

ESG DISCLOSURE, MULTIPLE LARGE SHAREHOLDING, FEMALE DIRECTORS, AND FIRM PERFORMANCE: THE CASE OF CHINA'S MANUFACTURING FIRMS

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ABSTRACT

Background and Purpose: In China, rapid industrialisation and economic growth have heightened the scrutiny of corporate Environmental, Social, and Governance (ESG) practices, particularly in the manufacturing industry, which significantly contributes to environmental degradation and social challenges. This study examines the potential advantages of ESG reporting for Chinese manufacturing firms. Additionally, it assesses the role of female directors in moderating the relationship between ESG practices and reporting towards firm performance, offering insights into the importance of gender diversity on corporate boards in promoting sustainable and responsible business practices.

Methodology: This study employs a quantitative approach, utilising publicly available data on ESG reporting and corporate financial performance in Chinese A-share listed manufacturing firms from 2018 to 2022. Financial data and relevant metrics were sourced from the CSMAR and Winds databases. Two regression models were used. The first evaluates the direct relationship between ESG reporting and MLS on corporate financial performance, measured by return on assets (ROA). The second incorporates the moderating effect of female directors on this relationship.

Findings: The study found that ESG reporting positively influences the financial performance of Chinese manufacturing listed companies. Improved ESG performance enhances corporate transparency, reduces information asymmetry, and fosters stakeholder trust. The findings also indicate that female directors significantly moderate the relationship between ESG reporting, MLS, and performance. Their presence strengthens ESG initiatives' impact.

Contributions: The study provides insights into the relationship between female directors and ESG practices in Chinese firms. It contributes to understanding ethical decision-making and has implications for developing corporate governance policies in China.

Keywords: ESG reporting, firm performance, female directors, gender diversity, corporate governance.

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1.0 INTRODUCTION

The growing emphasis on sustainable business practices is reshaping the global corporate landscape, largely due to the need to address climate change, social inequalities, and governance issues. Environmental, Social, and Governance (ESG) disclosure has become essential for evaluating corporate accountability and sustainability, moving beyond traditional financial metrics to assess a company's societal and environmental impacts (Christophers, 2017; Duque-Grisales & Aguilera-Caracuel, 2021). In China, manufacturing firms significantly contribute to economic growth while also facing environmental and social challenges. The level of government focus on environmental issues greatly influences how these firms adopt sustainability principles (Andrikopoulos, 2025). In response, the Chinese government has introduced regulatory measures to enhance ESG transparency, aiming to support the Sustainable Development Goals (SDGs). Despite these initiatives, the effectiveness of ESG practices in China's manufacturing sector varies, highlighting the need for deeper exploration into the factors affecting their implementation and impact on firm performance.

A crucial factor complicating ESG practices in China is the prevalence of Multiple Large Shareholding (MLS) structures. Firms with MLS structures, characterised by the presence of two or more shareholders, each holding substantial stakes, present a unique corporate governance challenge (Andrikopoulos, 2025). While proponents argue that MLS can

improve oversight and mitigate agency problems through enhanced monitoring and strategic input, it can also lead to conflicts of interest and power struggles if large shareholders pursue divergent goals. In the context of China's manufacturing firms, which often operate under complex and opaque ownership structures, the impact of MLS on ESG performance and overall financial outcomes remains underexplored. This study aims to fill this gap by analysing how MLS influences the relationship between ESG disclosure and firm performance, providing insights into the dual-edged nature of MLS in corporate governance.

Additionally, this study examines the role of gender diversity in corporate governance, specifically the impact of female directors on the board. The presence of women in leadership positions has been linked to improved decision-making, enhanced corporate governance, and increased sensitivity to social and environmental issues (Govindan et al., 2021; Anazonwu et al., 2018). However, the effectiveness of female directors in promoting ESG practices and enhancing firm performance in China remains unclear, particularly given the socio-cultural barriers and underrepresentation of women in leadership roles. While some studies suggest that female directors can strengthen ESG initiatives and build social trust through greater transparency and ethical oversight (Qiu et al., 2022; Kazemian et al., 2022), others indicate that their impact may be limited by contextual factors such as board dynamics and the prevailing corporate culture. This study aims to shed light on the moderating role of female directors in the relationship between ESG disclosure and firm performance in the manufacturing sector of China.

