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# How does the audit committee affect ESG performance? A case of China

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## *ABSTRACT*

This study aims to investigate the impact of Audit Committee (AC) characteristics on Environment, Social, and Governance (ESG) performance in China. The research employed foundational theories such as agency theory, legitimacy theory, stewardship theory, and stakeholder theory. A quantitative approach was adopted, encompassing descriptive statistics and Ordinary Least Squares (OLS) regression. The data was collected from a sample of 100 companies listed on the Shenzhen and Shanghai stock exchanges in China from 2020 to 2023. Secondary data was obtained from the Wind database and the annual reports of the sampled companies. The research findings indicate that AC independence has a positive impact on ESG performance, while AC gender diversity exhibits a negative impact. However, AC meeting frequency and size did not reveal significant effects. This study contributes to enriching the theoretical framework concerning the relationship between ACs and ESG performance, while also addressing existing research gaps. Furthermore, the study provides recommendations for the amendment of China's Company Law.

**Contribution/ Originality:** This study addresses the limited literature by examining how various audit committee (AC) characteristics influence ESG scores, particularly during COVID-19. It provides a fresh perspective on the AC–ESG link and contributes to global policy discussions by enriching the debate on AC and ESG performance, especially in China.

## 1. INTRODUCTION

The concept of environmental, social, and governance (ESG) has emerged over the last two decades. First introduced in 2004, this concept has been widely popularized in many countries around the world. In 2006, the Principles for Responsible Investment (PRI), which was founded by the United Nations, was created to help investors gain a deeper understanding of the impact of ESG on investment. The PRI also describes ESG investing as an approach that integrates ESG factors into investment and financing choices, a method known as sustainable or impact investing (Principles for Responsible Investment (PRI), 2018). Therefore, ESG standards are considered tools to help assess the level of ESG practices of enterprises and serve as the basis for identifying socially responsible companies.

In present-day society, enterprises increasingly tend to report their ESG practices based on sustainability reporting frameworks.

China, one of Asia's most dynamic green finance hubs, is also a major player in the global market. Since joining the World Trade Organization (WTO) in 2001, Chinese companies have increasingly adopted the ESG concept. The introduction of mandatory corporate social responsibility reporting led to a significant rise in the number of publicly listed companies disclosing such information. Sustainable development became a national priority following the 18th National Congress of the Communist Party of China (CPC) in 2012 and was further emphasized at the Fifth Plenary Session of the 18th CPC Central Committee in 2015. Many companies voluntarily disclose ESG reports annually because, according to the Global Reporting Initiative (GRI) (2016), this kind of report not only serves as an important measurement together with a disclosure mechanism for stakeholders but also becomes a tool to achieve sustainable development goals. Besides, it is ESG performance that has a positive impact on corporate value (Zheng, Li, Ren, & Guo, 2023), corporate operations (Dang, Huynh, & Nguyen, 2023) corporate financing activities (Feng, Goodell, & Shen, 2022). Realizing that with some prominent roles of ESG performance and the increasing popularity of ESG in China, corporate governance becomes essential for achieving sustainability. From a governance perspective, many governance functions need to collaborate to direct a long-term sustainable development strategy. Within the scope of this research, the Audit Committee (AC) is the department being studied because of its specificity and key role in business operations.

The formation and development of AC are associated with the awareness process and managers' requirements for corporate control and governance issues. This is because corporate governance is a crucial aspect of the business landscape that helps improve the achievements and efficiency of companies (Akbar, 2015). Managers of enterprises listed on the stock exchange need to take greater responsibility for the reliability of annual reports; therefore, the control and evaluation of operations are more comprehensive and accountable (Buchalter & Yokomoto, 2006). Besides, AC was born out of a necessity to serve the interests and maintain the trust of investors, especially during the integration process. The economy develops strongly, and competition becomes more fierce and intense. A well-functioning AC enhances trustworthy, consistent, and effective corporate governance (Ha, 2022).

With the aim of controlling ESG performance, AC plays an absolutely pivotal role in operating and directing the company. In particular, the economic and social crises brought about by the COVID-19 pandemic have increased pressure on companies and their employees to commit to their performance along with social responsibilities (Deng, Li, & Ren, 2023; Sachin & Rajesh, 2022; Stojanovic, Puška, Ozbalci, & Bolek, 2023). The reason is that COVID-19 has brought increased focus to ESG performance (Albitar, Al-Shaer, & Elmarzouky, 2021). Investors' increased interest in companies' ESG aspects during the pandemic indicates that they perceive sustainability as essential rather than a luxury (Pástor & Vorsatz, 2020). However, according to Dwekat, Seguí-Mas, Tormo-Carbó, and Carmona (2020), there are a limited number of researchers who have examined the influence of AC characteristics on sustainability matters. In highlighting this overlooked issue, this study aims to better understand the factors of AC that influence ESG performance. Within the framework of the COVID-19 pandemic, it will examine whether the pandemic affects the operating indicators of listed companies as well as the ESG ratio, using data collected during and after the pandemic from 2020 to 2023. To achieve this research objective, the study poses the following research questions.

1. What characteristics of the Audit Committee will impact ESG performance?

2. To what extent does each characteristic of the Audit Committee impact ESG performance?

3. What recommendations should be made to enhance ESG performance and the role of audit committees in China?

This study offers a new perspective on the impact of audit committee (AC) characteristics on ESG performance. It highlights the novelty of ESG practices among listed Chinese companies by applying four theoretical frameworks—agency, institutional, stewardship, and stakeholder theories. Unlike previous research, which mainly emphasized

agency theory (Pozzoli, Pagani, & Paolone, 2022), this multi-theoretical approach allows for a more comprehensive analysis, assessing both the AC–ESG relationship and the quality of internal controls, thereby fostering stakeholder trust. Additionally, the study demonstrates that AC characteristics, as indicators of internal audit quality, play a crucial role in ensuring effective financial and non-financial controls, including ESG-related activities. Based on empirical findings, the study develops an ESG performance model linked to AC traits and offers practical recommendations for stakeholders. The research aims to serve as a professional and reliable reference for future studies on related topics.

## 2. LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

AC and ESG are fields that have been explored and examined by researchers worldwide. We conducted a search on the Scopus database using the keywords "ESG" (or "ESG performance," "environment, social, and governance performance," "environment," "social," or "governance") in combination with "audit committee" in the article title. This search yielded 110 English-language publications accessible in the fields of management, economics, accounting, and finance, published up until the end of January 2025 (31/01/2025). Figure 1 and Figure 2 summarize the number of studies by year and by country.

