

## **2022 S.T. Yau High School Science Award (Asia)**

### **Research Report**

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#### **Title of Research Report**

Reexamining the Impact of ESG Activities on Corporate Financial Performance and Analysis of Moderating Effects – Evidence from China

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# **Reexamining the Impact of ESG Activities on Corporate Financial Performance and Analysis of Moderating Effects – Evidence from China**

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## **Abstract**

In contrast with the conventional objective of maximising shareholders' benefits, modern firms make efforts to pursue the welfare of all stakeholders. Consequently, the Environmental, Social and Governance (ESG) framework is established to assess firms' performances in non-financial sectors. Nowadays, at the crucial economic transitional stage in China, it becomes an urgent agenda for the authority to implement regulations that shift firms' myopic pursuit of profitability to the necessary integration of ESG practices into their business operations. To this end, the Communist Party of China (CPC) has conducted various party-building-related activities to improve ESG scores within both state-owned and private-owned enterprises, hoping to facilitate firms' transitional process and ultimately achieve quality corporate financial performance (CFP) with high sustainability.

In this work, we explore the relationship between ESG scores and CFP theoretically, focusing on analysing the moderating role of party-building-related indicators as well as total assets and firm ownership. Afterwards, theoretical hypotheses are proposed, and empirical analysis is conducted by employing the fixed effect model based on 2011-2019 data from Chinese A-share listed companies. Empirical results indicate that the ESG score is significantly (or nearly significantly) positively correlated with return on equity (ROE) and return on assets (ROA), and negatively related with Tobin's Q (TQ). Furthermore, it is discovered that party-building-related indicators, including the Two-way Entry Index (TEI) and the proportion of CPC members (PCPC) in directors, supervisors and senior executives of listed companies, reduce the positive impact of ESG on accounting performance ROE and ROA while alleviating the negative effects of ESG score on the market performance Tobin's Q (TQ). Other moderators, such as total assets and firm ownership, also show significant regulating effects on the ESG-CFP link. Regression analysis according to different groups further demonstrates the sample heterogeneity. It is expected that this paper will proffer useful references to stakeholders for reshaping a green and sustainable capital market in China.

## **Keywords:**

ESG, Corporate Financial Performance, Fixed Effect Model, Moderating Effect

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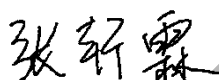
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**Commitments on Academic Honesty and Integrity****We hereby declare that we**

1. are fully committed to the principle of honesty, integrity and fair play throughout the competition.
2. actually perform the research work ourselves and thus truly understand the content of the work.
3. observe the common standard of academic integrity adopted by most journals and degree theses.
4. have declared all the assistance and contribution we have received from any personnel, agency, institution, etc. for the research work.
5. undertake to avoid getting in touch with assessment panel members in a way that may lead to direct or indirect conflict of interest.
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7. observe the safety regulations of the laboratory(ies) where we conduct the experiment(s), if applicable.
8. observe all rules and regulations of the competition.
9. agree that the decision of YHSA(Asia) is final in all matters related to the competition.

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# 1. Introduction

## 1.1 Research Background

### 1.1.1 The Rise and Development of ESG

Traditionally, firms aim to maximise profits and create more value for their shareholders, thus attracting more investment input. The conventional business model is supported by multiple studies, which claimed that firms should mainly be concerned with utilising resources to increase profits (Friedman, 1970). However, in recent years, there has been a paradigm shift in the companies' management philosophy around the world, which is from the traditional objective of solely maximising shareholder value to pursuing the welfare of all stakeholders. This notable transformation in operation ideology can be attributed to the establishment of green financing framework under the environmental dimension of UN Sustainable Development Goals (SDGs) as well as a wider acceptance and practice of the sustainable development principle, which is a conservation strategy devised to resolve many interlock crises caused by climate change (United Nations, 1987). Not only companies are putting much emphasis on carrying out corporate social responsibility (CSR) activities to benefit all their stakeholders, to investors worldwide, besides solely considering the traditional financial returns of firms when making investment decisions, non-financial factors such as Environmental, Social and Governance (ESG) have also been carefully evaluated to practice responsible investing. ESG investing relates closely with fundamental investing, so many investors purchase additional shares due to disclosure of information about ESG (Duuren et al., 2016). The Assets Under Management (AUM) of global ESG Exchange-Traded Funds (ETFs) have skyrocketed since 2015, reaching US\$174 billion by 2021 (UNCTAD, 2021). It has thus become a global consensus to identify, analyse and mitigate financial risks according to ESG ratings, conducting economic activities in a socially responsible way.

