



Influence of Female Executives on the ESG Rating Performance of Enterprises

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Abstract. With the increasing attention paid to female executives, the individual characteristics of women and the diversity of an enterprise's senior executive team play a crucial role in the performance of the enterprise. As an important indicator to measure the performance of corporate social responsibility (CSR), ESG rating also reflects an enterprise's ability for sustainable development. This paper is an attempt to investigate the impact of the level of gender diversity of female executives and senior executive teams on the ESG rating performance of enterprises, and the results indicate that both the tenure and overseas background experiences of female executives have a positive impact on the ESG rating performance of enterprises.

Keywords: Female executives · Top management team · ESG rating performance · Sustainable development

1 Introduction

Female leaders and managers have been receiving increasing scholarly attention. Particularly in China, the number of female directors and executives in China is still on the rise despite the more and more female executives seen in the workplace. Extant studies have found that the level of gender diversity in senior executive teams is positively correlated with corporate performance [1]. Therefore, it is of great significance to investigate the impact of female leaders and executives on the social performance of enterprises.

ESG encompasses the three dimensions of environment, society and governance respectively, and reflects the non-financial information of enterprises. Specifically, it takes non-financial performance as an evaluation standard of enterprises, a crucial indicator to measure the sustainability of enterprises. Investors can evaluate the capacity of listed companies for sustainable development through the information revealed by ESG and the relevant rating results. Therefore, to interpret China's economic and social development, it is of great importance to pay attention to the rating performance of ESG reports of listed companies as a way to understand their sustainable development ability. In this paper, the research questions center around the influences of female executives on the ESG rating performance of enterprises and explore their role and the diversification level of senior management team on the sustainable development performance of enterprises.

2 Literature Review and Research Hypotheses

Extant empirical studies at home and abroad on female executives' corporate social responsibility (CSR) and social performance usually focused on the positive role of female executives in the overall CSR performance, and most of them verified the main effects of female executives on CSR performance [2]. Furthermore, existing research has upheld the belief that female members of the executive team have a positive impact on ESG performance [3]. However, due to the differences in ESG rating systems between China and foreign countries [4] and the lack of empirical research on Chinese enterprises, it is of scholarly importance to specifically analyze the influences of female executives on ESG rating performance under the Chinese context by using the ESG rating system currently adopted in China and the ESG reports disclosed by currently listed companies. According to Feminist care ethics, women in mutual relations are more likely to feel "responsibilities and obligations" to others [5], and it is thus more likely for women to care for others, be more mindful of the environment, society and corporate governance, and attach more importance to an enterprise's long-term sustainable development in the process of managing it. In the realm of leadership, female leaders tend to consciously shape themselves into the type of roles expected by society, so they will take actions to gain the support of their followers and stakeholders [6]. Comparatively, men value the economic benefits of enterprises more, contrary to their female counterparts' concerns over how to show higher "moral care" than male leaders [7]. As a result, female leaders tend to attach more importance to the social benefits of enterprises and thus, to the results of ESG rating reports of enterprises and the stakeholders' evaluation of the sustainable development ability of enterprises. Therefore, according to the upper echelons theory, social-role theory and the above literature, hypothesis 1 is proposed.

Hypothesis 1: The tenure of female executives plays a positive role in the ESG rating results of enterprises.

From the perspective of the diversification of the senior executive team in an enterprise, scholars found that the higher diversified the senior executive team is, the stronger its ability will be to solve business problems and put forward innovative opinions to optimize enterprise performance, based on the different demographic characteristics of senior executives (such as nationality, gender, professional experience, educational background, etc.) [8]. Meanwhile, an enterprise with higher proportion of female executives tend to show higher degree of gender diversity. According to the theory of group dynamics, female executives will enhance other managers' attention to corporate social performance and sustainable development in the process of their interaction with other managers, and such an impact is also affected by the number and proportion of female executives [9]. Therefore, it is believed that in a senior executive team, higher proportion of female executives often indicates more attention being paid to the social performance and sustainable development ability of the enterprise and will thus positively promote the enterprise's ESG rating performance. To sum up, hypothesis 2 is proposed.

Hypothesis 2: The proportion of female executives is positively correlated with the ESG rating results of enterprises.

The imprinting theory believes that in the process of an individual's development, specific environmental changes will bring the individual to identify with certain environmental characteristics, which will thus affect his/her cognition, values and related behavioral decisions, and have a long-term impact on his/her individual development [10]. The academic experience and overseas background experience of senior executives have been widely discussed in the field of research on their personal characteristics. The experience of working or studying abroad enables senior executives to be exposed to different social customs, systems and cultural backgrounds, which will imperceptibly affect their cognitive frameworks and push them to gradually adapt their knowledge and skills to the new environment. In terms of the choice of enterprise strategy, foreign enterprises pay more attention to the concept of sustainable development and CSR performance than domestic enterprises. To sum up, hypothesis 3 is proposed.