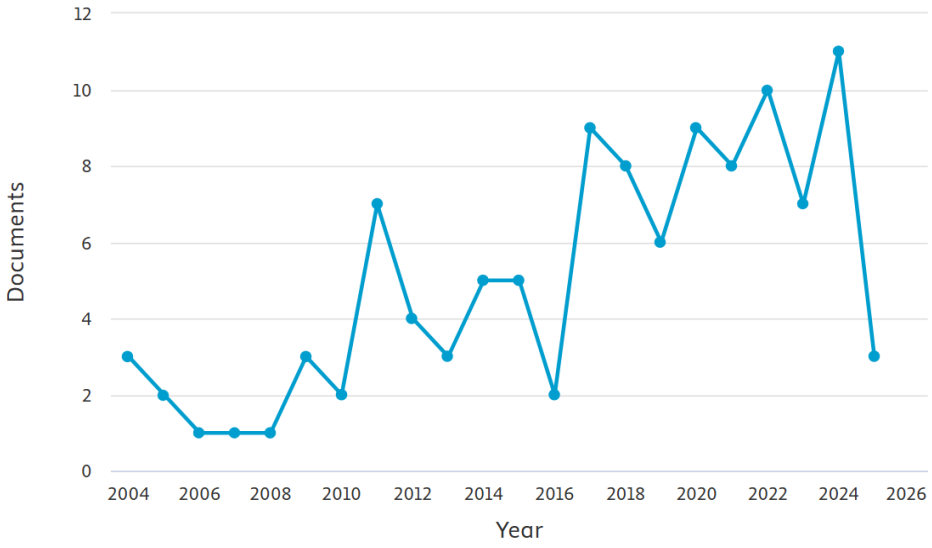


**Figure 1.** Number of studies by year.

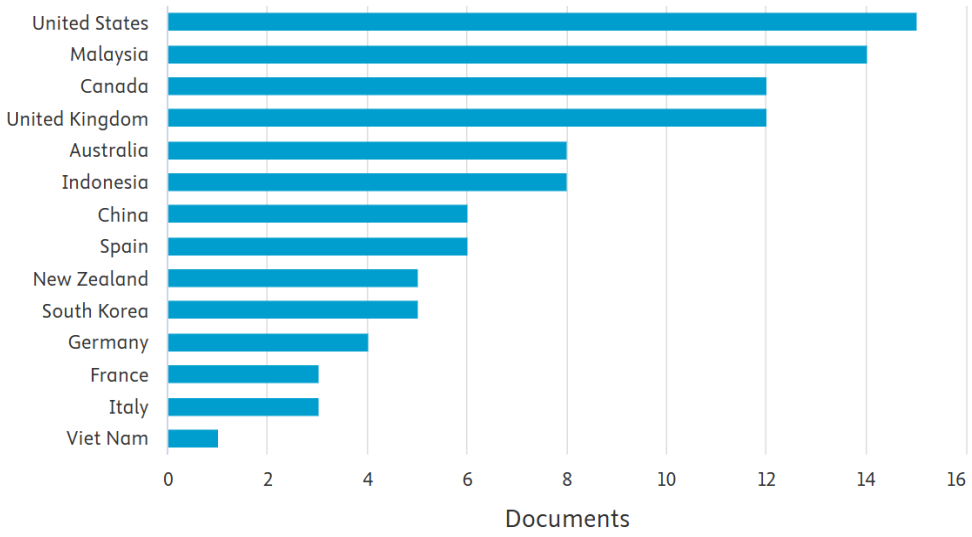


**Figure 2.** Number of studies by country.

The research employed a bibliometric analysis to assess and evaluate studies based on scientific bibliographic indicators. Based on 118 works collected from Scopus, the research team examined citation indexes, focusing on highly cited works that have significant influence in the research field.

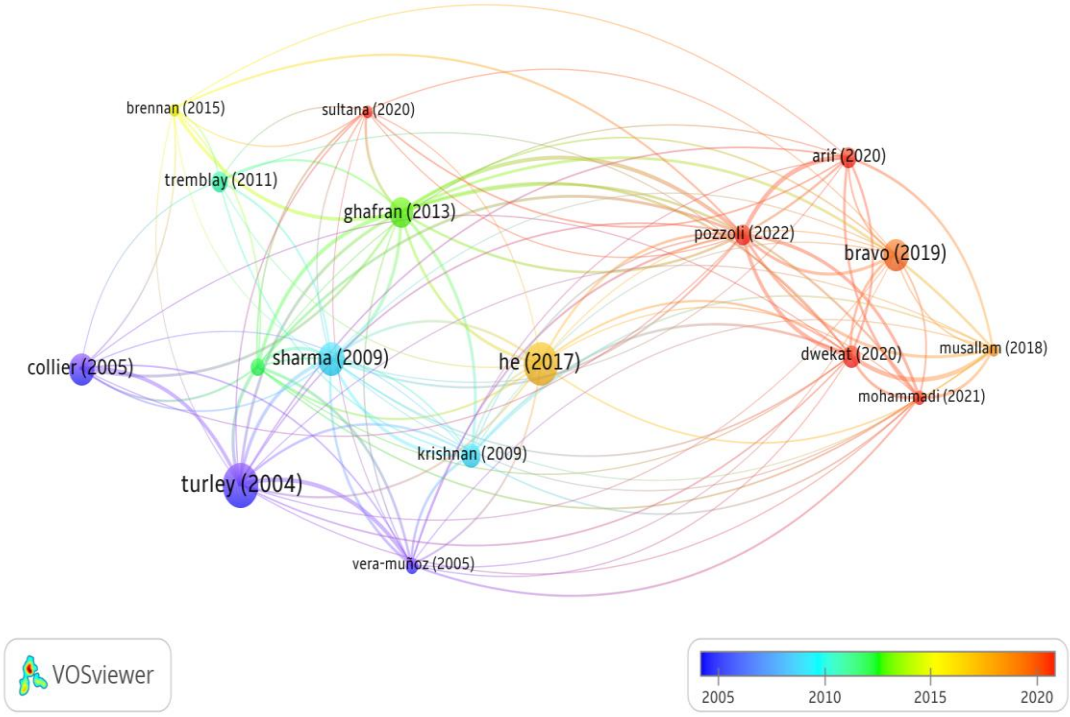


**Figure 3.** Citation analysis of research.

**Source:** Authors' analysis of data from Scopus using VOSviewer, 2025.
Sultana et al. (2020); Brennan et al. (2015); Arif, Sajjad, Farooq, Abrar, and Joyo (2021); Tremblay et al. (2011); Ghafran (2013); Pozzoli et al. (2022); Bravo, Jiménez, and de Cózar (2019); Collier (2005); (Sharma, Naiker, & Lee, 2009); He, Zhang, and Sun (2017); Dwekat et al. (2020); Musallam (2018); Mohammadi, Mohibbi, and Hedayati (2021); Krishnan and Moens (2009); Turley (2004) and Vera-Muñoz (2005).

