# Alma Mater Studiorum Università di Bologna
# Archivio istituzionale della ricerca

Gender diversity and corporate performance: Emphasis on sustainability performance

(Article begins on next page)

# GENDER DIVERSITY AND CORPORATE PERFORMANCE: EMPHASIS ON SUSTAINABLILITY PERFORMANCE

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ABSTRACT

In this research, we empirically investigate the impact of the board's female representation on corporate financial and sustainability performance after the introduction of the minimum gender quotas in Italy in 2011 (Golfo-Mosca Law). We studied the 40 companies of the FTSE-MIB index for three years 2016-2018. Using yearly regression analysis, pooled analysis, and differential analysis, we find that the female involvement on both boards has almost no significant effect on the financial performance; however, a significant association is found with the corporate sustainability performance. The robustness checks using differential analysis confirm the later relationship in which firms that improved female representation had also an ethical score upgrade. Interestingly, we also provide that there is an optimal level of gender quotas that maximizes sustainability performance and beyond that, a negative impact on performance might be detected.


KEYWORDS: Golfo-Mosca law, board of directors, board of statutory auditors, financial performance, ethical performance, pooled analysis, non-linearity.

1. INTRODUCTION

From the regulatory point of view, Italy is one of the most advanced countries in Europe for gender equality, despite this, female employment continues to be below the European average and the relative wages among the lowest in the world.

The first rules to protect gender equality date back to the 1940s, precisely in 1945 when Law Decree no. 23 recognizes the voting right to Italian women and in 1947 with the introduction of the Italian constitution, the art. 3: *"all citizens have equal social dignity and are equal before the law, without distinction of sex."* Other subsequent laws had also been approved such as the protection of women in the workplace, the motherhood and admission of women to public offices and professions, against any discrimination based on sex at the time of hiring and throughout the working period. Many of these legislative rules enacted over the years were then collected with the Legislative Decree 151/2001 in the "Consolidated Act of the legislative provisions on the protection and support of motherhood and fatherhood". Until 2011, to reduce the gender gap on the board of directors, a gender quotas law was enacted (Law 120/2011), known as the Golfo-Mosca Law, named after an initiative, undertaken by the two parliamentarians. It's made up of three articles: the first concerns the representation of gender balance in the bodies of listed companies; the second deals with the effective date of application of the rule, and the third concerns the gender balance in public controlled companies.

The introduction of mandatory quotas is also motivated by positive effects on growth and competitiveness based on the relationship between female engagement corporate profits. The effective date of the law according to art.2 is fixed starting from the first renewal of the administration and control bodies of listed companies, it requires that the least represented gender must be represented by at least one-fifth of the number of seats of directors and statutory auditors elected. This is a fixed-term law and once the validity period has elapsed, the gender balance forecast will be freely determined by the companies. The publication of the Golfo-Moscow

law has sparked numerous reactions. For women's perspective, the law was perceived as a defeat because specific regulations were necessary to guarantee the presence of the top management in society. For others, the legislation has the merit of recognizing the existence of a gender disparity for which it has filled the gap for the benefit of certain equity. Since the beginning of 2019, in anticipation of the natural expiry of the law, there have been proposals for the extension due to the reduction in the gender gap thanks to the law. An Italian study promoted by Consob[1] (2018),  precisely on the effectiveness of Law 120/2011 reports that since it entered into force, the presence of women on the boards of directors has increased continuously and in June 2018 there was a presence of 36% (ten years earlier or in 2009 it was 6.7%) reaching the highest figure exceeding the quota required by the same law. Another significant research produced by the Credit Suisse Research Institute (CSRI) "The CS Gender 3000 in 2019", according to which the presence of women internationally on the Board of Directors has increased by 50%; in Italy, it is 33.1% compared to a world average of 20.6%. The tax decree linked to the Budget Law of December 5, 2019, has extended the "Golfo-Mosco" law (Law 120/2011). Among the changes compared to the previous one: 1) the temporary nature changes: the law will remain "temporary" but for 6 consecutive terms; 2) the percentage that the least represented gender must obtain on the board of directors (BoD) and the boards of statutory auditor's (BSA) have been amended jumping from one third to two-fifths of the directors/auditors elected; 3) gradualness is maintained: the new provisions also provide for the allocation of at least one fifth for the first renewal after the start date of negotiations.

This paper aims to investigate the potential impact of female quotas on corporate financial and sustainability performance after the introduction of Golfo-Mosca 2011.  Previous studies usually measure how the trend of gender quotas have been improving since the Act was enacted, or they investigate the association between female quotas and corporate financial performance. However, we rely on recent data and we extend the empirical investigation by including the corporate sustainability or ethical performance and we provide original findings related to ethical performance[2] and the optimal level of female quotas. For three years from 2016 to 2018, we investigated the 40 companies of Milan Exchange (FTSE-MIB 40). We studied the three single years then we merge them into pooled data (year-firm), we also provide robustness tests; we employ the difference analysis and the non-linearity test.  We find that female representation on both boards has almost no significant effect on the financial performance; however, a significant association is found between female involvement and the corporate sustainability performance in the single year and the pooled analysis. The robustness checks using differential analysis confirm the later relationship, finally, we provide that there is an optimal level of gender quotas that maximize the sustainability performance and beyond that, a negative impact on performance might be found.

The rest of the paper is organized as follows: section two covers the related literature on female quotas and performance; section three describes the methodology, models, and data; section four presents the analysis and discussions; and finally, in section five conclusions and implications are presented.

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[1] CONSOB is the Italian Financial markets' authority.
[2] This study, sustainability performance and ethical performance are used interchangeably.

