.795$, $p < 0.10$). Differently, the coefficient of female executive directors is not statistically significant ($\beta = -0.567$,

$p > 0.10$). Referring on the effect of independent and executive female directors before and after the Golfo-Mosca law, the empirical results found using ROE as the dependent variable are identical to those obtained using ROA. The results are unchanged, corroborating the reliability of our findings.

Diversely, in columns 5 to 8 of Table 5.6, we run the empirical analyses employing a market measure of performance: Tobin's Q. Given the difficulties in estimating replacement costs, we follow common practice and use the market-to-book (M/B) ratio as a proxy for Tobin's Q. It is calculated as the sum of the market value of equity, the book value of short-term debt, and the book value of long-term debt scaled by total assets (Belkhir et al., 2014; Pinkowitz et al., 2006). In this case, the findings differ from our results from Table 5.5. Using a market-based measure of performance, the results regarding the entire period of analysis are not supported. The variables of female directors and female independent directors are no longer statistically significant. The only identical result, in terms of empirical findings, is that the coefficient of the variable female independent directors, before the introduction of the Golfo-Mosca law, remain positive and statistically significant ($\beta = 0.714$, $p < 0.05$). Despite the empirical findings are robust to different accounting measures of performance, the econometric results are partially confirmed by employing a market-based proxy (Tobin's Q). As Tang (2017) underlines on page 366: "It should be noted that as different measures of firm performance (e.g., accounting vs. market-based measures) capture different dimensions, it is unrealistic to expect them to lead convergent results (Combs, Crook, & Shook, 2005; Richard, Devinney, Yip, & Johnson, 2009). What measure is most appropriate and thus should be chosen should be based on the conceptual arguments underlying the hypotheses (Combs, Crook, & Shook, 2005; Richard, Devinney, Yip, & Johnson, 2009)". Therefore, given that in Italy, more than in other European countries, the stock market is only of marginal importance and few firms are listed,[2] we believe it is better to consider accounting-based measures performance as proxies to measure firm value.

Although the results show a positive effect of female directors and female independent directors on performance, it is possible that the relationship could be affected by other factors able to change the sign and intensity of the relationship. Therefore, to see how potential moderators may affect the role of female directors, further analyses are conducted. Specifically, we test the role of the firm size as moderator able to influence the conditional effect of female directors on firm performance. To verify the differences between small and large firms, the interactions between female variables and a continuous variable are included in the model.

Table 5.7 shows the empirical evidence about the relationship between female variables and performance influenced by firm size.

[2] In 2015, only 282 companies traded on the Milan stock exchange – segment MTA (290 in 2014, 294 in 2008, 271 in 2003), whereas the number of listed companies was 490 in France, 555 in the Germany, 1,858 in the United Kingdom, and more than 3,600 in Spain (source: Standard & Poor's, Global Stock Markets Factbook and supplemental S&P data).

Table 5.7. Relationship between female directors and firm performance according to different firm size

	Return on Assets (ROA) $_{t+1}$			
	(1)	***(2)***	***(3)***	***(4)***
Variables	***Whole period***	***Whole period***	***Before Law <2012***	***After Law ≥2012***
Female directors	0.579***			
	(0.109)			
Female directors*Size	-0.0383***			
	(0.00789)			
Female independent directors		0.713***	0.836***	0.348*
		(0.136)	(0.297)	(0.180)
Female independent directors*Size		-0.0476***	-0.0573**	-0.0220*
		(0.00968)	(0.0229)	(0.0127)
Female executive directors		-1.170**	-0.736	0.806
		(0.457)	(0.721)	(0.680)
Female executive directors*Size		0.0910**	0.0599	-0.0581
		(0.0367)	(0.0592)	(0.0521)
Firm size	-0.0350***	-0.0324***	0.00169	-0.00969
	(0.00794)	(0.00799)	(0.0141)	(0.0271)
Cash holdings	0.104***	0.110***	0.180***	-0.171**
	(0.0263)	(0.0264)	(0.0355)	(0.0704)
Debt	0.0350**	0.0347**	0.0157	0.0452
	(0.0174)	(0.0174)	(0.0232)	(0.0319)
Cash flow	9.92e-05**	9.49e-05**	-5.94e-06	-9.88e-06
	(4.21e-05)	(4.21e-05)	(5.28e-05)	(0.000165)
Growth opportunity	0.0198***	0.0216***	0.0162***	-0.00975
	(0.00498)	(0.00501)	(0.00561)	(0.00967)
Capex	0.00281	0.00406	-0.0604	-0.149
	(0.0325)	(0.0325)	(0.0431)	(0.122)
CFvol	-0.463***	-0.389***	0.535**	-0.0546
	(0.0710)	(0.0735)	(0.227)	(0.135)
Board size	-0.0208	-0.0210	-0.0186	0.00707
	(0.0166)	(0.0167)	(0.0231)	(0.0359)
CEO Duality	-0.000531	0.000505	0.000837	0.00328
	(0.00591)	(0.00591)	(0.00719)	(0.0109)
Male independent directors	-0.0136	-0.0140	-0.0104	-0.00113
	(0.0149)	(0.0150)	(0.0198)	(0.0344)
Constant	0.492***	0.461***	-0.0463	0.157
	(0.108)	(0.109)	(0.196)	(0.363)
Observations	1,285	1,285	865	420
R-squared	0.110	0.113	0.112	0.077
Number of Id	190	190	186	175
Fixed effects	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes

Notes: The table shows the empirical findings of the moderating role of firm size on the relationship between female directors and firm performance. Column (1) and columns (2) show the results considering the entire period under investigation: 2006 to 2015. Column (3) and (4) reports the empirical results in the two sub-periods: before and after the Golfo-Mosca law. The dependent variable is a performance measure (ROA). Temporal dummies are included in the model. In parentheses is the p-value. (*), (**) and (***) indicate the statistical significance of each coefficient at a level of 10%, 5%, and 1%, respectively.