The studies are primarily concentrated in two periods: from 2011 to 2014 and from 2017 to 2025. More recent studies (from 2017 onward) tend to exhibit strong connections with earlier research, as they build upon and further develop foundational theories and research models. This relationship is visually represented by the size of the nodes and their connections in Figure 3.

The literature on AC, ESG performance, and their interrelationship underscores the critical role of corporate governance in fostering sustainability. Research on AC emphasizes their responsibilities in financial oversight, risk management, and ethical compliance, with key attributes such as independence, expertise, diversity, and meeting frequency influencing their effectiveness. Independence is a fundamental factor that requires enhancement to improve operational efficiency, the quality of financial statements, and mitigate the risk of fraud (Abbott, Parker, Peters, & Raghunandan, 2004). The size of the AC is positively correlated with a company's financial performance (Alqatamin, 2018; Majeed, Aziz, & Saleem, 2018). A larger AC ensures more effective oversight, enhances performance, and increases the frequency of meetings, ultimately reducing the likelihood of errors and fraud (DeZoort, Hermanson, Archambeault, & Reed, 2002). Moreover, the frequency of AC meetings has been shown to have a positive impact on the effectiveness of the AC, which in turn can enhance a company's performance (Salloum, Azzi, & Gebrayel, 2014; Sharma et al., 2009). On the other hand, the presence of female directors on the AC enhances the committee's objectivity, improves the quality of financial statements (Al-Shaer & Zaman, 2018), and reduces the occurrence of internal corporate fraud (Huang & Thiruvadi, 2010).

Meanwhile, studies on ESG performance explore how firms integrate ESG considerations into their strategies, often driven by regulatory requirements, stakeholder expectations, and long-term value creation. The identification of this factor assists companies in determining their long-term sustainable development potential (Efthymiou, Kulshrestha, & Kulshrestha, 2023) as well as assessing their investment capacity in both tangible assets (Zhang, 2024) and financial resources (Gudmundarson & Peters, 2024). Potential risks related to ESG, including compliance with environmental regulations, fulfillment of social responsibilities, and the adequacy of governance structures, can be identified through ESG assessments (Citterio & King, 2023). Furthermore, companies that focus on enhancing ESG performance through innovation, cost reduction, and efficiency improvements such as developing environmentally friendly products, optimizing supply chains, and increasing energy efficiency, can gain a competitive advantage over industry peers (Jinchang Li, Lian, & Xu, 2023).

Studies on the relationship between AC and ESG performance have been examined in many regions and countries with different governance models and legal institutions. Typically, studies focus on countries in the European Union, where the legal system and database are well-developed, creating the premise for the application of various research methods Pozzoli et al. (2022) conducted a study on the impact of AC characteristics on the effectiveness of ESG practices in European Union member states before and during the COVID-19 pandemic to examine the relationship between three AC characteristics independence, expertise, and tenure and ESG scores. This is supported by Alkurdi, Al Amosh, and Khatib (2024), who indicated that the independence and expertise of the AC have a positive relationship with the effectiveness of ESG practices, with correlation coefficients of 0.110 and 0.013, respectively. Besides, in Southeast Asian countries such as Malaysia or Indonesia, climate change and pollution are promoting extensive research on ESG in this region. For example, Hamoudah, Banhmeid, Alahdal, and Sahu (2024) examined the impact of corporate governance mechanisms on emission scores in Malaysia to show that independent AC may be less involved or less effective in overseeing and promoting detailed carbon emission performance. This research provides valuable theoretical contributions by offering a clear and comprehensive evaluation of BoD and AC characteristics in relation to environmental innovation, distinguishing it from prior studies conducted in Malaysia. Notably, these findings contrast with those of Khatib et al. (2023), who suggested that AC expertise, as a corporate governance mechanism, contributes to improving carbon emission performance.

However, the direct application of these research results to other countries with different economic, social, and cultural contexts needs to be carefully studied. ESG initiatives in some countries are often in their infancy, and the legal framework is incomplete, which leads to difficulties in measuring and evaluating the effectiveness of ESG practices and inconsistencies among research results. The number of studies in China accessible from Scopus is six, accounting for a relatively small proportion of the total research.

Previous studies mainly examined factors affecting AC or ESG performance. Regarding the relationship between AC and ESG performance, most studies examined the impact of the Board of Directors (BOD), of which AC is a part, on ESG scores or ESG aspects such as environment, society, governance, or corporate social responsibility, without considering all three aspects comprehensively. Due to these differences, the research results of various studies still contain contradictions. The impact of AC on ESG performance in SMEs, as well as differences across specific industries, has not been thoroughly studied. Therefore, research focusing on the Chinese market is necessary to directly assess how AC influences ESG performance within the local legal and practical context.

### *2.1. ESG Performance*

ESG performance serves as a benchmark for evaluating a company's adherence to principles in three key domains: Environment, Social, and Governance. The environmental aspect examines how businesses operate to reduce their ecological footprint, with research suggesting that proactive sustainability measures can result in lower costs, improved regulatory compliance, and a stronger corporate image (Gidage, Bhide, Pahurkar, & Kolte, 2024). Social considerations involve corporate efforts to enhance employee welfare, foster community relations, and maintain

positive consumer interactions. Companies that emphasize ethical labor practices and community support often experience greater employee retention, lower turnover, and stronger customer loyalty (Verheyden, Eccles, & Feiner, 2016). Additionally, well-structured social policies can help mitigate risks tied to social instability and reinforce a company's societal credibility (Sassen, Hinze, & Hardeck, 2016). Governance, on the other hand, pertains to the policies and systems that shape corporate leadership and decision-making. Effective governance promotes transparency, accountability, and ethical business conduct, reducing the likelihood of corporate misconduct while driving long-term shareholder confidence (Anwer, Goodell, Migliavacca, & Paltrinieri, 2023). Firms with solid governance frameworks generally outperform competitors in financial stability and risk mitigation (Hu, Zou, & Yin, 2023).