With ESG being taken into account by more firm managers and shareholders, a critical question to discuss is whether high ESG scores can lead to high corporate financial performance (CFP). The existing research that analysed the impact of ESG disclosure practices on CFP showed contradictory perspectives. A 2015 study gathered more than 2,200 previous findings on this topic and after evaluating their results collectively, concluded that 90% of studies found a non-negative correlation between ESG and CFP (Friede et al., 2015). On the contrary, in certain market settings, ESG practices may impose additional financial burden on firms, incurring unnecessary costs and thus

reducing firm value (Fatemi et al., 2017). Taking 179 Canadian companies as study samples, Makni et al. (2009) found significant negative associations between corporate social performance and ROE, ROA and market returns. A negative relationship between ESG and CFP is also discovered when analysing the market of the United Kingdom (Brammer et al., 2006). Using firm samples from Shanghai Securities Exchange, Li (2006) determined that higher CSR performance can negatively affect TQ. After analysing samples from Chinese A-share listed companies from 2015 to 2019, Ruan et al. (2021) concluded that ESG is significantly negatively correlated with CFP. In addition, there are also multiple studies which conclude that the relationship between ESG and CFP is not definite (Robert et al., 2014). Luffarelli et al. (2019) determined that the effect of CSR performance on TQ is not significant in the business-to-business industry. Trumpp and Günther (2017) found a weak or U-shaped association between corporate environmental performance and CFP. When analysing the time-lagging effect of CSR, Wang and Xu (2010) concluded that firms' current environmental performance is not significantly associated with next year's CFP, but it will negatively affect the third year's CFP. Besides this, no significant relationship between ESG and CFP is determined after examining data from China's high-tech enterprises (Zhu, 2014). The substantial disparity between prior results can be attributed to the fact that research subjects may be at different stages of development with unsimilar domestic circumstances, and the different types of company ownerships and market environments will all affect the final correlation examined.

### ***1.1.2 ESG under the Chinese Context***

After more than a decade of economic growth at an unbridled speed, China is now subject to various challenges such as an ageing population, dwindling demographic dividend and a slower economic momentum. To overcome these issues and attain continual economic progress, China has now decided to enter a new era of structural reform and is transitioning to sustainable and high-quality growth. At the crucial stage of transformation, many current reform policies are starting to acknowledge that combating issues such as pollution, resource scarcity and corporate governance may help boost longer-term sustainable economic growth. These regulations shine a spotlight on the paramount importance of a comprehensive ESG system in this immense sustainable and green wave. Hence, driven by the “dual carbon” goal of achieving carbon neutrality by 2060, China has embarked on her journey of exploring and establishing an ESG evaluation framework with Chinese characteristics under the guidance of the Communist Party of China (CPC). In August 2016, seven government agencies collectively issued the “Guidelines for Establishing the Green Financial

System” (The People’s Bank of China, 2016), providing an imperative instruction for promoting ecological civilisation and building a green financial system in China. In June 2018, the China Securities Regulatory Commission (CSRC) announced the “Code of Corporate Governance for Listed Companies (2018 revision)”, which is the first explicit regulation to ask listed companies to reveal their information related to ESG factors. At the 2021 China Social Investment Forum (SIF) Summer Summit, various large financial institutions have pledged to make ESG principles the foundation of their investment activities and adopt Climate Related Financial Disclosure (TCFD).