The empirical results show that the impact of female directors on firm performance is contingent by the size of the company. In particular, the findings regarding the entire period of analysis, displayed in columns 1 and 2 of Table 5.7, show that all the coefficient of the interaction terms between female variables and size are statistically significant and have different sign compare to the sign of the main effect investigated. Specifically, looking at the impact of female directors and female independent directors, their positive effect on firm performance decrease as the size of the firm increases. Conversely, the negative effect of female executive directors on corporate performance is positively moderated by firm size.

Referring to the moderating effect of the size in the relationship between of female independent directors and female executive directors on corporate performance before and after the introduction of Golfo-Mosca Law, as the interaction terms between female independent directors and size are negative and statistically significant, the previous empirical findings are confirmed in the case of female independent directors.

Diversely, the interaction terms between female executive directors and size are not statistically significant in both sub-periods. Consequently, it does not seem that the size of the company can affect the main effect of a female with executive roles on firm performance.

5.7. Conclusion

This chapter contributes significantly to study the effects of the mandatory introduction of gender diversity into the board of directors of listed companies in Italy. After testing the mere relationship between female directors and business performances, the aim of this article has been to test whether this relationship may depend on other parameters, such as the role of directors on the board. The empirical analysis, conducted on a sample of 190 listed companies regarding the years 2006-2015, highlighted a positive and significant relationship between female directors and business performance.

Regarding the role of female directors on the board, it is possible to highlight discordant empirical results. Only independent women directors affect company performance positively. Regarding women with independent qualifications, our findings show that gender diversified boards are more severe in control activity. Consequently, excessive monitoring of firms with strong governance can affect the performance of the board positively, leading to benefits for the firms. Further analyses aimed to explore the effect of female directors on performance by looking at different firm sizes show that the positive effect of female directors and female independent directors on firm performance is reduced in the largest firms. Therefore, we can conclude that the impact of female directors on firm performance in contingent by the size of the company.

This work is not without limitations. First of all, the research refers only to the Italian context. Therefore, the conclusions reached cannot be generalized in other countries, especially those that have approved a law on female quotas for many years and, thus, they are at a stage of evolution different from the Italian one. Furthermore, this chapter does not consider the distinction between family and non-family businesses. The Italian environment, strongly characterized by the presence of family firms, lends itself to future research whose aim is to investigate first of all the different role of women directors in the two different types of companies. Also, it could be interesting to analyze the potential dissimilar impact that the directors female family members could determine in comparison with the pink quotas not directly associated with the family that holds control of the company.

This work allows interesting implications to be drawn for institutional actors, who have strongly supported gender diversity both in business and top management. Descriptive statistics show that the percentage of women on corporate boards has grown strongly in recent years. However, law 120/2011 obliges companies to appoint women. At the same time, it was expected that the different categories of directors could grow uniformly, which did not happen. The conclusions allow us to say that it is not enough to impose the presence of women on corporate governance to have good management results. It would be advisable for female directors to be considered for all the different roles that exist in corporate governance, and not only for the role of independent directors, but especially it is necessary to consider the specific features of the institutional context of reference and the experiences of female directors to be included in corporate governance.

The law on gender quotas will soon cease to be effective. In fact, in 2022 listed companies will no longer have an obligation to include a mandatory percentage of women directors on their boards. At that point, companies will have to decide whether to continue to include women on their boards and thus benefit from their peculiarities and their experiences gained in these 10 years of board assignments, or return to the past and have a predominance of men on the boards. For these reasons, the topic deserves to be followed and deepened with further studies and empirical evidence aimed at highlighting the opportunities deriving from the recruitment of women directors on the boards.

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Appendix
Description of the variables

Variables	*Descriptions*
Board size	Board size is the number of members who sit on the board of directors
Capex	The ratio of capital expenditures to total assets
Cash flow	The ratio of cash flow from operations to total sales
Cash flow volatility	Company mean standard deviation of cash flows over the past 10 years divided by total assets
Cash holdings	The ratio of cash and cash equivalents to total assets
CEO duality	Dummy equal to 1 if the CEO is also the chair of the board, 0 otherwise
Debt	The ratio of long-term debt to total assets
Female directors	The ratio of female directors divided by the total number of directors on the board
Female independent directors	The ratio of female independent directors divided by the total number of directors on the board
Female executive directors	The ratio of female executive directors divided by the total number of directors on the board
Firm size	Natural logarithm of total assets
Growth opportunity	% change in sales from the year t to year t-1
Male independent directors	The ratio of male independent directors divided by the total number of directors on the board
ROA	The ratio of total operating income to total assets
ROE	The ratio of pre-tax income to common equity
Tobin's Q	Sum of the market value of equity, the book value of short-term debt, and the book value of long-term debt, scaled by total assets
Year dummies	10 dummy variables for each year of the period 2006-2015, equal to 1 if the observation refers to the corresponding year, 0 otherwise