Previous studies have identified several factors influencing the effectiveness of ESG performance among companies, such as the regulatory environment, corporate financial strategy, digital transformation, corporate social responsibility (CSR), and governance models. Firstly, in terms of the regulatory environment, coercive pressure, often referred to as regulatory pressure, has been recognized as a crucial driver of sustainability in environmental, social, and economic aspects (Famiyeh, Opoku, Kwarteng, & Asante-Darko, 2021). Authorities enforce policies to either encourage or regulate corporate activities related to ESG, such as the introduction of central environmental inspections, Green Finance Policies (GFP), sustainable compensation policies, and the enforcement of environmental protection laws (Lei & Yu, 2024). From a digital transformation perspective, prior studies have highlighted the role of digital transformation, including those by Narula et al. (2021); Wang and Esperança (2023) and Huang, Li, and Li (2023). Notably, Lu, Xu, Zhu, and Sun (2023), Wu and Li (2023), and Zhong, Zhao, and Yin (2023) further emphasized its significant impact, particularly in strengthening internal controls and promoting environmentally friendly initiatives. Besides, in terms of CSR, ESG performance is also influenced by the disclosure of ESG reports. Under public scrutiny, companies are motivated to enhance their ESG practices to meet stakeholder expectations and improve their corporate reputation. Several studies have demonstrated that carbon emissions play a crucial role in linking board characteristics to ESG performance, highlighting the significance of environmental sustainability within ESG frameworks (Alkurdi et al., 2024; Rajesh, 2020). The presence of a compliance oversight committee, such as an AC, has been positively correlated with higher ESG scores (Menicucci & Paolucci, 2023; Velte, 2016). Lastly, the governance model serves as the foundation for directing, supervising, and ensuring that companies effectively and sustainably fulfill their ESG commitments. Wei, Mohd-Rashid, and Ooi (2024) highlighted the negative impact of corporate corruption on ESG performance, emphasizing the urgent need for anti-corruption measures to enhance sustainability. Adeneye, Fasihi, Kammoun, and Albitar (2024) asserted that well-structured corporate governance frameworks help minimize resource wastage, encourage sustainable investment practices, and ultimately enhance ESG ratings. Additionally, collaborative governance integrating both internal oversight and external partnerships—has been identified as a key driver of ESG improvement, with stakeholder involvement playing a crucial role in fostering accountability and long-term sustainability (Husted & de Sousa-Filho, 2017).

Globally, differences in legal systems, cultural traditions, and capital market structures lead to variations in corporate governance principles across regions and countries. Governance models in China still include an Audit Committee or a Supervisory Board. However, previous studies have not focused on any specific governance model but rather on Boards of Directors in general. Therefore, it is necessary to assess the impact of a specific governance model on ESG performance.

### *2.2. ESG Performance and Audit Committee Independence*

AC independence is a principal characteristic of AC that has a positive effect on AC's ability to monitor and make decisions (Bronson, Carcello, Hollingsworth, & Neal, 2009). This is also supported by agency theory, which states that an independent AC separate from management helps minimize conflicts of interest and enhances the effectiveness of monitoring (Fama & Jensen, 1983). Initially, the Audit Committee (AC) was solely responsible for supervising the

financial reporting process and auditing activities performed by independent auditors. However, due to increasing social responsibility demands and conflicts of interest issues among investors and shareholders, the AC's role in overseeing the company's compliance with legal regulations, particularly ESG compliance, needs to be enhanced. Information related to ESG, as mentioned in the annual report, should also be verified by the AC before publication. The independence of the AC is considered fundamental for issuing ESG reports, which help attract investment and promote sustainable development.

According to Hussain, Rigoni, and Orij (2018); Broadstock, Chan, Cheng, and Wang (2021) and Pozzoli et al. (2022) one of the key characteristics that might positively influence AC's ability to maintain is its independence. The requirement of independence helps AC to be transparent in handling issues related to employees, compensation, or shareholder rights. In addition, Al-Shaer and Zaman (2018), Buallay and Al-Ajmi (2020), and Bamahros et al. (2022) showed that the independence of AC is positively and significantly related to ESG disclosure. Non-board members of AC can significantly influence companies to enhance their disclosure of ESG-related information, including ESG performance. Additionally, Popov and Makeeva (2022) provided empirical evidence suggesting that AC independence plays a crucial role in facilitating ESG implementation within corporate operations. This independence enhances the ability to oversee senior management's actions and offers fresh insights into the company. However, its effectiveness may be limited if external directors lack sufficient engagement with the specific company or industry.

Several studies have mentioned that the relationship between AC independence and ESG performance is not always positive and may have no impact or a negative impact. Jing Li, Mangena, and Pike (2012) stated that there is no significant relationship between the independence of AC and the disclosure of non-financial information, including ESG information, which will not ensure ESG performance. In addition, the presence of independent directors on the audit committee might make it difficult to ensure the social performance of enterprises (Mallin, Michelon, & Raggi, 2013).

Agency theory, legitimacy theory, and previous studies suggest that independent ACs are more likely to objectively assess ESG-related issues and monitor corporate compliance. Their lack of managerial or family ties allows for enhanced objectivity and impartial monitoring. Therefore, in the context of China, the hypothesis is:

*$H_1$: The independence of the audit committee has a positive relationship with the ESG performance of companies listed on the Chinese stock market.*

### *2.3. ESG Performance and Frequency of Audit Committee Meetings*

Meetings are an indispensable part of any company or organization. Regular meetings help AC continuously monitor the progress of ESG initiatives, promptly detect potential issues or risks, and make appropriate adjustments. Companies need to avoid holding formal meetings solely to meet quantity targets but must ensure that each meeting provides practical value, contributing to the improvement and effectiveness of the committee. Regular discussions also enhance transparency and accountability, ensuring that ESG policies and reports are thoroughly evaluated, thereby creating a basis for accurate and effective decision-making. Umar, Jibril, and Musa (2023) observed that the frequency of AC meetings was positively related to ESG performance in firms through their study of charitable corporate contributions before and during the COVID-19 pandemic. In addition, the quality of the publication of the ESG report will also be improved thanks to meetings of the AC, which also maintain ESG performance (Appuhami & Tashakor, 2017; Arif et al., 2021; Buallay & Aldhaen, 2018).

Although the frequency of AC meetings is often considered a positive factor in monitoring activities, including ESG initiatives, some studies have shown that if not properly managed, this can have negative impacts. According to Beasley, Carcello, Hermanson, and Neal (2009), too many meetings can put pressure on time and resources, leading to a decrease in the quality of analysis and evaluation of sustainability initiatives. In addition, Bedard, Chtourou, and Courteau (2004) showed that AC is at risk of focusing on short-term issues to meet immediate needs instead of

prioritizing long-term strategies. Therefore, if the frequency of AC meetings is not properly organized, it can have negative consequences, reducing the ability to effectively implement ESG strategies.

Applying stewardship theory, the authors emphasize the important role of the AC in supporting the CEO to effectively implement ESG goals by increasing the frequency of meetings. This helps the executive board to adjust ESG strategies promptly, thereby improving the effectiveness of ESG performance. However, it is also important to consider the empirical evidence of the relationship between these two factors. Based on the China context as well as personal judgment, the hypothesis is proposed.

*$H_2$: The frequency of audit committee meetings has a positive relationship with the ESG performance of companies listed on the Chinese stock market.*

### *2.4. ESG Performance and the Size of the Audit Committee*

The size of the AC is a vital factor in ensuring that tasks are divided appropriately. The number of members of the AC should be appropriate to the size and nature of the company's industry. Too few members might cause each to take on too much work, or too many might lead to injustice when some do not contribute but still receive a bonus. Madi, Ishak, and Manaf (2014) presented evidence in Malaysia that the larger the size of AC, the more effective AC. AC would be bound to carry out its responsibilities as they are always willing to devote more resources. The results showed that the size of AC was found to have a significant relationship with the company's governance. Jamil and Wahyuni (2025) concluded that there is a positive relationship between the size of AC and the ESG practices of listed companies in Malaysia, meaning that the more members there are in AC, the more likely the company is to comply with and implement sustainability strategies.