## 2. RELATED LITERATURE & HYPOTHESES DEVELOPMENT

Many noticeable researchers attest that the presence of women on governance bodies positively impacts corporate performance. Early studies date back to the 90, mostly aimed at investigating the phenomenon that became known as the "Glass Ceiling" coined in 1978 by Marilyn Loden. Then it became famous following the publication of a widely quoted article in the Wall Street Journal of March 1986 "The Glass Ceiling: Why Women Can't Seem to Break the Invisible Barrier That Blocks Them from the Top Jobs". It was written by Carol Hymowitz and Timothy D. Schellhardt, in which the crystal ceiling is described as" the set of artificial barriers based on attitudinal and organizational prejudices that prevent qualified people from advancing until they reach managerial positions in their organizations".

According to Arfken et al. (2004), the causes of the Glass Ceiling can be classified into two categories: those attributable to the characteristics of the female stereotype and those to the socio-cultural aspects. The first goes back to Karsten (1994) concerning the female personality, her abilities and the typical behaviors of the woman, her directional style that incorporates a comprehensive, empathic vision of the woman, attentive to the private life of the characteristic people who cannot live with the need to an authoritative personality capable of exercising that charisma necessary to manage an organization.

The latter is related to Bartol et al. (1978), who concern the internal dynamics of companies and the attitude of workers to prefer to be headed by a male leader as a cultural phenomenon. For others, the cause is attributable to the phenomenon of "interlocking" which occurs when a director is part of the BoD of two or more companies that are connected, that is when the companies are connected through a single network of directors often belonging to the same family. In the same context, Leighton and Thain (1993), argued the presence of an "old boy network", a model that generates within the BoD a mechanism for co-opting and depending on the directors of the same network.

Similar approaches are shared by Burke and Mattis (2000), who underline the role of appointments and the informal contacts, and how the roles of the CEO of the Board Chairman are fundamental to trigger a vicious circle of mutual protection of a close circle of the relationship system. Following the pioneering obligation of the presence of at least 40% of the gender quotas in the governance bodies of the Norwegian companies which took place in 2003, Kenneth et al. (2012) empirically highlight a negative impact on the value of the company consequent to the introduction of quotas, it led to a decrease of 13.4 % in the value of the Tobin's Q Index as well as an increase in the governance costs and an increase in leverage causing a deterioration of the operating performance of the companies.

Conversely, Ibrahim et al. (2009), show that the introduction of quotas attests to bring benefits. It enhanced the Diversity Management, a term coined in 1987 in the United States when the Hudston Institute published their study "Workforce 2000" on the ethnic composition of the workforce in the United States for the year 2000.

Diversity management is a managerial technique to empower each individual by enhancing the differences of the various members to improve working conditions and increase the effectiveness and organizational efficiency. According to Schwartz (2017), diversity management can improve corporate performance

assuming that each person is a leading actor and bearer of a wealth of values and expectations that are the result of their personal history. The increase in women's participation in the labor market following the introduction of gender quotas means more employees and more GDP. This approach is identified as "womenomics" in the economic theory in which women's work is an important engine of world development. Another important positive contribution made by the presence of women in the governance bodies is the style change. According to Adams et al. (2011), the management style of women is more prudent than that of men, they also show greater attention towards welfare policies, therefore being more stakeholders-oriented rather than shareholders oriented compared to men.

With the intensification of globalization and technological progress, companies have developed new business models aimed at combining business needs with those of the community and the environment in which it operates. Companies are increasingly evaluated through Environmental, Social, & Governance (ESG) parameters which are reported in specific reports (Al-Shaer et al, 2016; Campopiano and Massis, 2015, Gatto 2019). The development of sustainability reporting was also accelerated in the execution of the European Directive no. 95 of 2014 on the communication of non-financial information and information on diversity which since 2017 has become mandatory for large listed companies. Extensive research has shown that being socially responsible is economically advantageous for shareholders: companies that have implemented sustainability policies have enjoyed higher market values (Jain and Jamali, 2016).

To understand this assumption, it is necessary to underline the difference between the agency theory and the stakeholder theory. Prior literature based on agency perspective suggested that companies exist to create value for their shareholders this associated with the economic return and financial performances. Following the stakeholder theory, organizations exist to serve the interests of multiple stakeholders. So, the financial performance metrics are important but incomplete to assess the value created to all stakeholders defined as financial and non-financial returns (Harrison & Wicks, 2013).

Therefore, some scholars have begun to examine how the composition of corporate leadership has effects on corporate strategies and social responsibility plans (Waldman and Siegel, 2008; Isidro and Sobral, 2015), others on the role of the board (Aceituno et al, 2013).

Initial research has immediately shown that women are more likely to support sustainable strategies; Webb (2004) has shown that companies more likely to adopt sustainable environmental policies are also more conducive to implementing gender diversity within governance bodies. Walls and Hoffman (2013) demonstrate the positive relationship between gender diversity present and corporate social responsibility policies.

In recent years, the data attest (Zhang, 2013) that the most corporate social responsibility-oriented companies are rewarded n terms of market value and financial performance. This led to greater attention to investigate how board differences might result in different CSR performance (Terjesen and Couto, 2016).

Among the numerous studies (Galbreath 2018; Harjoto et al. 2015; Yasser et al. 2017; Ben-Amar et al. 2017 and Landry et al, 2016), some report that the inclination towards socialization of women is intrinsic in nature

itself that characterizes them in their psychological nature, their leadership style, and other attributes towards value.

Kemp et al. (2015), Li et al. (2015) and Williams (2003) show that women compared to men tend to be more aware and concerned about problems related to environmental damage and personal well-being, they tend to be more inclined to respect others, more committed to the community and inclined to charity and altruism.