Due to China’s unique political and economic landscape, it is anticipated that the central authority has a crucial influence on cultivating the culture and practices of ESG in China, as it plays an indispensable role in the Chinese economy. Therefore, the central authority has been utilising corporate governance tools, such as establishing party committees inside enterprises to accomplish its national policy. This strategy is called party-building, which is “dangjian” in Chinese. In 2018, the amended Company Law states that companies shall allow party organisations to be established and provide them with the necessary conditions to operate. Party committees shall enter the management, the board of directors and supervisors by two-way membership and cross office holding. While this is only compulsory for state-owned enterprises (SOEs), some private companies still undertake this policy change voluntarily. The revised CPC Constitution requires the party committees to play a leading role, set the right direction aligned with the party priorities, keep in mind the big picture and actively participate in decision-making on major company issues in accordance with the national regulations.

Hence, with party-building being enforced into the Company Law and the government making a concerted push to empower party organisations, it is expected that the central authority’s agenda will be put into place with less resistance. This is most evident from the phenomenon that SOEs or companies whose CEOs have connections with the CPC are more likely to carry on ESG practices (Tao, 2021). This can be primarily attributed to the fact that these firms are more deeply rooted in the bureaucracy and thus are more scrutinised by the government, bearing testimony to the critical influence of party-building over the implementation of ESG practices. It is noteworthy that listed SOEs or state-controlled companies are more willing to incorporate the party’s priorities into their business activities to enhance social welfare, such as contributing to targeted poverty alleviation and pollution reduction (Monti, 2016). More recently, the government also implemented harsher punishments for firms that cannot manage to meet ESG standards, including considerably higher fines and jail sentences for senior officials from the party organisations. Therefore, based on the



unique political framework in China, one of our research's novelties is that we testify the moderating effects of company ownership and party-building on the correlation between ESG and CFP.

## ***1.2 Research Significance***

In China, ESG integration is still in its infancy and is still lacking a general authoritative rating standard. Since there is a relatively large divergence between the Chinese and Western firms' information disclosure level and the domestic market environment, following the international standards of ESG rating system directly to assess Chinese companies' ESG performance will be highly impractical. Due to the inconsistent results from the prior findings, reinvestigating the effect of ESG on CFP is highly justified, especially in China's market, where there is insufficient evidence and empirical literature to derive a definite correlation. Moreover, as China's ESG research started relatively late compared with other developed countries, much existing literature mainly focused on theoretical discussion on building ESG rating systems and little research analysed the direct impact of ESG factors on CFP. Since many prior findings under Chinese context only focused on a single dimension of ESG, especially the Environmental and Social factors, the number of research that examines the aggregate effect of ESG on CFP is still inadequate. As every individual dimension of ESG is interconnected, it will be imprecise to just consider the impact individually, and thus the combined effect of ESG on Chinese companies needs further investigation. Much prior studies also ignored the unique political landscape in China and failed to include the impact of CPC and business ownership on the relationships determined, which are, according to our analysis, very crucial factors that may significantly affect the final results testified.

Main contributions of this research are as follows. Firstly, we choose party-building, business ownership and firm size as moderators to obtain experimental evidence on whether these factors will enhance the impact of ESG on CFP or diminish it under Chinese context. To the best of our knowledge, this is almost the first empirical analysis that includes these three categories of moderators when explaining the ESG-CFP link under Chinese context. Secondly, we aim to determine the influence of aggregate ESG and three sub-components of ESG on the CFP, respectively. Besides the current ESG, we also set the ESG to be one-year delayed to examine any possible time-lagging relationship. Thirdly, we explore the relationship between ESG and CFP based on 6834 observations from Chinese A-share listed companies between 2011-2019. The nearly ten-year time span will largely avoid the impact of both domestic and international economic fluctuations on our findings. The relationships determined can provide insightful information to

Chinese companies and financial institutions, raising their consciousness of the significance of ESG integration and helping them to practise ESG investing and conduct ESG activities to enhance their corporate sustainability. Our results can also offer some insight in the time of China's critical economic transition, assisting stakeholders in establishing a greener financial system and promoting sustainable development with high quality growth.