Eichenseher and Shields (1985) and Pincus, Rusbarsky, and Wong (2002) suggested that small ACs may be more centralized than larger committees; therefore, the company's governance function is also weaker than that of a large-scale AC. In the UK, Jing Li et al. (2012) investigated the relationship between the AC and the disclosure of intellectual capital. The results of the study showed that the disclosure of information about intellectual capital has a particularly positive relationship with the size characteristics of AC. Recent authors have also suggested that the size of the AC should be considered by the company's management apparatus because this factor is expected to increase the effectiveness of the AC and improve the quality of the ESG Report publication (Buallay & Aldhaen, 2018).

Applying Legitimacy Theory, large ACs will have more resources to monitor and support the implementation of ESG strategies more effectively. Therefore, based on the above results, the authors propose a research hypothesis.

*$H_3$: The size of the Audit Committee has a positive relationship with the ESG performance of companies listed on the Chinese stock market.*

### *2.5. ESG Performance and the Gender Diversity of Audit Committee*

Up to now, people still believe that jobs related to management and auditing are often more suitable for men. This is a common notion formed from long-standing social prejudices. However, reality has proven the opposite. Women not only excel in these roles but also bring unique value thanks to their multi-dimensional perspectives and flexible handling of situations. Diversifying gender in an organization, especially in management positions, not only creates an equal working environment but also helps the organization have more diverse and comprehensive perspectives on issues.

Gender diversity in AC has many positive benefits for ESG performance, especially when implemented properly. According to Adams and Ferreira (2009), the presence of women on AC can promote more effective monitoring because they tend to ask in-depth and detailed questions, increasing accountability in managing social-related activities. Carter, D'Souza, Simkins, and Simpson (2010) also emphasized that gender diversity brings different perspectives, helping AC to analyze sustainability issues more comprehensively and make decisions that are more in line with shareholder and community expectations.

Besides, Carter et al. (2010) also noted that if female members lack professional experience, this can reduce the effectiveness of monitoring ESG initiatives. In addition, Guest (2009) found that gender diversity can lead to increased governance costs and longer decision-making times, negatively affecting governance performance. Yorke, Donkor, and Appiagyei (2023) found that male finance professionals had no impact on the social pillar, while female finance professionals had a greater impact on all three pillars than their male counterparts. These findings highlight that gender diversity needs to be accompanied by appropriate preparation and support to avoid adverse impacts.

Applying stakeholder theory to the study, the authors clarify the positive impact of gender diversity in the audit committee on connecting and coordinating relationships between the organization and its stakeholders. Gender diversity helps make more balanced decisions that reflect the interests of more stakeholders, especially in ESG issues. As a consequence, the hypothesis is formulated.

*$H_5$: The gender diversity of the Audit Committee has a positive relationship with the ESG performance of companies listed on the Chinese stock market.*

## 3. RESEARCH METHOD

This study investigates the impact of AC characteristics on ESG performance. To do this, a quantitative approach using publicly available secondary data is employed to test the hypotheses and examine the correlation between AC characteristics and ESG performance.

### *3.1. Sample Selection and Data Collection*

The population includes all companies listed on the Shenzhen Stock Exchange and Shanghai Stock Exchange. According to data published by each exchange in February 2024, these two exchanges are the largest in the Chinese market and rank among the leading exchanges in Asia and globally, with approximately 2,263 and 2,844 listed companies, respectively. Considering the period from 2020 to 2023, with each company-year observation treated as an individual element of the population, the total population comprises no more than 20,428 observations across the four years, reflecting the inclusion of newly listed entities. The selection of this timeframe (2020-2023) is based on the observation that the concept of ESG has gained significant attention from corporate management in recent years, coinciding with increased concerns regarding environmental, human, and social issues. This period also aligns with the acute phase of the COVID-19 pandemic and serious pollution, which profoundly impacted corporate operations. Consequently, management, internal controls, and particularly audit committees, were compelled to develop appropriate strategies to mitigate risks and facilitate economic recovery.

Regarding sample size, the authors employed a rigorous selection process, resulting in a sample of 400 elements, comprising 100 companies listed before 2020, with four consecutive years of data per company. This sample size is deemed representative and suitable for the research population. Given a population of no more than N = 20,428 elements, the application of Yamane (1967) formula for determining sample size with a known population, using an acceptable margin of error of e = ± 5%, yields a minimum sample size.

$$n = \frac{N}{1 + N \times e^2} = \frac{20{,}428}{1 + 20{,}428 \times 0{,}05^2} \approx 393$$

The sampling methodology employed is stratified random sampling. This technique involves partitioning the population into distinct subgroups, or strata, defined by specific criteria such as size, revenue, or industry sector. To ensure maximum representativeness, the sample was selected to encompass a diverse range of industries and sizes. The sample includes companies operating across various sectors, including agriculture, forestry, mining, manufacturing, transportation, postal services, services, and real estate. Based on the 'Guidelines for Classification of Companies by International Standards' in GB/T 4754—2017, issued on June 30, 2017, by the General Administration of Customs of the People's Republic of China and the Standardization Administration of China, company size classification (small, medium, and large) is determined by three criteria: revenue, total assets, and number of

employees. Notably, the classification standards vary across different industries. According to current regulations of the two exchanges, only medium and large-sized companies can be listed (minimum annual revenue of 300 million yuan), with large-sized companies constituting a significant proportion. Accordingly, the authors selected a sample of 25 medium-sized companies and 75 large-sized companies, totaling 400 observations (more details in Table 1). Data on total assets, total revenue, and return on equity (ROE) are readily available in audited financial statements, facilitating immediate compilation. Data concerning ESG scores, AC characteristics, and years of operation are collected from platforms like Wind and annual reports (more details in Table 2).