Furthermore, they also differ from men (Adams, 2016; and Shaya & Abu Khait, 2017) in the style of leadership and the organizational priorities, they tend to be more innovative, transparent and egalitarian in their strategic vision with policies more focused on awareness and the community, more involved in the interests of the stakeholders more oriented towards long-term projects, they also show greater adaptability, even at the expense of short-term profits. These attributes are the consequence of different characteristics women have such as training courses, social humanities studies, and the previous work experience in medium-small size (Farrell and Hersch, 2005). Conversely, men tend to gain work experience in large companies, they are more attentive to the interests of shareholders and prefer a short-term business strategy.

A significant study was produced by McKinsey in 2014, from which emerges that the European companies in which gender equality is achieved in the administrative and control bodies achieve a 41% higher ROE than other counterparts with lower gender equality.

A study conducted by the Credit Suisse Research Institute (2012), states that in the 6 years from 2006 to 2012, listed companies where at least one woman resides on the boards recorded an average share performance of 26% higher than the companies led by entirely a male leadership

Based on the previous discussions on the role of the female in corporations and their potential impact on corporate performance, the following hypotheses are formulated leading to the empirical investigation of the role of the board female quotas on corporate performance:

*Hypothesis 1 (H$_0$): there is no significant relationship between board gender diversity and corporate financial performance.*

*Hypothesis 2 (H$_0$): there is no significant relationship between board gender diversity and corporate sustainability performance.*

## 3. RESEARCH METHODOLOGY
### 3.1 THE FRAMEWORK

To test the mentioned hypotheses on the impact of female quotas on corporate performance, we select the following variables of interest. The independent variables are the gender variables that are assumed to be associated with corporate performance (Kenneth et al, 2012; Adams et al, 2011); gender variables are represented by two main measures:

1. The number and the percentage of women on the board of directors (BoD).

2. The number and the percentage of women on the board of statutory auditors (BSA) *(or Collegio sindacale in Italian)*[3].

On the other hand, corporate performance variables, which are assumed to be influenced by the existence of female on both boards, are represented in two dimensions:

1. Financial indicators of performance: The classical return on assets (ROA) and return of equity (ROE).
2. The sustainability or the ethical performance: A rating that takes nine letters as indicators of the ethical performance similar to the credit rating, it is provided by the ethical rating agency Standard Ethics and the ratings take the following range: from EEE (very strong) to F (very weak): EEE, EEE-, EE+, EE, EE-, E+, E, E-, F. The rating is made up of ten elements (Sustainability, Independence, Systemic Approach, Credibility, Standard, Competitive, Reputational, Comparability, ESG Risks, Transparency) that capture the ethical and responsible performance of the company.

In all the relationships constructed, we controlled for two variables

1. The size of the company measured by its market capitalization: Larger firms are more likely to be involved in diverse activities and to be more socially responsible (Issa, 2017; Barnea and Rubin, 2010)
2. The macro sectors to which the company belongs: Financial, Industrial, Utilities, and Service.

### 3.2 THE MODELS

As shown in the previous section, we translated the relationships for testing the hypotheses into econometric models to capture the sign and the significance of the coefficients.

*Model one:* measures the relationship between the number of females on both boards and the three performance indicators (ROI, ROE, and Rating), a separate model for each performance variable:

$$Perf = \alpha + B_1(BoD_f) + B_2(BSA_f) + B_3(CAP) + DUM_{Sec} + \varepsilon$$

*Perf.:* is the performance measure represented by ROI, ROE, or Rating. $BoD_f$ and $BSA_f$ are the numbers of women on the BoD and the BSA. *CAP* is the market capitalization of the firm, and $DUM_{Sec}$ is sector dummy, and $\varepsilon$ is the error term.

*Model two:* measures the relationship between the percentage of women on both boards and the three performance indicators (ROI, ROE, and Rating), a separate model for each performance variable:

$$Perf = \alpha + B_1(BoD_{Pf}) + B_2(BSA_{Pf}) + B_3(CAP) + DUM_{Sec} + \varepsilon$$

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[3] *As defined by the Italian Civil Code*: It is an internal control body of the company. It exercises control over the administration of the company, ensuring compliance with the law and the articles of association and in particular the adequacy of the organizational, administrative and accounting structure adopted by the company and its concrete functioning. It also exercises accounting control in the case provided for by article 2409 paragraph 3. It is made up of three or five effective members, shareholders or non-members. In addition, two alternate auditors must be appointed. At least one full member and one alternate member must be a legal registered auditor. The remaining members, if not registered, must be chosen from among those registered in the professional registers identified by decree of the Minister of Justice, or from tenured university professors, in economic or legal subjects.

*BoD$_{pf}$ and BSA$_{pf}$* are the percentages of females on both boards.

We adopted two approaches for the analysis regarding the first two models:

1. We run the first two models for every single year for each performance indicator to see how the relationship might change from one year to another, so, for each year we have 40 companies/observations.

2. We merged the three years, and we performed a pooled analysis that combines time series with cross-sectional data, so we get 120 observations (3×40).

**Robustness tests**

To verify the results of the first two models, and to provide more in-depth analysis, the following additional tests have been performed:

***Differential analysis:*** showing whether the companies that had improvements in their female representations had an upgrade in their Ethical Rating.

$$\Delta Rating = \alpha + B_1\left(\Delta BoD_f\right) + B_2\left(\Delta BoD_{Pf}\right) + B_3(\Delta CAP) + DUM_{Sec} + \varepsilon$$

*Δ* is the change in the variables of interest from 2016 to 2018, so Δ = value (2018-2016).