The complex interplay between ESG disclosure, MLS, and female directors presents a multifaceted challenge for China's manufacturing firms, which strive to balance economic performance with sustainable development. This study seeks to contribute to the existing literature by providing empirical evidence on how these factors interact to influence firm performance. By employing a comprehensive dataset of China A-share listed manufacturing firms from 2018 to 2022 and utilising advanced econometric models, this research will offer valuable insights for both academics and practitioners. The findings are expected to have significant implications for corporate governance policies and practices, highlighting the need for a nuanced understanding of ESG integration and the strategic role of gender diversity in corporate boards.

This study addresses a critical gap in the literature on ESG practices in emerging markets by focusing on the unique challenges faced by Chinese manufacturing firms. It examines the direct impact of ESG disclosure on firm performance and how MLS and female directors influence this relationship. The research aims to provide a comprehensive framework

for understanding the conditions under which ESG practices can contribute to sustainable corporate performance, thereby offering practical guidance for policymakers and business leaders seeking to promote responsible business practices in China's rapidly evolving corporate landscape.

The remainder of this paper is structured as follows: Section 2 presents a comprehensive review of the relevant literature, highlighting the theoretical underpinnings and empirical findings related to ESG disclosure, MLS, and the role of female directors in corporate governance. Section 3 outlines the research methodology, detailing the data collection process, variable definitions, and econometric models used to test the hypotheses. Section 4 provides an in-depth analysis of the results, including descriptive statistics, correlation analysis, and regression outcomes, along with a discussion of the implications of these findings. Section 5 concludes the study by summarising the key insights, discussing policy and managerial implications, and suggesting avenues for future research.

2.0 LITERATURE REVIEW

2.1 ESG Practices and Disclosure in China

The growing emphasis on Environmental, Social, and Governance (ESG) factors has significantly impacted corporate reporting practices around the world. In China, the development of ESG disclosure has been shaped by a series of regulatory changes and an increasing awareness among stakeholders about the importance of sustainable business practices. According to the recently issued Corporate Sustainability Disclosure Guidelines, Chinese regulators have set a goal to implement a climate-related disclosure standard by 2027. This standard will be aligned with IFRS S2 and will include an accompanying application guide. Additionally, efforts are underway to create a fully integrated national sustainability disclosure framework by 2030 (Yue & Nedopil, 2025). As a result, firms in China are increasingly incorporating ESG factors into their business strategies, acknowledging the long-term benefits of sustainable practices. This shift has led to a notable rise in green bonds and sustainability-linked loans, further underscoring the nation's commitment to environmental and social governance.

Compared to its developed counterparts, China's ESG disclosure is still in its early stages of development. The regulatory system for ESG information disclosure in China differs significantly from those in European and American countries. Listed companies in China are currently operating under a "semi-mandatory and voluntary" ESG information disclosure regime, resulting in low participation rates and a lack of comprehensiveness and

standardisation. The ESG assessment system in China remains at an exploratory level, with no unified standards established yet.

Some of the foremost ESG assessment firms in China include Zhongzheng Index, HuaZheng Index, the China Bond Assessment Centre (CBAC), Shangdao Financial Green, the China Investment Union (CASVI), Runling Global (RKS), the China Finance University (CFE) Green Gold, and Winds. These firms focus primarily on companies listed in China A-shares, leveraging public information to create a graded index structure that assigns letter grades evaluating critical aspects such as business environment, development, and management practices. The establishment and application of these ESG ratings are crucial for effectively measuring a company's commitment to sustainable practices and governance quality. However, there is a pressing need for more standardized and comprehensive disclosure frameworks to align with global best practices (Chen et al., 2023). Research clearly demonstrates that inconsistent ratings from agencies like Huazheng, Runling Global, and Wind can compromise market efficiency, underscoring the urgent necessity for unified methodologies. Both policy reviews (Yue & Nedopil, 2025) and quasi-natural experiments (Romus et al., 2020; Hao et al., 2025) confirm that China's regulators are decisively tightening disclosure rules and aligning them with IFRS/ISSB standards. This strategic shift is expected to significantly reduce rating dispersion and enhance comparability. Ultimately, this evolving landscape underscores China's strong commitment to improving ESG transparency and embedding sustainable development into its economic framework.