### ***1.3 Research Framework***

According to the proposed research direction and approach, the synopsis of our research is as follows. With the first section being an introduction, which demonstrates the background of our research and the significance it upholds, the second section presents a review of the existing literature on the related topics, multiple theoretical frameworks associated with our research and the hypotheses we have proposed. The third section detailedly elucidates the data source, variables and our methodology, while the fourth section displays our results and empirical analysis. The fifth section comprises the conclusion of our study, possible policy suggestions and the avenues for further research.

## **2. Literature Review and Hypothesis Development**

### ***2.1 Impact of Aggregate ESG on CFP***

The existing literature focusing on the impact of aggregate ESG on CFP has shown conflicting perspectives, with the research subject being vastly different and the results varying widely across countries. Multiple studies supported the positive relationship between ESG and CFP. As mentioned in the introduction, a 2015 research gathered more than 2,200 previous findings on this topic and concluded that 90% of studies found a non-negative association between ESG and CFP, with most of these findings showing stable links over time (Friede et al., 2015). After examining one of the largest emerging market economies, India, using panel regression models, Chelawat and Trivedi (2016) found that good ESG performance will improve the CFP of India's listed companies. News-based ESG reports have been proven to be able to raise a firm's public image in Switzerland, thus leading to positive annual variation in companies' CFP measured by ROA (Pasquini-Descomps & Sahut, 2013). Among literature zooming into the Chinese market, a study which focused on China's listed electricity generation firms based on panel regression models concluded that ESG performance has a significant positive impact on CFP (Zhao et al., 2018). Li et al. (2021) examined the moderating

effect of enterprise innovation on the relationship between ESG and CFP, suggesting that good ESG performance can increase both CFP and firms' level of research and development (R&D).

On the other hand, Fatemi et al. (2017) found that under certain market conditions, disclosing ESG related information will incur additional costs on the company and lead to a decrease in firm valuation, implying a negative association between ESG performance and CFP. This study can be further supported by the trade-off theory (Friedman, 1970), which pointed out that the primary objective of corporate executives is to maximise share value and satisfy the interests of shareholders. Bearing CSR or carrying out environmental protection activities will only impose extra costs and reduce profits, diminishing a firm's competitiveness (Barnett, 2007), and thus ESG practices cause a negative impact on CFP. After selecting 179 Canadian companies from 2004 to 2005 as study samples and adopting Granger causality test, Makni et al. (2009) found significant negative associations between corporate social performance and ROE, ROA and market returns. Amran et al. (2013) also proved a negative relationship between CSR and CFP under the Asia-Pacific context. In China, Li (2006) studied firms from Shanghai Securities Exchange and discovered that higher CSR performance would reduce the value of TQ. Using samples from Chinese A-share listed companies from 2015 to 2019, Ruan et al. (2021) also concluded that ESG is significantly negatively correlated with CFP.

There are also studies which arrived at the conclusion that the relationship between ESG and CFP is not significant. Robert et al. (2014) concluded that there is no definite correlation between ESG and CFP while Luffarelli et al. (2019) found that the effect of CSR performance on TQ is not significant in the business-to-business industry. No significant relationship between ESG and CFP is determined after examining data from China's high-tech enterprises (Zhu, 2014). When analysing the time-lagging effect of CSR, Wang and Xu (2010) used data from Beijing's listed companies and concluded that firms' current environmental performance is not significantly associated with next year's CFP, but will negatively affect the third year's CFP. Dong et al. (2017) studied A-share listed manufacturing companies from 2011 to 2015 and found no significant correlation between one-year lagging CSR and current CFP.