**Table 1.** Industry composition.

| Sector name | Number of companies | % |
|---|---|---|
| Real estate development | 7 | 7% |
| Catering | 1 | 1% |
| Agriculture, forestry, husbandry and fishery | 25 | 25% |
| Retail | 24 | 24% |
| Leasing and commercial services | 13 | 13% |
| Software and information technology services | 6 | 6% |
| Other industries | 24 | 24% |
| Total | 100 | 100% |

### *3.2. Analytical Techniques*

The relationship between AC and ESG performance has been examined by numerous studies using OLS regression, including Pozzoli et al. (2022), Umar et al. (2023), and Alkurdi et al. (2024), among others. Based on this, the authors operationalize the variables and employ OLS regression analysis via SPSS 20 software to estimate the directional and magnitude relationships between the dependent variable, control variables and independent variables. Furthermore, the authors conduct a multivariate linear regression analysis (variable details are presented in Table 2) with the following equation:

$$ESG\_Score_{it} = \beta_0 + \beta_1 AC\_Independence_{it} + \beta_2 AC\_Frequency_{it} + \beta_3 AC\_Size_{it} + \beta_4 AC\_Female_{it} + \beta_5 Assets_{it} + \beta_6 Sales_{it} + \beta_7 ROE_{it} + \beta_8 OperatingYear_{it} + \beta_9 Size_{it} + \varepsilon_{it}$$

Where: $\beta_0$ is the intercept; $\beta_1$, $\beta_2$, $\beta_3$, $\beta_4$ are the coefficients of the independent variables; $\beta_5$, $\beta_6$, $\beta_7$, $\beta_8$, $\beta_9$ are the coefficients of the control variables; i represents the $i^{th}$ company in the sample of n companies (n = 100) and year t (from 2020 to 2023); $\varepsilon_{it}$ is the error term of the model.

The study utilizes panel data, combining two components: time-series data and cross-sectional data. The use of the OLS regression method is straightforward and effective for estimating values; however, it is important to consider potential violations of OLS assumptions. Additionally, the authors conduct tests for violations of the regression model, including multicollinearity, heteroskedasticity, and autocorrelation, specifically: The variance inflation factor (VIF) is used to test for multicollinearity, if VIF > 10, the research model has serious multicollinearity, and vice versa.

### *3.3. Measurements of the Variables*

*ESG performance* is commonly measured through ESG scores in prior research. The selection of a specific ESG scoring methodology depends on the research context. For instance, Pozzoli et al. (2022) in their study of European Union countries, utilized ESG scores from the Refinitiv Eikon database, whereas Pernamasari and Chariri (2024) employed scores based on the Bloomberg rating scale. In this study, the authors chose to use data from the Wind database, which is recognized as a leading provider of financial and non-financial information for listed companies on Chinese stock exchanges. The Wind ESG rating framework comprehensively reflects long-term fundamental ESG impacts and short-term risk implications, encompassing 139 indicators with a maximum score of 10 (More details in Table 3).

The measurement of independent variables in the study is shown in Table 2. The measurement methods are inherited from previous studies and the data are collected from the Wind website and the financial statements publicly disclosed by the sample companies.

In the process of reviewing the research and evaluating the current situation in China, the authors found it necessary to include company characteristics in the research model to enhance its explanatory power. The control variables are company characteristics, including total assets, net revenue, return on equity (ROE), years of operation, and company size. Total assets, net revenue, and ROE are data that can be collected from companies. ESG performance depends on the financial capacity as well as the inherent assets of the enterprise. Enterprises without a stable source of revenue will find it difficult to ensure ESG compliance if their revenue cannot cover the costs of ESG and other expenses. These characteristics have been studied by many previous studies.

In the context of this study, the authors continue to consider the impacts of these characteristics on the effectiveness of ESG implementation in the Chinese stock market. The number of years in operation and the company size are two characteristics that the authors propose to include in the research model. In the authors' view, newly established companies often exhibit two trends. One is to focus on maintaining and increasing the company's revenue and assets in the early stages to establish a solid foundation of economic potential before investing in ESG. The other is to comply with ESG standards from the early stages, operating responsibly towards society to attract investors and support long-term financial stability. The study will examine in depth whether the number of years in operation impacts ESG performance. Additionally, the selection of samples based on size according to the GB/T 4754-2017 standard should be considered in the model. Company size may influence business strategy, which in turn can indirectly affect ESG performance.

**Table 2.** Variable measurement and data sources.

| No. | Variable name | Symbol | Measurement | Source | Studied authors |
|---|---|---|---|---|---|
| Dependent variable | | | | | |
| 1 | ESG performance | ESG_Score | ESG score | Wind database/Wind financial terminal | Albitar et al. (2021); Pozzoli et al. (2022); Pernamasari and Chariri (2024) and Jamil and Wahyuni (2025) |
| Independent variables | | | | | |
| 2 | AC independence | AC_Independence | Number of independent AC Members / Total number of AC members | Wind database; annual reports | Pozzoli et al. (2022), Jamil and Wahyuni (2025), and Seth and Saxena (2025) |
| 3 | AC meeting frequency | AC_Frequency | Number of AC meetings in the fiscal year | Wind database; annual reports | Jamil and Wahyuni (2025) |
| 4 | AC size | AC_Size | Number of current AC members | Wind database; annual reports | Jamil and Wahyuni (2025) and Masud et al. (2025) |
| 5 | AC gender diversity | AC_Female | Total number of AC members | Wind database; annual reports | Yorke et al. (2023) |
| Control Variables | | | | | |
| 6 | Total assets | Assets | Logarithm of total assets in the fiscal year | Wind database; annual reports | Albitar et al. (2021), Pozzoli et al. (2022), and Seth and Saxena (2025) |
| 7 | Net sales | Sales | Logarithm of net revenue in the fiscal year | Wind database; annual reports | Pozzoli et al. (2022) |
| 8 | ROE | ROE | Net profit / Equity | Wind database; annual reports | Pozzoli et al. (2022) and Seth and Saxena (2025) |
| 9 | Years of operation | Operating year | The number of years the company has been operating up to the data collection time | Wind database; annual reports | Authors' proposal |
| 10 | Company size | Size | Company size according to *GB/T 4754-2017 standard*<br>Dummy variable = 1 if company is large<br>Dummy variable = 0 if company is medium | *GB/T 4754-2017 standard*; annual reports | Authors' proposal |

**Table 3.** ESG score meaning.

| ESG score | ESG rating | Meaning |
|---|---|---|
| 9 ≤ ESG score ≤ 10 | AAA | Outstanding corporate governance and sustainability performance, with minimal ESG risk |
| 8 ≤ ESG score < 9 | AA | Strong corporate governance and sustainability performance, associated with low ESG risk |
| 7 ≤ ESG score < 8 | A | Moderately strong corporate governance and sustainability performance, with relatively low ESG risk. |
| 6 ≤ ESG score < 7 | BBB | Balanced corporate governance, sustainability performance, and ESG risk |
| 5 ≤ ESG score < 6 | BB | Somewhat weak corporate governance and sustainability performance, with relatively high ESG risk |
| 4 ≤ ESG score < 5 | B | Limited corporate governance and sustainability performance, leading to high ESG risk |
| 0 ≤ ESG score < 4 | CCC | Poor corporate governance and sustainability performance, resulting in exceptionally high ESG risk |

**Source:** www.wind.com.cn.

## 4. RESULT

### *4.1. Descriptive Statistical Analysis*

The descriptive statistical summary of the numerical variables, presented in Table 4, includes the data used in the regression model for listed companies in China from 2020 to 2023. This analysis demonstrates that the average ESG score is 6.42, while the mean values for AC_Size, AC_Independence, AC_Frequency, and AC_Female are 4.05, 0.72, 4.96, and 0.03, respectively. Furthermore, Table 5 shows the correlation matrix results, confirming that all correlation coefficients remain below the threshold of 0.9, indicating an absence of severe collinearity among the explanatory variables. Additionally, VIF values reported in Table 6 are all below 10, reinforcing the conclusion that multicollinearity does not pose a significant concern in the model.