2.2 ESG Practices and Disclosure in China

The transformation of corporate ownership structures globally has seen an increasing trend towards Multiple Large Shareholders (MLS). Typically, shareholders holding more than 10% of the voting rights are regarded as large shareholders. When a firm has two or more such shareholders, its ownership structure can be defined as having MLS (Jiang et al., 2024). Proponents argue that MLS can play a crucial role in improving firm monitoring and reducing agency costs (Musa et al., 2025). However, a critical examination reveals a more nuanced impact of MLS on firm decisions, which can operate through two primary channels: the 'voice' channel (Chen et al., 2023; Jiang et al., 2024).

The 'voice' channel is often lauded for enabling MLS to actively participate in company decision-making through board representations, supervising managerial decisions, and advocating for initiatives that enhance firm value. However, the effectiveness of this channel can be contingent on the alignment of the large shareholders' interests with those of the

minority shareholders. If the interests are misaligned, MLS could prioritise their agendas over the firm's long-term value, leading to potential conflicts and suboptimal decision-making.

Conversely, the 'exit' channel allows MLS to utilise 'exit threats' by selling off their shares. This prospective action might result in a decrease in the firm's stock market value, which could theoretically deter managerial and controlling shareholder misconduct (Lysandrou & Stoyanova, 2007). However, the practical implications of this channel are more complex. The threat of exit could create short-term pressures on management to boost share prices at the expense of long-term strategic initiatives. Additionally, the actual execution of such exits could lead to significant market disruptions and loss of investor confidence.

Empirical findings on the impact of MLS on corporate environmental protection investment (CEPI) and ESG performance present mixed results. For instance, Wei and Zhou (2024) found that collusion among multiple local state-owned enterprises (MLS) has a negative impact on firms' CEPI in China, particularly in firms with limited external supervision. This finding highlights the potential for MLS to engage in self-serving behaviour that undermines the firm values and social responsibility. On the other hand, Jiang et al. (2024) suggest that MLS can increase CEPI by reducing agency costs and fostering green innovation, indicating a positive role for MLS under certain conditions. However, this optimistic view is tempered by Wang et al. (2023), who find that collusion among large shareholders for mutual benefits leads to subpar ESG performance, underscoring the potential for MLS to prioritise personal gains over corporate sustainability.

While theoretical frameworks and some empirical studies support the potential benefits of MLS in enhancing firm monitoring and reducing agency costs, there is significant evidence indicating the complexities and potential downsides of such ownership structures. The dual influence of MLS through the 'voice' and 'exit' channels can lead to both positive and negative outcomes, depending on the specific context and alignment of shareholder interests. Further analysis should focus on delineating the conditions under which MLS can positively or negatively impact firm performance, particularly in areas of corporate governance, environmental sustainability, and social responsibility.

2.3 Female Directors in China

Gender diversity is increasingly recognised as a critical element in corporate management and firm performance (Yahya, 2025). It is commonly believed that having a diverse range of genders in a company leads to improved performance (Tufail et al., 2025). Additionally, the presence of gender diversity within a company leads to an enhanced corporate reputation,

resulting in improved firm performance (Hassan et al., 2025). The inclusion of both genders in the board member selection process is expected to lead to improved management. Prior empirical findings also exhibited a positive relationship between the presence of women on a board and board monitoring (Huang & Li, 2024).

The persistence of inadequate gender diversity on corporate boards in China represents a significant concern, as the representation of women remains markedly lower than international benchmarks. Recent statistical analyses indicate that the proportion of female directors within Chinese corporations is substantially inferior to that observed in numerous Western countries, with noteworthy disparities across various industries (Chen et al., 2023). Evidence derived from the year 2025 elucidates the beneficial ramifications of advancing female representation on corporate boards, which is associated with enhanced governance and performance outcomes. Specifically, boards characterized by a greater representation of women exhibit a reduction in wage disparities between executive leadership and employees, thereby signifying diminished rent extraction (Qin et al., 2025). Furthermore, the inclusion of at least two experienced women directors markedly increases the likelihood of terminating underperforming CEOs, indicative of more robust monitoring practices (Farooq et al., 2025). Additionally, a higher proportion of female directors correlates with improved aggregate ESG (Environmental, Social, and Governance) scores, particularly within more established corporate entities (Zhu & Chen, 2025). The evidence further demonstrates a positive association between diversity and financial performance, effectively countering the adverse implications of CEO duality (Erum et al., 2024). The underrepresentation of women on corporate boards constitutes a critical issue that impedes the realization of the potential advantages that gender diversity can confer on governance practices and overall corporate efficacy.