Hypothesis 3: The overseas experience of female executives has a positive effect on the ESG rating results of enterprises.

3 Research Design

3.1 Sample Selection and Data Source

The company data, personal data of female executives and data of senior executive teams are all from the CSMAR guotai'an database. This paper has mainly selected the A-share listed companies from 2010 to 2020 as the initial research samples which, when being screened, companies with ST and * ST, those in the financial industry, and those with relatively more missing data are excluded. To avoid the influences of extreme values on the empirical results of the data, this paper winsorizes the continuous variables at the upper and lower 1% level. The final observation sample is 23443, and the data processing and regression model are completed by Stata 15.

3.2 Variable Description

Explained Variable

Drawing from the practice of Liu Xuexin [10], the explained variable is the ESG rating performance of the listed companies. According to the SynTao Green Finance rating system, the rating is divided into 9 levels from high to low, which are, specifically, A+, A, A-, B+, B, B-, C+, C and C-. However, in the process of data collation, it is found that there is little or no company data at the levels of A+, A and C-. Therefore, the rating of this study is assigned 1-6 points from low to high from C to A-, which corresponds to the annual ESG rating performance of the listed companies from 2016 to 2020.

Explanatory Variables

In this study, the explanatory variables include three indicators to measure female executives, namely, the tenure, proportion, and overseas background experience of female executives. Of which, the term of office of female executives in a company is expressed by the average value of this indicator. The proportion of female executives is measured

by the percentage of women in the company's senior executives. The background of women's overseas experience is divided into three specific categories, which are overseas employment, overseas study and no overseas background. Female executives with overseas study or work experience are represented by 1, and female executives without overseas experience are represented by 0.

Control Variable

Drawing from the research of Huang Xin [10] (2021) with further consideration to the research content of this paper, the control variables adopted in the regression model include company size (Size), ROE, asset liability ratio, enterprise nature (whether it is a state-owned enterprise (SOE) or not (non-SOE)), senior executive size, and company age (Age). In addition to the above control variables, this study also sets the year as a dummy variable. Table 1 shows the definitions and descriptions of the specific variables.

3.3 Model Design

As the purpose of this study is to verify the impact of female executives on enterprises' ESG rating performance, regression models (1) to regression models (3) are built to test hypothesis 1 to hypothesis 3.

$$ESG\ comprehensive\ rating_{it} = \beta_1 fem_term_{it} + \beta_2 controls_{it} + \alpha_i + \lambda_t + \varepsilon_{it} \quad (1)$$

$$ESG\ comprehensive\ rating_{it} = \beta_1 fem_ra_{it} + \beta_2 controls_{it} + \alpha_i + \lambda_t + \varepsilon_{it} \quad (2)$$

$$ESG\ comprehensive\ rating_{it} = \beta_1 fem_ovsea_{it} + \beta_2 controls_{it} + \alpha_i + \lambda_t + \varepsilon_{it} \quad (3)$$

4 Empirical Analysis

4.1 Descriptive Statistics and Correlation Analysis

Table 2 is a presentation of the analysis results of the descriptive statistics of the main variables in this study, in which the average and median ESG comprehensive ratings are 3.193 and 3.0 respectively. As shown by the results, the ESG rating levels of the sample companies are mostly medium to low with poor overall ESG rating performance, and according to the standard deviation, there are large differences between the variables.

According to the results of the correlation analysis in Table 3, the absolute value of the correlation coefficient between each variable is lower than 0.5, indicating the absence of any serious multicollinearity between the sample variables selected in this study, and the selected variables are effective variables, on the basis of which further regression analysis can be carried out.

Table 1. Definitions and descriptions of variables [Owner-drawing]

Type of Variable	Name of Variable	Symbol of Variable	Measurement of Variable
Explained variable	ESG rating performance	<i>ESG rating</i>	The value of 1–6 is assigned to the ESG rating by SynTao Green Finance, corresponding to the rating results of each year
Explanatory variables	Tenure of female executives	<i>fem_term</i>	The average term of female managers in senior management
	Proportion of female executives	<i>fem_ra</i>	The proportion of female leaders in senior management
	Overseas experience of female executives	<i>fem_ovsea</i>	Female executives with overseas experience are recorded as 1 and those with no overseas experience are recorded as 0
Control variable	Enterprise size	<i>Size</i>	Number of company scale assets
	Enterprise age	<i>Age</i>	Natural logarithm of the year the enterprise was established
	Nature of enterprise	<i>Nature</i>	Non-SOEs are recorded as 1 and SOEs are recorded as 0
	Size of senior executive team	<i>Team</i>	Total number of members in the senior management team
	Asset liability ratio	<i>Lev</i>	Total liabilities/total assets at the end of the period
	Return on net assets	<i>Roe</i>	Net profit/total assets at the end of the period