**Table 4.** Descriptive statistics.

| Variables | Observations | Min. | Max. | Mean | Std. dev. |
|---|---|---|---|---|---|
| ESG_Score | 400 | 4.00 | 8.91 | 6.42 | 1.07 |
| AC_Independence | 400 | 0.25 | 1 | 0.72 | 0.19 |
| AC_Frequency | 400 | 3 | 7 | 4.96 | 0.97 |
| AC_Size | 400 | 3 | 7 | 4.05 | 1.10 |
| AC_Female | 400 | 0 | 1 | 0.03 | 0.16 |
| Assets | 400 | 8.46 | 14.23 | 10.30 | 1.15 |
| Sales | 400 | 7.90 | 11.91 | 9.74 | 0.95 |
| ROE | 400 | -161.56% | 64.17% | 7.17% | 14.96% |
| Operating Year | 400 | 6 | 58 | 26.39 | 7.48 |
| Size | 400 | 0 | 1 | 0.75 | 0.43 |

**Table 5.** Variance inflation factor (VIF).

| Variable | VIF | 1/VIF |
|---|---|---|
| AC_Independence | 1.161 | 0.861 |
| AC_Frequency | 1.090 | 0.917 |
| AC_Size | 1.343 | 0.744 |
| AC_Female | 1.116 | 0.896 |
| Assets | 4.393 | 0.227 |
| Sales | 4.169 | 0.239 |
| ROE | 1.092 | 0.916 |
| OperatingYear | 1.105 | 0.905 |
| Size | 1.066 | 0.938 |

**Table 6.** Correlation matrix.

| Variables | ESG_Score | AC_Independence | AC_Frequency | AC_Size | AC_Female | Assets | Sales | ROE | OperatingYear | Size |
|---|---|---|---|---|---|---|---|---|---|---|
| ESG_Score | 1 | 0.666 | 0.379 | 0.407 | -0.157 | 0.797 | 0.835 | 0.720 | -0.779 | 0.033 |
| *p-value* | | *0.001* | *0.020* | *0.001* | *0.002* | *0.000* | *0.000* | *0.016* | *0.000* | *0.000* |
| AC_Independence | 0.666 | 1 | 0.039 | -0.295 | 0.131 | 0.284 | 0.303 | 0.124 | 0.105 | 0.204 |
| *p-value* | *0.001* | | *0.442* | *0.000* | *0.009* | *0.000* | *0.000* | *0.013* | *0.036* | *0.000* |
| AC_Frequency | 0.379 | 0.039 | 1 | 0.219 | -0.026 | - | 0.008 | -0.078 | 0.011 | 0.025 |
| *p-value* | *0.020* | *0.442* | | *0.000* | *0.603* | *0.228* | *0.869* | *0.121* | *0.820* | *0.622* |
| AC_Size | 0.047 | -0.295 | 0.219 | 1 | 0.152 | 0.196 | 0.204 | 0.072 | 0.009 | 0.148 |
| *p-value* | *0.001* | *0.000* | *0.000* | | *0.002* | *0.000* | *0.000* | *0.151* | *0.860* | *0.003* |
| AC_Female | -0.157 | 0.131 | -0.026 | -0.152 | 1 | - | -0.137 | -0.162 | 0.124 | - |
| *p-value* | *0.002* | *0.009* | *0.603* | *0.002* | | *0.128* | *0.006* | *0.001* | *0.013* | *0.000* |
| Assets | 0.797 | -0.060 | 0.196 | 0.284 | -0.076 | 1 | 0.867 | 0.156 | -0.001 | 0.447 |
| *p-value* | *0.000* | *0.228* | *0.000* | *0.000* | *0.128* | | *0.000* | *0.002* | *0.978* | *0.000* |
| Sales | 0.835 | 0.008 | 0.204 | 0.303 | -0.137 | 0.867 | 1 | 0.209 | 0.059 | 0.643 |
| *p-value* | *0.000* | *0.869* | *0.000* | *0.000* | *0.006* | *0.000* | | *0.000* | *0.240* | *0.000* |
| ROE | 0.720 | -0.078 | 0.072 | 0.124 | -0.162 | 0.156 | 0.209 | 1 | -0.141 | 0.174 |
| *p-value* | *0.016* | *0.121* | *0.151* | *0.013* | *0.001* | *0.002* | *0.000* | | *0.005* | *0.000* |
| OperatingYear | -0.779 | 0.011 | 0.009 | 0.105 | 0.124 | - | -0.059 | -0.141 | 1 | - |
| *p-value* | *0.000* | *0.820* | *0.860* | *0.036* | *0.013* | *0.978* | *0.240* | *0.005* | | *0.002* |
| Size | 0.333 | 0.025 | 0.148 | 0.204 | -0.240 | 0.447 | 0.643 | 0.174 | -0.157 | 1 |
| *p-value* | *0.000* | *0.622* | *0.003* | *0.0000* | *0.000* | *0.000* | *0.000* | *0.000* | *0.002* | |

### *4.2. Empirical Findings*

The panel data regression analysis was conducted using the OLS method to estimate the model parameters, with all data processed through SPSS 20 software. As reported in Table 7, the R-squared value is 0.216.

The results indicate a strong and positive association between AC_Independence and ESG_Score, with a statistically significant coefficient of 0.756 at the 1% level. This finding empirically suggests that a higher proportion of independent members within the AC enhances ESG performance. Conversely, AC_Size and AC_Frequency do not exhibit significant relationships with ESG performance, as their significance levels are 0.88 and 0.082, respectively. These results highlight that, rather than increasing the frequency of meetings, companies should prioritize optimizing their structure to ensure meetings are strategic, well-organized, and contribute to long-term ESG objectives. The effectiveness of ESG oversight depends more on governance structure and independence than on committee size alone.

In contrast to these findings, AC_Female demonstrates a negative association with ESG performance, with a coefficient of −0.669 at the 4% significance level. This suggests that a higher proportion of female members in the AC negatively influences ESG-related outcomes.

To ensure the reliability of these findings, additional regression analyses were conducted separately for each year from 2020 to 2023. The results of these supplementary regressions, as presented in Table 7, corroborate the main conclusions drawn from Table 8.