In the context of ESG disclosure, the role of female directors in China is underexplored. While there is growing evidence suggesting that women on boards can positively influence ESG reporting and performance, empirical studies focusing on firms in China are scarce (Chen et al., 2023). This presents a research gap that needs to be addressed to better understand how gender diversity on boards impacts ESG practices and disclosures in China. Investigating this relationship could provide valuable insights into how companies can enhance their ESG strategies by promoting gender diversity within their leadership teams. Further research is needed to explore the specific mechanisms through which female directors influence ESG outcomes and to identify any barriers that may prevent women from contributing effectively in this domain (Chen et al., 2023).

2.4 Theoretical Framework

The theoretical framework of this study is grounded in several key theories and constructs. This framework aims to provide a comprehensive understanding of the moderating role of female directors in the relationship between ESG disclosure and firm performance.

Resource dependence theory (Salancik et al., 1978) posits that businesses depend on resources in their external environments to survive. These dependencies pose risks to businesses. To reduce dependencies and their surrounding uncertainties, businesses can cultivate linkages with external entities that control those resources. Salancik et al. (1978) attributed three benefits to corporate board linkages: advice and counsel, legitimacy, and communication channels.

Agency theory (Jensen & Meckling, 1976) examines the conflicts of interest between principals (shareholders) and agents (managers). This theory suggests that agents may not always act in the best interests of principals due to differing goals and risk preferences. Effective corporate governance mechanisms, such as a diverse and independent board, can mitigate these conflicts by ensuring better monitoring and alignment of interests. The inclusion of female directors on boards can enhance oversight and accountability, leading to more transparent ESG disclosures and improved firm performance. Female directors may also bring unique perspectives and ethical considerations that align with the broader interests of stakeholders, further supporting the company's sustainability objectives.

By integrating resource dependence theory and agency theory, this study investigates how female directors influence the relationship between ESG disclosure and firm performance. Female directors can provide valuable resources and reduce uncertainties through their external linkages while also enhancing corporate governance and mitigating agency conflicts. This dual role highlights the significance of gender diversity in corporate boards for fostering sustainable business practices and generating long-term value.

2.5 Hypotheses Development

The hypotheses of this study explore the relationship between ESG disclosure, firm performance, and the moderating role of female directors. Based on the resource dependence theory and agency theory, this section formulates several hypotheses to empirically test the proposed relationships.

2.6 ESG Disclosure and Firm Performance

Environmental, Social, and Governance (ESG) disclosure is increasingly recognised as a critical factor in evaluating a firm's long-term sustainability and ethical practices. ESG reporting provides transparency and accountability, which can enhance a company's reputation, build investor trust, and improve stakeholder relationships. Prior studies have indicated a positive relationship between ESG disclosure and firm performance, as it can lead to improved risk management, operational efficiencies, and access to capital (Malik & Kashiramka, 2024).

A study of listed firms on the Hong Kong Exchange (HKEX) found a significant positive association between the total ESG disclosure level and firm financial performance (Sahu et al., 2024). Meanwhile, in a different setting, Agarwala et al. (2024) found a U-shaped relationship between ESG and financial performance. Although ESG has always been associated with positive firm performance, there are also contradicting empirical findings. ESG disclosures are not significantly associated with firm performance. ESG disclosure is merely hype; they asserted that ESG disclosure increases costs and decreases a firm's competitive advantage. Thus, the first hypothesis is formulated as follows:

H1: There is a positive relationship between ESG disclosure and firm performance.

2.7 Female Directors and Firm Performance

Intensifying gender diversity in the boardroom can enhance the effectiveness of boards in fulfilling their control and strategic roles, thereby improving overall firm performance. Gender diversity brings a range of perspectives and experiences, which can enhance decision-making processes and lead to more effective governance practices. Female directors are often associated with stronger ethical stances and greater sensitivity to social and environmental issues, which can positively impact a firm's strategic direction and performance outcomes. Studies have shown that boards with higher gender diversity tend to exhibit more effective oversight, reduced agency conflicts, and improved stakeholder relationships, all of which contribute to superior firm performance (Murdiati et al., 2023).