The prior literature has shown opposing viewpoints, so in order to hypothesise a possible association between the ESG and CFP of Chinese companies, it is critical to analyse the theoretical framework behind the ESG system and interpret in accordance with the unique characteristics of the Chinese market.

The theory serving as underpinning for the correlation between the environmental factor and CFP is the sustainability theory (United Nations, 1987). It suggests that the fundamental requirement of development should be aiming to satisfy the interests of the current generation and simultaneously, not compromise the future generations' capability to fulfil their own interests. As individual agents of an economy, corporations' ability to achieve sustainable development will become a crucial prerequisite for the society and economy to pursue high sustainability in the long term. With the rising popularity of green consumerism in China, the new Chinese middle class who become more aware of the deteriorating effects of irresponsible manufacturing behaviours on the environment, are demanding products that are more sustainable with higher safety standards. They are willing to embrace goods and services from companies that contribute actively to communities and are committed to environmental protection, even if that means they sometimes have to pay higher prices. Therefore, by conducting activities to conserve the environment, companies can greatly improve their profitability (Hart, 1995), as they will make efforts to reduce cost of production through R&D, raising their consumers' gratification towards the brand and thus boosting sales (Porter & Linde, 1995). With China moving to compulsory disclosure on the environmental score, the authority implements supportive policies that match with its green agenda and gives subsidies to firms with high environmental performance, which helps firms improve their CFP (Zhu, 2020).

The possible benefits of conducting CSR can be explained by the divergent stakeholder theory (Freeman, 1999), which highlighted that besides profit maximisation, a company should strive to fulfil the interests of its various stakeholders such as employees, suppliers, customers and communities by minimising its externalities and improving societal well-being. A company's operation is closely linked with its stakeholders, and maintaining good ties with stakeholders can enable the company to obtain greater value creation. ESG disclosure can thus enhance a firm's brand image and public reputation (Orlitzky et al., 2003), bolster customer loyalty and its appeal to competent job applicants (Greening & Turban, 2000) and consequently improve its competitive advantage.

The theoretical basis that supports the association between governance factor and CFP is the principal-agent theory (Jensen & Meckling, 1979). The separation between company representatives and shareholders sometimes leads to the principal-agent problem, which is caused by asymmetric information, lack of control over company management and contrasting interests of firm executives and shareholders. The structure and functioning of a company's board of directors are vital to its governance criterion under the ESG score. A highly effective governance mechanism will help a

company handle its principal-agent problem by reducing agency cost, offering more useful information to investors to mitigate information asymmetry and ensuring activities are carried out for shareholders' interests. An increased transparency and a strong governance structure will thus generate higher returns and improve CFP (Klapper & Love, 2004). After evaluating the above presented theories, we can draw the first hypothesis:

**H1: Overall ESG performance is positively correlated with CFP.**

## ***2.2 Moderating Effects of Party-Building and Business Ownership***

Party-building ("dangjian" in Chinese) under the context of corporations, is a corporate governance tool used by the central authority of China. Party members may enter the company's management, the board of directors and supervisors through two-way membership and cross office holding. The aim of party-building mainly entails to enhance the monitoring and controlling of the firms, to ensure that firms' are marching forward in the direction favoured by the state interests and to facilitate the execution process of state policies.