**Table 7.** Robustness check (Cross-sectional analysis) for a single year covering from 2020 to 2023.

| Variables | 2020 | 2021 | 2022 | 2023 |
|---|---|---|---|---|
| AC_Independence | 0.183 | 0.160 | 0.324 | 0.174 |
| AC_Frequency | -0.75 | -0.205 | -0.082 | -0.340 |
| AC_Size | -0.134 | 0.086 | 0.012 | 0.880 |
| AC_Female | -0.089 | -0.106 | 0.083 | 0.510 |
| Assets | -0.631 | -0.261 | 0.047 | -0.427 |
| Sales | 0.000 | 0.000 | 0.000 | 0.000 |
| ROE | 0.308 | 0.374 | 0.373 | 0.320 |
| OperatingYear | 0.000 | 0.000 | 0.000 | 0.000 |
| Size | 0.308 | 0.374 | 0.373 | 0.320 |
| Prob>F | 0.000 | 0.000 | 0.000 | 0.000 |
| R-squared | 0.308 | 0.374 | 0.373 | 0.320 |

**Table 8.** Regression results.

| Variable | ESG_Score |
|---|---|
| AC_Independence | 0.756 |
| AC_Frequency | -0.082 |
| AC_Size | -0.088 |
| AC_Female | -0.098 |
| Assets | -0.239 |
| Sales | 0.490 |
| ROE | 0.032 |
| OperatingYear | -0.110 |
| Size | 0.102 |

### *4.3. Discussion*

Our findings highlight the impact of AC characteristics on ESG performance, demonstrating that ESG outcomes are influenced by a combination of these factors.

Specifically, our results reveal a significant positive relationship between AC_Independence and ESG performance. Conversely, AC_Female exhibits a significant negative correlation with ESG performance. As a result, the study supports hypotheses H1 and H4, while hypotheses H2 and H3 are not supported.

To be more specific, starting with H1, the study confirms this relationship through quantitative analysis, showing a strong correlation (Coef = 0.756, Pearson correlation = 0.67, significant at 1%). Independent AC enhances corporate governance by improving oversight, transparency, and risk mitigation, reducing fraud and bias. Its objectivity ensures fair monitoring and better ESG data management. These findings align with prior research, Bamahros et al. (2022), Popov and Makeeva (2022), and Seth and Saxena (2025), which highlight the role of independent audit members in driving ESG performance. This study contributes new empirical evidence on AC's influence on ESG governance in China.

Regarding H2, the study findings contradict this assumption, revealing a negative but statistically insignificant relationship (beta = -0.085, sig = 0.099). While Umar et al. (2023) suggest that more meetings enhance ESG effectiveness, this study aligns with Bedard et al. (2004) and Beasley et al. (2009), who argue that excessive meetings may shift the focus to short-term issues, weakening ESG strategies. In collocation, an unstructured increase in AC meetings may overload members, reducing their decision-making efficiency and ultimately impairing ESG performance. Therefore, strategic meeting organization is crucial for effective ESG implementation. Instead of holding meetings for quantity, companies need to hold quality meetings, which address the company's outstanding issues.

About the other variables, H3 suggests that AC size enhances ESG performance, but regression analysis (beta = -0.063, Sig = 0.211) finds no significant impact in Chinese firms. While prior studies, Choi, Laibson, and Madrian (2004) and Jamil and Wahyuni (2025) link larger committees to better oversight, this study suggests that ESG effectiveness depends more on committee independence than size. That means the size of the AC does not determine the quality of work; instead, the professional quality of the AC should be considered.

Meanwhile, H4 indicates that gender diversity in the AC enhances ESG performance in Chinese-listed companies. Previous studies, Yorke et al. (2023) and Adams and Ferreira (2009), highlight the positive influence of female financial experts on ESG oversight and accountability. However, this study finds a significant negative correlation (beta = -0.784, sig = 0.032) between the proportion of female members and ESG scores. In the Chinese context, the limited authority of female board members and the dominance of profit-driven priorities may explain this outcome. Gender diversity alone does not guarantee stronger ESG governance, raising concerns about corporate decision-making structures. Consequently, H4 is not fully supported, as the expected positive impact of gender diversity appears to be reversed in this setting.

## 5. CONCLUSION

This study analyzes secondary data from 100 companies over four years, sourced from Wind and annual reports. Using descriptive statistics, correlation tests, and regression analysis, it provides strong evidence that audit committee (AC) characteristics significantly influence the ESG performance of Chinese firms. By directly examining attributes such as independence, size, gender diversity, and meeting frequency, the study addresses a notable gap in the limited literature especially in the context of the COVID-19 pandemic, where such research remains scarce.

This study has policy implications as it enriches the debate on AC and ESG performance in China and around the world. It examines two time periods: during and after the COVID-19 pandemic, and suggests that companies need to make appropriate changes to restore economic potential and adapt to changes in the economy. As a component of internal control, AC plays an important role in monitoring and making decisions on corporate sustainability activities. Companies should strive to build a transparent, independent, and objective AC, with information disclosure meeting two criteria: completeness and quality. Enhancing transparency helps promote the operation and effectiveness of the committee (Madi et al., 2014). The Ministry of Finance should establish clearer regulations regarding the independence of individuals and the disclosure of relationships that may affect independence. The Audit Committee (AC) should also enhance communication within the committee and between the AC and stakeholders such as internal auditors and company management. Each meeting between the AC or between the AC and

stakeholders should be of high quality, meaning that it does not need to be too frequent, but each meeting should address outstanding issues or diversify meeting formats, such as online meetings during the COVID-19 period, to ensure the attendance of all members. The Company Law of the People's Republic of China (amended in 2023) stipulates that the AC must have at least three members, of whom more than half must not hold any position other than that of a director in the company and must not have any relationships with the company that could impair their independent and objective judgment. However, it is necessary to be transparent about what constitutes an appropriate size to enable timely and effective decision-making without conflicts of interest among stakeholders. Enterprises need to be appropriately sized to optimize costs and prevent power concentration in the AC chairperson. Regarding gender diversity, it is important to consider whether women can balance their health and time commitments to ensure the quality of their work.

Additionally, this study has certain limitations that future research may address. Firstly, it focuses on the impact of AC independence, gender diversity, size, and meeting frequency based on the authors' perspectives. As a result, other relevant characteristics that could influence ESG performance may not have been considered. In future studies, other characteristics such as the years of experience of ACs should be considered to limit possible bias. Second, the study used secondary data from Wind and annual reports provided annually, which will limit the accuracy compared to data provided monthly or quarterly. The annual reports of companies can have inherent risks, such as differences when applying accounting estimates, making it impossible to confirm the consistency between the collected figures. Further research could eliminate the impact of COVID-19 on ESG performance. Third, due to time and capacity constraints, this study only collected data from 100 companies, which is a modest number compared to the size of the Chinese economy. Therefore, generalizing the findings to the entire economy will have certain limitations when making comments and recommendations for development. In the future, this study can be expanded to include more listed companies on the stock markets.

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