Conversely, Al Shaer et al. (2024) suggested that companies with female managers who are perceived as corrupt have greater real earnings management and larger audit fees. An earlier studies also argued that female directors' participation in the boardroom could reduce effectiveness in executive tasks, as a more diversified board may experience communication glitches, thus adding organisational and operational risks to the company and negatively

impacting firm performance. In the context of China's firms, the impact of female directors on firm performance remains underexplored. Given the unique cultural and regulatory environment in China, it is crucial to empirically investigate whether the inclusion of female directors on boards enhances firm performance. Therefore, the second hypothesis is proposed as follows:

H2: There is a positive relationship between the presence of female directors on the board and firm performance.

2.8 Multiple Large Shareholders (MLS) and Firm Performance

Prior studies indicate that having multiple large shareholders helps mitigate the corporate agency problem (Chen et al., 2023), enhance corporate audit quality, and improve corporate governance (Ouyang et al., 2025). Additionally, effective corporate governance reduces managerial short-sightedness, addresses the corporate agency problem, and promotes increased corporate investment in environmental protection. Moreover, there is empirical evidence indicating that companies that actively assume environmental responsibility experience reduced debt costs, improved company performance, increased corporate value (Qin et al., 2025), and are less affected by stock price declines during the COVID-19 pandemic.

Furthermore, substantial data indicate that high levels of ownership concentration can have a negative impact on a company's environmental responsibility and overall performance. In their study, Chen et al. (2023) discovered a positive correlation between ownership concentration and corporate leverage. Consequently, firms with higher ownership concentration exhibit a reluctance to assume environmental responsibility. According to scholars, firms with concentrated ownership are less inclined to engage in corporate environmental and social responsibility because controlling shareholders prioritise their interests over those of society and stakeholders. Hence, the presence of several significant stakeholders helps alleviate the negative consequences of concentrated ownership. Active participation of other shareholders in corporate decision-making can enhance ESG practices and disclosure by closely monitoring the actions of large shareholders and enhancing corporate governance. Therefore, the third hypothesis is proposed as follows:

H3: There is a positive relationship between MLS and firm performance.

2.9 The Moderating Role of Female Directors

The presence of female directors on corporate boards has been linked to various positive outcomes, including enhanced corporate governance, better decision-making, and increased sensitivity to ethical and social issues. Female directors bring diverse perspectives and ethical considerations that align with the broader interests of stakeholders, thereby strengthening the impact of ESG initiatives. Moreover, gender-diverse boards are likely to be more vigilant and effective in monitoring management actions, which further enhance ESG disclosures and firm performance. Despite these potential benefits, the impact of female directors on the relationship between ESG disclosure and firm performance remains underexplored, particularly in the context of China's firms. Given the relatively low representation of women on boards in China, it is crucial to investigate whether their presence can amplify the positive effects of ESG reporting. Therefore, the fourth hypothesis is proposed as follows:

H4: Female directors positively moderate the relationship between ESG disclosure and firm performance.

By testing these hypotheses, this study aims to provide empirical evidence on the significance of ESG disclosure, the relationship between MLS and firm performance, and the critical role that gender diversity on boards can play in enhancing this relationship. The findings are expected to contribute to the broader understanding of how integrating ESG factors and promoting gender diversity can drive sustainable business practices and long-term value creation.

3.0 RESEARCH DESIGN

This study adopts a quantitative research design to investigate the relationship between ESG disclosure and firm performance, as well as the moderating role of female directors. The study employs multiple linear regression analysis to test the hypotheses using data from China's manufacturing firms listed on the A-share market.

3.1 Data and Sample Selection

The sample consists of China's manufacturing firms listed on the A-share market from 2018 to 2022. A purposive sampling method is used to ensure that the selected firms have comprehensive data on ESG disclosure, firm performance, board composition, and ownership structure. Data were collected from the Cathay United database (CSMAR) and the Winds

database. However, firms classified as ST, *ST, and PT were excluded to ensure data standardisation and reliability. These companies often exhibit irregular financial data and trading patterns, which can introduce biases and inaccuracies into the analysis. By excluding these companies, the study aims to produce results that are more realistic and valid, reflecting the performance of companies that are not undergoing significant financial or operational distress. Additionally, firms with incomplete data or outliers were also excluded to maintain the reliability and validity of the analysis. The final sample comprises 19,919 firm-year observations.