***Non-linearity test:*** a model that estimates the quadratic (non-linearity) relationship between the female representation on both boards and the Sustainability rating. The rationale is to verify whether there is an optimal level of female representation on corporate boards, and a high concentration of same-sex of the governance bodies might create conflicts of interest and increase the cost of governance:

$$Rating = \alpha + B_1\left(BoD_f\right) + B_2\left(BoD_f\right)^2 + B_3(CAP) + DUM_{Sec} + \varepsilon$$

$$Rating = \alpha + B_1\left(BoD_{pf}\right) + B_2\left(BoD_{pf}\right)^2 + B_3(CAP) + DUM_{Sec} + \varepsilon$$

$$Rating = \alpha + B_1\left(BSA_f\right) + B_2\left(BSA_f\right)^2 + B_3(CAP) + DUM_{Sec} + \varepsilon$$

$$Rating = \alpha + B_1\left(BSA_{pf}\right) + B_2\left(BSA_{pf}\right)^2 + B_3(CAP) + DUM_{Sec} + \varepsilon$$

The quadratic term is added to capture the non-linear relationship between gender variables and the ethical rating. We were constrained to separate the independent variables in different equations due to the multicollinearity issue.

### 3.3 DATA

For this research, we collected information related to the independent variables (gender quotas on both boards), the dependent variables (financial and sustainability performance), and the control variables (firm's market capitalization and the macro sector). Financial variables were collected from Bloomberg terminal; ethical ratings were hand-collected from Standard Ethics; gender variables are also hand-collected from firms' annual

reports. The variables of interest were collected for the 40 companies (constituents) of the Milan Stock Market Index FTSE-MIB 40 for three years 2016, 2017, and 2018. We decided to study the 40 companies of the index because they are big enough, publicly traded, and they belong to all macro sectors and regions of Italy so they can represent the trend and developments of the female quotas on board after the law was enacted. Additionally, they are required to publish their information regarding the board structure, and it is easier to obtain their Ethical rating since they are required to publish non-financial reports (or integrated reports). Table 1 shows the variables of interest, their definitions, and transformations (extensions).

**Table 1**

### 3.4 DESCRIPTIVE STATISTICS & CORRELATIONS

Table 2 shows the descriptive statics for the variables of interest for the three years, the averages for the three years are calculated separately to demonstrate the three-year trend. The number of females on the BoD has increased from 3.87 to 4.27 which corresponds to an increase from 32% to 36%. As for the number of female on the BSA, it jumped from 1.27 to 1.46 which corresponds to an increase from 37% to 40%, so we can confirm that the female representation, on both boards in the publicly traded companies in Italy, has achieved the minimum quotas required by Golfo-Mosca law. It's worth noting that the differences in the number of females on both boards are due to the size of each board, according to the art.2397 of the Italian civil code, the BSA is composed of three or five members while the BoD is composed of a larger number that sometimes counts 23 members, thus, it is easier to observe changes in the percentage of females on the BSA than on the BoD, however, the minimum percentage of the female has to be achieved on both governance bodies. With the approval of the 2020 budget law in Italy, publicly traded companies must achieve 40% representation of the less represented gender (in this case female) instead of on 30%, therefore, we expect an increase in the average female representation to be around the minimum level required by the law. However, the effects of the 2020 new quotas are not captured by this study as we cover until 2018 and it will be an interesting extension of future research. Regarding the performance variables, we can notice that financial variables (ROI and ROE) are random and there is no significant improvement, which provides a preliminary glimpse that financial performance is not related to gender quotas. On the other hand, sustainability rating is seen to experience an upgrade by time which corresponds to the improvements in female quotas on both boards.

**Tables 2 & 3**

For more emphasis on the compliance, the upper part of Table 3 shows the number of companies that exceeded the 30% and the 40% thresholds by 2018, most of the companies have complied with the 30% threshold while only 12 companies have more than 40% of female representation. Even though we refer to 2018, some companies have anticipated the law by improving the female representation on their boards. Similarly, the lower part of Table 3 shows that 32 companies showed improvements in their female representation and sustainability rating from 2016 to 2018. We have paid particular attention to matching, in which the same 36 and 12 companies are reported in the upper part, and the same 32 companies are reported in the lower part. We

think that Italian companies are on a good path towards achieving the minimum gender quotas required by the 2020 budget law, while the CONSOB must ensure compliance with the new threshold.

The correlation matric shown in Table 4 provides more insights into the relationship between female quotas and corporate performance. The correlations were calculated based on the whole data set (pooled set with 120 year-firm observations). It clearly shows that the correlations between female quotas and ROI and ROE are either negative or insignificant. However, positive and strong correlations are found between female quotas and ethical/sustainability performance (Rating). These preliminary findings confirm those in the descriptive statistics on how averages move in tandem or not. It is worth mentioning another important result, which is the negative correlation between financial performance and sustainability performance; this shows that there is a trade-off between financial performance and ethical performance, at least in the short run, improving the ethical performance of the company comes at the expense of the financial performance.

**Table 4**


4. ANALYSIS & RESULTS


4.1 RESULTS OF THE REGRESSION MODELS

Table 5 presents the results of the first model which measures the relationship between the number of females on the BoD and BSA (as independent variables), and corporate and ethical financial performance for the three consecutive years. It is evident in the three years the negative relationship between female representation on both boards and both financial performance measures (ROI & ROE), the results are not out of context, they are consistent with the findings of Kenneth et al. (2012) who find a similar negative association with Tobin's Q index in Norwegian companies. The weak (or negative) relationship with financial indicators might be due to the maintenance of female representation near the minimum levels foreseen by the regulation, another factor is that there are many another macro- and micro- factors that influence the financial performance of the company and the impact of the economic crisis it is still persistent, it can also be due to the increased cost of corporate governance in firms with higher female representation. However, a positive and significant association is seen between female representation and sustainability rating; while the positive relationship with sustainable performance is due to the following factors: women on top board and top management are more inclined towards CSR, sustainability, corporate ethical behavior and stakeholders' oriented, these findings are consistent with Adams et al. (2011) and Webb (2004), but it can also be due to the recent emphasis on non-financial reporting (integrated reporting / sustainable) in which large companies must disclose non-financial information.