Currently, there is little literature available in China that examines the impact of party-building as well as business ownership on a firm's aggregate ESG performance. Theoretically, as the national government is committed to promoting ESG practices in both state-owned and private firms, party-building activities can possibly nudge the decision-making process of firms and direct it towards the state's policy orientation (Ye et al., 2016), thus improving firms' ESG performance. Wang and Chen (2018) argued that CPC participation in decision-making supervises SOEs to address environmental responsibilities, encourage more harmonious labour relations, conduct social charity and facilitate better corporate governance. There are also findings indicating that politically embedded firms in China perform more CSR than other firms (Yu & Chi, 2021). Besides social responsibility, Yan and Xu (2022) also found that the party membership of private entrepreneurs will enhance corporate environmental investment because the party status can help to facilitate communication and coordinate targets between the state and firms. However, differing views are voiced out by Xiao and Shen (2022) who determined an inverse relationship between political connections and environmental performance of Chinese firms, which is due to the reason that political relationships shed politically connected firms from punishments by the authorities when they avoid taking environmental responsibilities.

Despite a lack of academic resources about environmental and social factors, prior studies mostly delved into the impact of party-building on corporate governance and demonstrated conflicting results. Ma et al. (2013) debated that party-building activities prove to be effective in prevention of corruption among senior executives. The result of this study is supported by the finding that the party committee's "two-way membership and cross office holding" policy can boost state-owned firms' value effectively (Wang & Ma, 2014). The study of Waal and Wang (2017) suggested that participation of corporate party organisations in corporate governance is beneficial for establishing an efficient organisational framework, thus significantly improving CFP. In addition, party-building allows the behaviours of agents to be supervised and restricted, alleviating proxy conflict and agency cost. As a result, the principal agent problem can be better addressed (Cui, 2021).

Nevertheless, the relationship between party committees' participation and corporate governance may not simply be linear, but takes the shape of an inverse U, suggesting that as party committees' participation increases, corporate governance increases to a maximum before it starts to decrease (Yu & Xu, 2020). The implementation of "two-way membership and cross office holding" within SOEs may result in the prevalence of bureaucracy and power centralisation, which leads to failure in the formation of collective decision-making mechanisms and causes corruption among corporate leaders (Sun & Xu, 2019). Intervention by party organisations also tends to increase the number of redundant employees in the firm and negatively affect corporate governance and CFP (Xue & Bai, 2008; Ma et al., 2013). Qian (1999) believed that government interference imposes political cost on enterprises. When the party organisation holds exclusive power on the decision-making level, it burdens agents with unnecessary political cost and it is detrimental to CFP (Chang & Wong, 2009). Furthermore, the participating party organisation may solely play the role of political and ideological symbol without any substantial contributions, magnifying corporate political burden and reducing CFP (Chen & Lu, 2014).

On the other hand, business ownership is also capable of affecting a company's profitability and ESG performance. SOEs generally possess closer relationships with the government compared to POEs. They are naturally subject to higher party participation. The effect CPC casts over SOEs has changed at different periods but has indeed increased during the past decade, with the party formally taking a leading role in all SOEs in 2020. Increasing party-building activities may push the party committee participation beyond the turning point of the inverse U proposed by Yu and Xu (2020) and induce a decrease in corporate governance, consequently affecting CFP.

Moreover, SOEs have more vague objectives and less motivation to earn profits compared to POEs. Instead, it is SOEs' prominent obligation to obey policies and intentions proposed by the party and the government. Thus, SOEs experience political constraints and are usually less driven to improve CFP. On the contrary, POEs are oriented towards maximising net private benefit. They are more enthusiastic and impelled to raise profits. As a result, POEs emphasise more on the publicity of ESG activities they carried out and translate it into greater CFP. Traditionally, POEs depict a profit-driven image in the public eye. When POEs take up ESG responsibilities, greater public response can be aroused by POEs' consciousness about sustainable development and management (Wang & Yang, 2022).

Our work might be unique in analysing the moderating impacts of party-building-related indicators and enterprise ownership on the ESG-CFP link. By referring to the above related research, we reach the following hypotheses:

**H2: Party-building-related indicators act as essential moderators in affecting the ESG-CFP link.**

**H3: The enterprise ownership moderates the relationship between ESG and CFP.**

### ***2.3 Moderating Effect of Firm Size***

Traditionally, firm size is a long-discussed topic in the literature focusing on the impact of individual sections of ESG on CFP. However, there are few studies concentrating on the moderating role of firm size on the correlation between ESG and CFP, especially under the Chinese context. To fill this gap, our research choose to investigate the moderating effect of firm size on the relationship between ESG and CFP.