3.2 Variables and Measurements Data and Sample Selection

3.2.1 Dependent Variable

Firm performance was measured by Return on Assets (ROA). ROA effectively measures the efficiency with which a company utilises its assets to generate earnings (Buallay, 2019). This approach is aligned with previous research, such as Duque-Grisales and Aguilera-Caracuel (2021), who also utilised ROA to assess the impact of Environmental, Social, and Governance (ESG) performance on organisations' financial outcomes. The established method ensures a robust evaluation of the relationship between ESG activities and financial performance.

3.2.2 Independent Variables

ESG Disclosure

The current study utilises the HuaZheng ESG Rating Index to empirically analyse the ESG performance of China's listed companies. The HuaZheng ESG rating system is recognised as the most extensive assessment framework in China's public database. It is widely adopted in academic research and the investment sector in China due to its comprehensive evaluation criteria, which align with international ESG standards while incorporating local characteristics.

Female Director

The proportion of female directors, calculated as the number of female directors divided by the total number of directors, was used to quantify women's participation on boards. This proportion is conveyed as a percentage. Additionally, the proportion of female directors holding the chairs of key board committees is also utilised as a separate independent variable to examine the impact of various types of female directors on corporate social responsibility.

Multiple Large Shareholders (MLS)

In this study, a firm is classified as having an MLS ownership structure if it has a minimum of two shareholders, each holding a stake equal to or exceeding 10% of the firm's shares. To enhance the robustness of the results, robustness tests were conducted using a 5% shareholding ratio as an alternative criterion for identifying large shareholders. Shareholding information was sourced from the CSMAR database.

3.2.3 Control Variables

This study includes control variables identified in previous studies (Wang et al., 2023), which have been shown to affect ESG disclosure and firm performance.

Firm Size

It is generally accepted that a firm's size has a significant impact on its financial performance. Larger firms typically have more disposable assets, which makes them more resilient to various risks. As a result, these firms are often more willing to invest their efforts and capital in ESG, thus affecting the relationship between ESG and corporate financial performance. Therefore, this study includes firm size as a control variable, measured by the natural logarithm of a firm's total assets.

Financial Leverage

Financial leverage refers to the ratio of a firm's total liabilities to its total assets. Both assets and liabilities can indicate the potential risks a firm faces and its financial stability. A company with high financial leverage risks disrupting its capital chain, which can lead to insolvency and potential bankruptcy. Higher financial leverage may negatively impact a firm's financial performance. Moreover, high debt can also have a negative impact on corporate financing, affecting a company's revenue generation and, in turn, its profits. This situation increases the likelihood of higher financial risk, reducing the firm's ability to engage in or invest in ESG initiatives.

3.2.4 Empirical Formula

The empirical models for the current study are as follows:

Model 1

Model 1 is used to examine the relationship between ESG disclosure, MLS, and the presence of female directors on firm performance.

$$FP_{i,t} = \beta_0 + \beta_1 ESG_{i,t} + \beta_2 MLS_{i,t} + \beta_3 FD_{i,t} + \text{Controls} + \varepsilon_{i,t}$$

Model 2

Model 2 is used to examine whether female directors moderate the relationship between ESG disclosure and MLS towards firm performance.

$$FP_{i,t} = \beta_0 + \beta_1 ESG_{i,t} + \beta_2 MLS_{i,t} + \beta_3 FD_{i,t} + \beta_4 ESG * FD_{i,t} + \beta_5 MLS * FD_{i,t} + \text{Controls} + \varepsilon_{i,t}$$

4.0 FINDINGS

4.1 Descriptive Statistics

The descriptive statistics for the variables used in the current study are presented in Table 1. All variables are winsorised at the 1% level (except for dummy variables) to limit the impact of extreme abnormal values on the regression results. The maximum value of firm performance (FP) for 2018-2022 is 0.255, the minimum is -0.382, and the mean is 0.041, indicating a significant gap in financial performance among China's manufacturing firms.

The ESG ratings of "9, 8, 7, 6, 5, 4, 3, 2, 1" correspond to "AAA, AA, A, BBB, BB, B, CCC, CC, and C", respectively. The maximum value for ESG is 8.000, the minimum is 1.000, and the mean is 4.155, which is greater than the median value of 4. This indicates that the mean ESG rating of listed companies in China's manufacturing industry is between B and BB. Many companies' ESG scores are lower than the average, suggesting that their ESG disclosure remains poor. Meanwhile, the distribution of female directors (FD) among China's manufacturing firms has a standard deviation of 0.138, indicating a significant difference in the proportion of female directors among various listed manufacturing companies in China. A minimum value of 0 indicates that some firms do not have female representation on their boards.