**Table 5**


Instead of testing the average number of women on both boards, in Table 6, we used the percentage of females on the BoD and the BSA. Regarding the relationship between gender diversity and financial performance, the Table shows mixed results but on average a negative (insignificant association) is evident which is consistent

with the findings in the previous Table. On the other hand, consistent with the previous findings, a positive relationship exists between the percentage of female representation of both boards and sustainability rating, same explanations are valid in this context. Furthermore, we also show a positive relationship between gender diversity and sustainability rating is more evident in companies with higher market capitalization which confirms the premise that bigger companies are more sophisticated and more able to satisfy both gender diversity and sustainability performance. Finally, we find no evidence that a certain sector is behaving differently from others.

**Table 6**

Table 7 presents the results of the pooled models. In Panel A, we show that both the number and the percentage of females on the BoD are positively related to the sustainability performance which highlights the importance of gender diversity (female representation) in enhancing corporate ethical and sustainability behavior. In Panel B, we present the female representation on the BSA, the number of women on the BSA is strongly positively associated with sustainability rating which supports the findings in Panel A. These findings are also consistent with the existing literature on the positive role gender diversity on governance bodies in enhancing responsibility and sustainability performance in which females bring a style change in governance and management and their orientation to stakeholders. The percentage of females of the BSA shows no significant relationship with sustainability rating; this might be due to the limited size of this kind of board in Italy.

**Table 7**

The results presented this section highlights the structural changes in governance bodies Golfo-Mosca Law has made, it has fostered female representation and gender diversity on governance bodies. We believe the law has created value by improving transparency and enhancing corporate sustainability performance. However, in this study, we were not able to establish a significant relationship between board gender diversity and corporate financial performance due to the limited years of the study and that financial performance is affected by far more external and internal factors.

4.2 ROBUSTNESS TESTS

The first robustness test in this section concerns the differential relationship; whether a change in female representation on the BoD is associated with and upgrade/downgrade of the ethical rating. Delta of each variable is taken as the difference between the years 2018 and 2016. As shown in Table 8, for multicollinearity reasons, we separate the variables in different models. In Model 1, we implement the change in the number of women on the BoD while in Model 2, we implement the change in the percentage of females on the BoD. Both separate models show positive and significant associations between changes in female representations and the change in sustainability rating, therefore, we confirm that, in our sample, companies that improved the female representation in their governance bodies have enjoyed an upgrade in their ethical rating, this implies that the improvement in gender representations are fast discounted in the company's ethical rating perceived by the

market. Furthermore, besides the absolute association between gender diversity on governance bodies and sustainability rating, in this test, we demonstrate the marginal effect (value) of female representation.

**Table 8**

The second robustness test presented in Table 9 shows the results of the non-linearity test under the assumption that female representation on governance bodies improves the sustainability rating up to a certain level of female representation, and over that level, deterioration of corporate performance might be detected. This hypothesis is supported by the results shown in Table 9. Panel A show shows the quadratic relationships between the number and the percentage of female representations on the BoD, it can be noticed that the first order of both variables is positively related to rating while the second order is negatively related, this proves that the relationship between female representation and ethical rating is not linear and exists an optimal level of female representation on the BoD. These findings are plausible from behavioral and psychological perspectives since boards with high female concentration could create conflicts among same-sex (female) and would increase the cost of governance in the corporation which might lead to the deterioration of sustainability rating. The results in Panel B are not statistically significant due to the limited size of the BSA in Italy, however, the signs support our thesis.

**Table 9**


5.   CONCLUSIONS AND IMPLICATIONS

In this paper, we tracked the development of gender diversity on the governance bodies of the Italian listed firms according to the Golfo-Mosca Law. For three years, we show the growth of female representation on both boards, the board of directors and the board of statutory auditors, and on average, the percentage had exceeded the minimum required by the law. Furthermore, to assess the economic and sustainability impacts of the law, we established relationships between female representation on both boards and corporate financial and sustainability performance. For the period of the study, we were unable to support a significant relevance of gender diversity and financial performance. However, a positive and persistent relationship between female representation and the ethical (sustainability) performance of the companies. This result confirms the importance of women related to sustainability performance. It is important to keep in mind that many of the sustainability ratings are mainly based on the quality of the reports and not on the real sustainability behavior of the company, this means that management can have a greater influence on their sustainability rating by producing better reports, but they have less influence on their financial performance which can be influenced by many factors outside the company. The debate over the relationship between gender diversity on board and the disclosure of non-financial information is open and increasing. Only a few studies attest to a positive relationship between voluntary information about gender diversity and their impact on sustainability performance. Others underline that data showed are not relevant ( Cordeiro, Profumo & Tutore, 2020).

In summary, The Golfo-Mosco law in the Italian legal system was instrumental in breaking down the notorious crystal ceiling, unlocking the rigid and backward Italian situation, and above all in initiating a change based on a new culture for a greater gender balance and inclusiveness in companies and the country.

Therefore, on December 5, 2019, the Italian Government through the Tax Decree, DL n. 124/2019 and of the Budget Law 2020, L. n. 160/2019 has extended and strengthened the Golfo-Mosco law. The new provisions provide for a temporary extension of its duration from 3 to 6 mandates as well as an increase from 30% to 40% of the presence of women in the corporate governance bodies. Some companies have already anticipated by achieving the 40% threshold, we also expect that more companies will be joining the journey by improving their gender quotas.

So this study reflects the influence of gender quotas proposed by the mandatory law. The situation is very similar to other European countries where in recent periods, corporate governance reforms and legislation introduced the mandatory gender quotas. As for the American companies for which is no quota, the percentage of women on the board is very low, about 21,70% (World Economic Forum 2019). Research (Valls Martinez, Cervantes & Cruz Rambaud, 2020) provides empirical evidence that the percentage of women on the board is positive up a certain limit, after which its influence is negative both in American and European companies.