4.2 Regression Analysis

This paper uses a two-way fixed effect model to verify hypothesis 1 to hypothesis 3. According to the regression results of model (1) in Table 4, the comprehensive ESG rating of the listed companies is significantly positive at the 5% confidence level, indicating that the longer the average tenure of female executives is, the better the ESG rating

Table 2. Results of Descriptive Statistics [stata]

Variable	Sample size	Average	Median	Standard deviation	Minimum	Maximum
ESG rating	3091.000	3.193	3.000	0.978	1.000	6.000
fem_ra	8480.000	0.157	0.143	0.165	0.000	1.000
fem_ovsea	23443.000	0.149	0.000	0.356	0.000	1.000
fem_term	17722.000	5.810	5.500	2.499	0.000	19.000
Size	8480.000	22.792	22.627	1.346	18.276	28.636
Team	8480.000	6.490	6.000	2.506	1.000	21.000
Nature	8480.000	0.551	1.000	0.497	0.000	1.000
Lev	8480.000	0.465	0.466	0.205	0.008	2.123
Age	8480.000	3.031	3.045	0.273	1.946	3.761
Roe	8480.000	0.016	0.060	0.891	-4.737	2.324

Table 3. Table of sample correlation coefficient [stata]

Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
(1) ESG rating	1.000	-	-	-	-	-	-	-	-	-
(2) fem_ra	0.003	1.000	-	-	-	-	-	-	-	-
(3) fem_ovsea	0.063	0.196	1.000	-	-	-	-	-	-	-
(4) fem_term	-0.034	0.067	-0.027	1.000	-	-	-	-	-	-
(5) Size	0.154	-0.136	-0.028	-0.050	1.000	-	-	-	-	-
(6) Team	0.075	-0.158	0.033	0.036	0.127	1.000	-	-	-	-
(7) Nature	-0.136	0.119	0.063	0.079	-0.214	-0.047	1.000	-	-	-
(8) Lev	0.005	-0.105	-0.021	-0.104	0.612	0.071	-0.072	1.000	-	-
(9) Age	0.049	-0.005	-0.066	-0.153	0.069	-0.076	-0.085	0.100	1.000	-
(10) Roe	0.018	0.013	0.021	0.067	0.036	0.021	0.006	-0.141	-0.046	1.000

results will be. The results of model (2) in Table 4 are insignificant with the regression coefficient negative, which indicates that under the current data sample conditions, the percentage of female executives has insignificant impact on the ESG rating results of the listed companies. According to the results of model (3) in Table 4, the ESG rating of the listed companies is significantly positive at the 5% confidence level, implying that female executives with overseas background experience have a positive impact on the enterprises' ESG rating performance, and such experience of these female executives can help enterprises make more decisions that are conducive to their social performance.

Table 4. Test results of the influences of female executives on enterprise ESG rating [stata]

	(1)	(2)	(3)
Variable	ESG rating	ESG rating	ESG rating
fem_term	0.0233** (0.0114)		
fem_ra		-0.0165 (0.214)	
fem_ovsea			0.193** (0.0757)
Size	0.0561 (0.111)	0.0342 (0.110)	0.0264 (0.109)
Nature	0.0622 (0.0650)	0.0412 (0.0639)	0.0465 (0.0638)
Team	-0.00796 (0.0117)	-0.00496 (0.0114)	-0.00583 (0.0113)
Lev	-0.288 (0.342)	-0.0611 (0.336)	-0.0556 (0.335)
Age	1.640** (0.746)	1.401* (0.732)	1.345* (0.730)
Roe	0.124* (0.0744)	0.130* (0.0745)	0.119 (0.0745)
Constant	-3.435 (3.270)	-2.145 (3.225)	-1.836 (3.220)
Year	Yes	Yes	Yes
Observations	1,941	2,036	2,036
R-squared	0.205	0.198	0.202
Number of id	586	602	602

Notes: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

5 Research Conclusion

Female executives play a positive role on the ESG rating performance of enterprises due to various factors, such as their social roles and demographic background characteristics. In the empirical research of this paper, the ESG rating of SynTao Green Finance is used as the outcome variable, as the ESG rating system of SynTao Green Finance attaches more importance to the negative events of enterprises in environment, society and governance in the aspect of index setting, which further shows that female managers pay more attention to their responsibilities and obligations to others. Besides, they have a higher

standard of “moral care”, which dictates that they are more mindful of the corporate social benefits and the sustainable development of enterprises.

Under the context that national regulatory authorities, listed company associations and investment institutions are paying increasing attention to ESG, it is of theoretical and practical significance to investigate the impact of female executives on ESG rating performance, which will help promote and strengthen the attention of listed companies to ESG reports and their sustainable development, and to the gender diversity level of their senior management teams.

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