Table 1: Descriptive statistics

Variables	N	Mean	Median	SD	Minimum	Maximum
FP	19919	0.041	0.041	0.074	-0.382	0.255
ESG	19919	4.155	4	0.996	0	8
MLS	19919	0.439	0	0.496	0	1
FD	19919	0.170	0.143	0.138	0	0.800
SIZE	19919	22.33	22.18	1.246	19.81	26.45
LEV	19919	0.402	0.400	0.185	0.0520	0.924

4.2 Correlation Analysis

Pearson correlation analysis in Table 2 reveals a significant positive correlation between FP and ESG disclosure (ESG) with a correlation coefficient of 0.253. This suggests that better ESG disclosure has a positive influence on financial performance. Control variables, including firm size (SIZE) and financial leverage (LEV), also show significant relationships with FP, indicating their influence on firm performance.

Table 2: Correlation analysis

	CFP	ESG	MLS	FD	SIZE	LEV
CFP	1					
ESG	0.253***	1				
MLS	0.337***	0.055***	1			
FD	0.038***	0.001	0.017**	1		
SIZE	0.086***	0.206***	0.080***	-0.115***	1	
LEV	-0.376***	-0.122***	0.032***	-0.109***	0.421***	1

Note: *** significant at 1%, ** significant at 5%, * significant at 10%

The analysis of the Variance Inflation Factor (VIF) confirms that all variables have VIF values well below the critical threshold, indicating no multicollinearity issues in the model, as shown in Table 3.

Table 3: Multicollinearity test

Variables	VIF	1/VIF
ESG	1.110	0.903
MLS	1.010	0.991
FD	1.020	0.982
SIZE	1.340	0.749
LEV	1.290	0.774

4.3 Regression Analysis

Multiple regression analysis was employed to examine the relationship between ESG disclosure, MLS, the influence of female directorship, and the financial performance of China's manufacturing firms. The findings in Table 4 indicate that ESG disclosure has a positive and statistically significant effect on financial performance. This outcome suggests that higher levels of ESG disclosure are linked to improved financial performance among manufacturing firms in China. MLS also shows a positive and significant relationship with financial performance in both models, suggesting that firms with multiple large shareholders tend to perform better financially. However, the presence of female directors has a negative and significant relationship with financial performance in both models. This result suggests that having female directors alone does not necessarily enhance financial performance, contradicting the general assumption that female directors have a positive impact on firm performance.

The contrary results may reflect underlying challenges or biases in the organisational culture or structural challenges within China's firms. Structural challenges, such as the absence of mentorship programmes, networking opportunities, and supportive organisational policies, may hinder the effectiveness of female directors. These challenges can hinder female directors from fully utilising their skills and experiences to impact firm performance positively. Moreover, the concept of critical mass suggests that having only a small number of female directors may not be sufficient to significantly influence board decisions. A higher proportion of female directors might be necessary to achieve a meaningful impact on firm performance.

Similarly, traditional gender roles in Japan remain entrenched, with cultural and structural barriers limiting the effectiveness of female directors.

Table 4: Regression results of the Model 1

Variables	(1)	(2)
ESG	0.0187*** (18.5611)	0.0096*** (11.4435)
MLS	0.100*** (5.45)	0.0703*** (19.2723)
FD	-0.02570*** (-13.11)	-0.0330** (-7.5622)
SIZE	0.0152*** (11.82)	0.0143*** (15.3679)
LEV	-0.1480*** (-17.83)	-0.1846*** (-28.8067)
_cons	-0.0369*** (-8.0492)	-0.2524*** (-12.9203)
N	19919	19919
Adj. R2	0.1083	0.3380
Year FE	YES	YES
Ind FE	YES	YES
Cluster Firm	YES	YES

The second model examines the moderating effect of female directorship on the relationship between Environmental, Social, and Governance (ESG) disclosure, multiple large shareholding (MLS), and the financial performance of Chinese manufacturing firms. Table 5 presents the findings of the moderation analysis. The positive and significant interaction between ESG and female directorship suggests that female directors amplify the beneficial impact of ESG disclosure on financial performance. Similarly, the positive and significant interaction between MLS and female directorship indicates that female directors enhance the positive relationship between multiple large shareholdings and financial performance.