The findings of this study have several implications at corporate and at national levels. In the short run, companies may not see the positive impacts of gender diversity on corporate performance, however, the long run guarantees fruitful results due to the trade-off between financial and sustainability performance. Gender diversity enhances better governance by fostering more responsible thinking and creating a dynamic environment. However, over-concentration of a certain gender might offset the positive impact of diversity by inducing conflicts among same-sex members and increases the cost of governance. At the national level, achieving a certain percentage of female representation would bring Italy in the front line of countries with gender diversity which improves the country's image globally.

Some studies have investigated the board structure and ownership structure (Nadeem, Gyapong & Ahmed, 2020). They focus on large firms in countries with diffused ownership. However, few studies conducted in countries like Spain and Italy where family ownership is dominant. Therefore, it would be interesting to study the differences in the role of female directors between family firms and non-family firms. Another interesting extension is investigating the level of female activism on both boards to verify whether they are active or just a decoration for law compliance.

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TABLE 1: DEFINITION OF VARIABLES

| VARIABLE | SYMBOL | DESCRIPTION |
|---|---|---|
| Female on BoD | $BoD_f$ | Number of women on BoD |
| Size of BoD | BoD | The size of the BoD |
| Percentage female on BoD | $BoD_{pf}$ | Percentage of women on BoD |
| Female on BSA | $BSA_f$ | Number on women on BSA |
| Size of BSA | BSA | The size of BSA |
| Percentage female on BSA | $BSA_{pf}$ | Percentage of women on BSA |
| Market Cap. | MKT | Firm's market capitalization |
| Return on Investment | ROI | Return on invested capital |
| Return on Equity | ROE | Return on equity |
| Sustainability rating | Rating | Sustainability/ethical rating |
| Change of female on BoD | $\Delta BoD_f$ | Change of women on BoD 2018-2016. |
| Change of % female on BoD | $\Delta BoD_{pf}$ | Change of the percentage of women on BoD 2018-2016. |
| Change in rating | $\Delta$Rating | Change in sustainability rating 2018-2016 |
| Change in market cap. | $\Delta$MKT | Change in market capitalization 2018-2016 |
| Sector | $DUM_{SECTOR}$ | Dummy variable for the macro sector: financial, industrial, utilities, and service |

TABLE 2: DESCRIPTIVE STATISTICS

| Variable | 2016 | | | 2017 | | | 2018 | | |
|---|---|---|---|---|---|---|---|---|---|
| | Mean | Min | Max | Mean | Min | Max | Mean | Min | Max |
| $BoD_f$ | **3.870** | 0.0 | 8.0 | **4.20** | 0.0 | 8 | **4.27** | 0.0 | 8 |
| BoD | 12.300 | 1.0 | 22.0 | 12.60 | 1.0 | 22 | 12.17 | 1.0 | 23 |
| $BoD_{pf}$ | **0.327** | 0.0 | 1.0 | **0.35** | 0.0 | 1 | **0.35** | 0.0 | 0.44 |
| $BSA_f$ | **1.270** | 1.0 | 3.0 | **1.33** | 1.0 | 3 | **1.46** | 1.0 | 5 |
| BSA | 3.470 | 3.0 | 7.0 | 3.54 | 3.0 | 7 | 3.70 | 3.0 | 15 |
| $BSA_{pf}$ | **0.370** | 0.2 | 0.67 | **0.38** | 0.2 | 0.67 | **0.40** | 0.3 | 1 |
| MKT | 10988 | 2270 | 56080 | 12296 | 2037 | 52411 | 10857 | 1360 | 51440 |
| ROI | 3.02 | -13.5 | 18.1 | 4.10 | -2.43 | 19.7 | 4.18 | -3.87 | 22.1 |
| ROE | 15.08 | -50 | 267 | 15.2 | -41.5 | 97 | 14.65 | -11.1 | 73.8 |
| Rating | **4.54** | 2 | 8 | 4.65 | 2 | 8 | **4.68** | 2 | 7 |

Note: The Table shows the descriptive statistics for the variables of interest. $BoD_f$ is the number of females on the BoD, BoD is the size of the board, $BoD_{pf}$ is the percentage of females on the BoD, $BSA_f$ is the number of females on the BSA, BSA is the size of the BSA, $BSA_{pf}$ is the percentage of females on the BSA, MKT is the market capitalization of the firm, ROI is the return on assets, ROE is the return on equity, and Rating is the sustainability/ethical rating.


TABLE 3: BREAKDOWN OF THE SAMPLE

| | >30% | >40% |
|---|---|---|
| BoD | 36 | 12 |
| BSA | 36 | 12 |

| ΔBoD_f | ΔBoD_pf | Δrating |
|---|---|---|
| 34 | 32 | 33 |

Note: The table offers a breakdown of the sample companies, the upper part shows the number of companies that have more than 30% and 40% of female representation on both boards. The lower part shows how many companies have improved their female representation on the BoD and their sustainability rating.


TABLE 4: THE CORRELATION MATRIX

| | $BoD_f$ | $BoD_{pf}$ | $BSA_f$ | $BSA_{pf}$ | MKT | ROI | ROE | Rating |
|---|---|---|---|---|---|---|---|---|
| $BoD_f$ | 1 | | | | | | | |
| $BoD_{pf}$ | 0.12 | 1 | | | | | | |
| $BSA_f$ | 0.29* | 0.094 | 1 | | | | | |
| $BSA_{pf}$ | 0.085 | 0.11 | 0.69*** | 1 | | | | |
| MKT | -0.13 | 0.08 | 0.18 | 0.11 | 1 | | | |
| ROI | (0.26) * | **0.06** | **-0.14** | **0.085** | -0.006 | 1 | | |
| ROE | **-0.098** | **0.04** | **-0.008** | **0.16** | 0.03 | 0.57*** | 1 | |
| Rating | **0.17** | **0.27*** | **0.34**** | **0.12** | 0.22 | **-0.24** | **-0.2** | 1 |