In our study, firm size is measured by the total assets of the firm. Multiple studies have focused on the correlation between firm size and ESG performance. Chen and Metcalf (1980) identified a positive link between firm size and environmental and social performance. Ullmann (1985) debated that larger firms demonstrate better social performance as they have abundant resources to cater to the demand of stakeholders in order to improve their reputation. Regarding corporate governance, larger firms are also performing better because they offer a greater extent of voluntary information disclosure compared to their smaller counterparts, thus exposing themselves under greater public scrutiny (Madhani, 2016). Muhammad et al. (2022) pointed out that the positive relationship between firm size and corporate governance is attributed to the fact that larger firms invest more in R&D.

Although the majority of studies agreed greater firm size boosts ESG performance, there are still a few scholars who showed contrary viewpoints. Gregory (2022) presented that there is no direct relationship between firm size and ESG score.

Meanwhile, some studies explored the role of firm size as a moderator of the ESG–CFP relationship. Ahmad et al. (2021) believes that firm size moderates the relationship between ESG and the market value of the firm but has no significant impact on the relationship between ESG and earning ability of firms. Youn et al. (2015) found that firm size plays a positive moderating role in the relationship between positive CSR and CFP. This result can be underpinned by the theory that larger firms have better access to resources, more organised structures and procedures than smaller firms. The study by Hernandez et al. (2020) focusing on micro-, small and medium-sized enterprises consolidated the previous result — the larger the size, the stronger the CSR–CFP relationship. However, an opposing view by Orlitzky (2001) claimed that size is not a factor that can compound the CSR-CFP relationship. Yook et al. (2018) also believed that the close link between high economic performance and environmental performance is due to other factors (dynamic capabilities) rather than firm size.

As analysed earlier, we believe that it is more likely for larger firms to already have a high level of ESG contribution. Due to the law of diminishing marginal returns, further investments in ESG may slow down the growth rate of CFP to some extent. Moreover, larger firms are more capable of performing market value management, thus they may influence the market CFP. Based on previous research and our analysis, we develop the following hypothesis:

**H4: Firm size moderates the relationship between ESG and CFP.**



### 3. Methodology

#### 3.1 Data Source and Sample

Our research sample consists of ESG disclosure scores of Chinese A-share listed companies from 2011 to 2019, which are derived from the Bloomberg ESG dataset. Besides the aggregate ESG scores, scores of three sub-dimensions E, S and G are also included to comprehensively analyse the overall and individual impact of ESG performance. The data of CFP and other financial data are gathered from China Stock Market & Accounting Research Database (CSMAR). The panel data used in this study is unbalanced as the number of firms varies every year. Hence, the original sample data are further screened in accordance with the following requirements: (1) companies without ESG disclosure scores or party-building-related data are excluded; (2) Special Treatment (ST) and \*ST listed companies are excluded; (3) All continuous variables are winsorized at the 1% level in each tail.

#### 3.2 Description of Variables

**Table 1 Definitions of Variables**

Type	Name	Definition
Dependent Variables	ROE	Return on equity is calculated by dividing a company's net income by shareholders' equity in the absence of debt. It can be interpreted as the return on net assets, which represents the profitability to the firm's shareholders.
	ROA	Return on assets is the net income divided by total assets, which takes into account the leverage or debt and reflects the profitability of a company in relation to its total assets. It also reflects the profitability to all stakeholders.
	TQ	Tobin's Q is equal to the market value of a company divided by its assets' replacement cost. It has been widely applied to assess enterprises' market value and reflect the company's future growth potential.
Independent Variables	ESG	Environmental, social and governance score rates a company's ESG performance according to various company-reported and derived indicators.