Table 5: Regression results of the Model 2

Variables	(1)	(2)
ESG	0.0096*** (11.4435)	0.0082*** (10.0374)
MLS	0.176*** (3.86)	0.0703*** (19.2723)
FD	0.02678*** (-11.01)	-0.0330** (-7.5622)
ESG_FD	0.0087*** (10.01)	0.0091*** (11.1795)
MLS_FD	0.076*** (8.83)	0.097*** (5.76)
SIZE	0.0143*** (15.3679)	0.0137*** (13.8259)
LEV	-0.1846*** (-28.8067)	-0.1860*** (-28.7146)
_cons	-0.2524*** (-12.9203)	-0.2340*** (-12.9197)
N	19919	19919
Adj. R2	0.3552	0.3380
Year FE	YES	YES
Ind FE	YES	YES
Cluster Firm	YES	YES

5.0 CONCLUSION

This study offers a detailed analysis of how Environmental, Social, and Governance (ESG) disclosure, multiple large shareholdings (MLS), and female directorship influence the financial performance of manufacturing firms in China. The findings indicate that ESG disclosure has a significant positive impact on firm performance, suggesting that transparency and responsible business practices foster better financial outcomes. Companies that actively engage in environmental, social, and governance initiatives are more likely to gain investors' trust, enhance their corporate reputation, and improve risk management, ultimately leading to

sustainable growth and profitability. Additionally, the results show that firms with MLS structures, which involve multiple large shareholders, tend to exhibit improved financial performance. This suggests that having a diverse group of significant shareholders can lead to better oversight and governance, reducing agency problems and promoting a more balanced decision-making process. However, the effectiveness of MLS structures depends on the alignment of shareholders' interests; misaligned objectives could potentially lead to conflicts that negatively impact firm performance.

The study also reveals a complex and nuanced role for female directors in the relationship between ESG disclosure and firm performance. Contrary to common assumptions, the direct impact of female board representation on financial performance is found to be negative, suggesting that merely increasing the number of female directors may not directly translate into improved outcomes. However, when female directors are actively involved in moderating the effects of ESG disclosure and MLS, their presence significantly enhances the positive impact on firm performance. This finding suggests that female directors can play a pivotal role in strengthening governance frameworks, promoting greater accountability, and ensuring that ESG initiatives are implemented more effectively. Their diverse perspectives and unique contributions can help navigate complex governance challenges, particularly in an environment where traditional power dynamics often prevail. These findings underscore the need not just for increasing female representation on boards but also for creating an inclusive environment where their voices are genuinely heard and integrated into corporate strategies, thereby unlocking their potential to promote sustainable business practices and better financial results.

While this study provides valuable insights, several limitations must be considered. Firstly, the data is restricted to China A-share listed manufacturing firms, which may limit the applicability of the findings to other sectors or geographical regions. This industry-specific focus means that the conclusions drawn may not fully capture the nuances of ESG practices in different business contexts. Secondly, the study period spans from 2018 to 2022, a relatively short time frame that may not adequately reflect the long-term effects of ESG initiatives and governance changes on firm performance. Consequently, the results may only offer a snapshot of the dynamics at play without accounting for potential shifts over longer periods. Thirdly, the reliance on secondary data from publicly available sources could obscure important internal dynamics and decision-making processes within these firms. Moreover, the influence of female directors is likely shaped by broader contextual factors, such as corporate culture and societal norms, which are not fully captured in this analysis. These constraints suggest that the findings

should be interpreted with caution and point to the need for more nuanced and comprehensive investigations.

Future research could address these limitations by broadening the scope to include a wider range of industries and countries, offering a more holistic view of how ESG practices and corporate governance interact in various contexts. Longitudinal studies, spanning extended periods, would be particularly beneficial in revealing the enduring impacts of ESG strategies and governance reforms on firm performance. Furthermore, incorporating qualitative methods, such as case studies or interviews, could provide richer insights into the internal challenges and dynamics that firms face in implementing ESG initiatives and fostering gender diversity on boards. It would also be valuable to explore the specific mechanisms through which female directors influence ESG outcomes and to identify barriers that may hinder their effectiveness. Finally, examining additional governance factors, such as board independence and executive compensation, could deepen the understanding of their roles in shaping the relationship between ESG disclosure and firm performance, thus offering a more comprehensive framework for future research.

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