Note: The Table shows the correlations among the variables of interest. $BoD_f$ is the number of females on the BoD, $BoD_{pf}$ is the percentage of females on the BoD, $BSA_f$ is the number of females on the BSA, $BSA_{pf}$ is the percentage of females on the BSA, MKT is the market capitalization of the firm, ROI is the return on assets, ROE is the return on equity, and Rating is the sustainability/ethical rating. *$p<0.1$; ** $p<0.05$; *** $p<0.01$

TABLE 5: NUMBER OF FEMALE ON BOTH BOARDS AND PERFORMANCE

| | *2016* | | | *2017* | | | *2018* | | |
|---|---|---|---|---|---|---|---|---|---|
| | *ROI* | *ROE* | *Rating* | *ROI* | *ROE* | *Rating* | *ROI* | *ROE* | *Rating* |
| $BoD_f$ | -0.58 | -3.81 | 0.35** | -0.27 | -1.4 | 0.19 | -1.16 | -3.7*** | 0.24 |
| | -0.82 | -0.63 | 2.21 | -0.46 | -0.53 | 0.98 | -1.54 | -2.8 | 1.13 |
| $BSA_f$ | 0.19 | 12.6 | 0.51 | 0.97 | 3.3 | 0.52 | -0.98 | -5.3** | 0.18 |
| | 0.1 | 0.77 | 1.17 | 0.69 | 0.51 | 1.05 | -0.92 | -2.7 | 0.62 |
| LnMKT | -0.27 | 3.54 | 0.34 | -0.65 | -0.11 | 0.32 | 0.17 | 0.71 | 0.26 |
| | -0.24 | 0.37 | 1.29 | -0.78 | -0.03 | 1.17 | 0.19 | 0.44 | 0.99 |
| $DUM_{SECTOR}$ | *YES* | *YES* | *YES* | *YES* | *YES* | *YES* | *YES* | *YES* | *YES* |
| CONST | 5.53 | -21.6 | -0.21 | 6.3 | 14.4 | 0.55 | 7.01 | 34** | 1.4 |
| | 0.55 | 0.81 | -0.08 | 0.86 | 0.43 | 0.23 | 0.85 | 2.38 | 0.6 |
| $R^2$ | 0.37 | 0.15 | 0.46 | 0.48 | 0.15 | 0.31 | 0.34 | 0.39 | 0.28 |
| $P>F$ | 0.02 | 0.52 | 0.006 | 0.001 | 0.5 | 0.05 | 0.03 | 0.01 | 0.1 |
| *RMSE* | 5.4 | 46 | 1.2 | 4.1 | 18 | 1.33 | 4.7 | 8.3 | 1.33 |
| *N* | 36 | 36 | 34 | 39 | 39 | 38 | 37 | 37 | 37 |

Note: The Table shows the results of the regression concerning the relationship between the number of females on both boards and performance. $BoD_f$ is the number of females on the BoD, $BSA_f$ is the number of females on the BSA, MKT is the market capitalization of the firm, ROI is the return on assets, ROE is the return on equity, $DUM_{SECOR}$ is the sector dummy, and Rating is the sustainability/ethical rating. * *p<0.1; ** p<0.05; *** p<0.01*

TABLE 6: PERCENTAGE OF FEMALE ON BOTH BOARDS AND PERFORMANCE

| | *2016* | | | *2017* | | | *2018* | | |
|---|---|---|---|---|---|---|---|---|---|
| | *ROI* | *ROE* | *Rating* | *ROI* | *ROE* | *Rating* | *ROI* | *ROE* | *Rating* |
| $BoD_{pf}$ | -6.4 | -21.2 | 10.4*** | -1.67 | 14.7 | 4.6* | -21.6 | 5.1 | 0.64 |
| | -0.49 | -0.2 | 3.55 | -0.17 | 0.33 | 1.44 | -1.28 | 0.14 | 0.13 |
| $BSA_{pf}$ | 9.1 | 144** | 0.15 | 8.6 | 30.4 | -0.72 | 4.22 | -5.2 | 0.83 |
| | 1.13 | 2.23 | 0.09 | 0.13 | 1.2 | -0.35 | 0.66 | -0.39 | 0.45 |
| LnMKT | -0.34 | 3.5 | 0.28* | -0.72 | -0.56 | 0.45 | -0.46 | -0.24 | 0.38* |
| | -0.31 | 0.4 | 1.13 | -0.92 | -0.15 | 1.69 | -0.46 | -0.11 | 1.31 |
| $DUM_{SECTOR}$ | *YES* | *YES* | *YES* | *YES* | *YES* | *YES* | *YES* | *YES* | *YES* |
| CONST | 2.4 | -67 | -0.63 | 4.2 | -1.2 | -0.13 | 11.3 | 14.8 | 2.04 |
| | 0.23 | -0.8 | -0.27 | 0.55 | -0.04 | -0.05 | 1.1 | 0.71 | 0.71 |
| $R^2$ | 0.39 | 0.26 | 0.52 | 0.51 | 0.17 | 0.31 | 0.33 | 0.14 | 0.25 |
| $P>F$ | 0.001 | 0.16 | 0.001 | 0.000 | 0.36 | 0.06 | 0.04 | 0.55 | 0.09 |
| *RMSE* | 5.4 | 43 | 1.12 | 3.9 | 68 | 1.34 | 4.7 | 9.8 | 1.36 |
| *N* | 36 | 36 | 34 | 39 | 39 | 38 | 37 | 37 | 37 |

Note: The Table shows the results of the regression concerning the relationship between the percentage of females on both boards and performance. $BoD_{pf}$ is the percentage of females on the BoD, $BSA_{pf}$ is the percentage of females on the BSA, MKT is the market capitalization of the firm, ROI is the return on assets, ROE is the return on equity, $DUM_{SECOR}$ is the sector dummy, and Rating is the sustainability/ethical rating. * *p<0.1; ** p<0.05; *** p<0.01*

TABLE 7: FEMALE ON BOARD AND ETHICAL RATING: POOLED ANALYSIS

| Panel A | Rating | Panel B | Rating |
|---|---|---|---|
| BoD$_f$ | 0.087 | BSA$_f$ | 0.54** |
| | 1.05 | | 2.18 |
| BoD$_{pf}$ | 2.43** | BSA$_{pf}$ | -1.54 |
| | 2.54 | | -1.3 |
| LnMKT | 0.365*** | LnMKT | 0.36** |
| | 2.7 | | 2.49 |
| DUM$_{SECTOR}$ | YES | DUM$_{SECTOR}$ | YES |
| CONST | 0.71 | CONST | 1.78 |
| | 1.41 | | 1.41 |
| $R^2$ | 0.301 | $R^2$ | 0.289 |
| $P>F$ | 0.000 | $P>F$ | 0.000 |
| RMSE | 1.223 | RMSE | 1.26 |
| N | 118 | N | 109 |

Note: The Table shows the results of the regression concerning the relationship between female representation on both boards and sustainable performance using panel analysis. BoD$_f$ is the number of females on the BoD, BoD$_{pf}$ is the percentage of females on the BoD, BSA$_f$ is the number of females on the BSA, BSA$_{pf}$ is the percentage of females on the BSA, MKT is the market capitalization of the firm, DUM$_{SECOR}$ is the sector dummy, and Rating is the sustainability/ethical rating. * $p<0.1$; ** $p<0.05$; *** $p<0.01$

TABLE 8: DIFFERENCE ANALYSIS: FEMALE ON BOARD AND ETHICAL RATING

| | $\Delta$ Rating | | |
|---|---|---|---|
| | model 1 | model 2 | model 3 |
| $\Delta$BoD$_f$ | 0.127* | | 0.104 |
| | 1.44 | | 1 |
| $\Delta$BoD$_{pf}$ | | 0.48* | 0.23 |
| | | 1.11 | 0.46 |
| $\Delta$LnMKT | 0.58** | 0.53** | 0.56** |
| | 2.32 | 2.16 | 2.29 |
| DUM$_{SECTOR}$ | YES | YES | YES |
| CONST | 0.156 | 0.17 | 0.15 |
| | 1.06 | 1.14 | 1.01 |
| $R^2$ | 0.271 | 0.25 | 0.28 |
| $P>F$ | 0.08 | 0.09 | 0.138 |
| RMSE | 0.456 | 0.462 | 0.463 |
| N | 35 | 35 | 35 |

Note: The Table shows the results of the first robustness test concerning the differential relationship between female representation on both boards and sustainable performance. BoD$_f$ is the number of females on the BoD, BoD$_{pf}$ is the percentage of females on the BoD, MKT is the market capitalization of the firm, DUM$_{SECOR}$ is the sector dummy, and Rating is the sustainability/ethical rating. * $p<0.1$; ** $p<0.05$; *** $p<0.01$

TABLE 9: NON-LINEARITY TEST: POOLED ANALYSIS

| Panel A | Rating | | Rating | Panel B | Rating | | Rating |
|---|---|---|---|---|---|---|---|
| $BoD_f$ | 0.205 | $BoD_{pf}$ | 2.73 | $BSA_f$ | 0.62 | $BSA_{pf}$ | 7.23 |
| | 0.81 | | 1.17 | | 0.96 | | 1.51 |
| $BoD_{f\_sqr}$ | -0.044* | $BoD_{pf\_sqr}$ | -0.041* | $BSA_{f\_sqr}$ | -0.062 | $BSA_{pf\_sqr}$ | -7.14 |
| | -1.46 | | -0.02 | | -0.43 | | -1.56 |
| LnMKT | 0.35** | LnMKT | 0.36*** | LnMKT | 0.32** | LnMKT | 0.38** |
| | 2.54 | | 2.65 | | 2.09 | | 2.61 |
| $DUM_{SECTOR}$ | YES | $DUM_{SECTOR}$ | YES | $DUM_{SECTOR}$ | YES | $DUM_{SECTOR}$ | YES |
| CONST | 1.92 | CONST | 1.06 | CONST | 1.63 | CONST | 0.22 |
| | 1.38 | | 0.78 | | 1.27 | | 0.13 |
| $R^2$ | 0.274 | $R^2$ | 0.294 | $R^2$ | 0.279 | $R^2$ | 0.274 |
| $P>F$ | 0.000 | $P>F$ | 0.000 | $P>F$ | 0.000 | $P>F$ | 0.000 |
| RMSE | 1.252 | RMSE | 1.235 | RMSE | 1.267 | RMSE | 1.271 |
| N | 118 | N | 118 | N | 109 | N | 109 |

Note: The Table shows the results of the regression concerning the quadratic relationship between female representation on both boards and performance using panel analysis. $BoD_f$ is the number of females on the BoD, $BoD_{pf}$ is the percentage of females on the BoD, $BoD_{f\_sqr}$ is the quadratic value of the number of females on the BOD, $BoD_{pf\_sqr}$ is the quadratic value of the percentage of females on the BOD, $BSA_f$ is the number of females on the BSA, $BSA_{pf}$ is the percentage of females on the BSA, $BSA_{f\_sqr}$ is the quadratic value of the number of females on the BSA, $BSA_{pf\_sqr}$ is the quadratic value of the percentage of females on the BSA, MKT is the market capitalization of the firm, $DUM_{SECOR}$ is the sector dummy, and Rating is the sustainability/ethical rating. *$p<0.1$; **$p<0.05$; ***$p<0.01$