**Table 1 (Continued)**

Independent Variables	E	The Environmental score quantifies firms' responsibility to preserve the natural world. It is reflected in their efforts to tackle climate change and carbon emissions, waste disposal and pollution, deforestation, etc.
	S	The Social score represents firms' consideration of people and relationships. Some indicators entail customer satisfaction, employee rights, data protection and privacy, diversity and gender equality.
	G	The Governance score shows the standard of running a company. Firms that dedicate themselves to improve their company structure, eliminate bribery and corruption and build an efficient executive committee are awarded higher Governance scores.
Control Variables	AGE	AGE measures the number of years since the company was listed in the stock market.
	GDP	GDP measures the GDP growth rate of the province that the firm is located in during a particular year.
	LTA	LTA is the log of total assets of a firm used as a representation for the firm size. Some typical categories include cash, marketable securities, accounts receivable, prepaid expenses, inventory and fixed assets.
	LEV	LEV stands for leverage ratio, which shows how much of a firm's capital comes from debt. It is a solid representation of whether a business can make good on its financial obligations.
	BMR	BMR represents book-to-market ratio, which is the market price of one of its shares multiplied by the number of shares outstanding.
	Nature	Nature represents the dummy variable indicating the business ownership of a company with 1 for POEs and 0 for SOEs.
	PCPC	PCPC is the proportion of CPC members in directors, supervisors and senior executives of listed sample companies, which is one of the indicators of the impact of party-building.
	TEI	TEI is the two-way entry index, which is a dummy variable with 1 for entering the company's management, the board of directors and supervisors through two-way membership and 0 for otherwise.

### 3.3 Model

Fixed effect model is selected for the regression analysis where year and industry are controlled. This is based on the fact that a different year means a different economic outlook and government policies, and differing industries also have distinctive characteristics and conditions. Additionally, for our panel data, considering the independence for any given year among different corporations and the dependence of observations across different years in each corporation, we use the standard errors which are heteroskedasticity robust, clustered by the corporation.

Eq.(1) models the correlation between ESG and firms' financial performance, epitomised by ROE, ROA and TQ. The one-year lagging effect is reflected in Eq.(2) to inspect whether the impact of ESG on CFP is immediate or delayed.

$$CFP_{i,t} = \alpha_0 + \alpha_1 ESG_{i,t} + \alpha_2 Age_{i,t} + \alpha_3 GDP_{i,t} + \alpha_4 LTA_{i,t} + \alpha_5 Lev_{i,t} + \alpha_6 BMR_{i,t} + \alpha_7 Nature_{i,t} + \alpha_8 PCPC_{i,t} + \alpha_9 TEI_{i,t} + \sum Year + \sum Ind + \varepsilon_{i,t} \text{-----}(1)$$

$$CFP_{i,t} = \alpha_0 + \alpha_1 ESG_{i,t-1} + \alpha_2 Age_{i,t} + \alpha_3 GDP_{i,t} + \alpha_4 LTA_{i,t} + \alpha_5 Lev_{i,t} + \alpha_6 BMR_{i,t} + \alpha_7 Nature_{i,t} + \alpha_8 PCPC_{i,t} + \alpha_9 TEI_{i,t} + \sum Year + \sum Ind + \varepsilon_{i,t} \text{-----}(2)$$

The way of how individual dimensions of ESG affect CFP is modelled by Eq.(3) using E, S and G scores as independent variables. Similarly, their one-year lagging effects are simulated by Eq.(4).

$$CFP_{i,t} = \alpha_0 + \alpha_1 E_{i,t} + \alpha_2 S_{i,t} + \alpha_3 G_{i,t} + \alpha_4 Age_{i,t} + \alpha_5 GDP_{i,t} + \alpha_6 LTA_{i,t} + \alpha_7 Lev_{i,t} + \alpha_8 BMR_{i,t} + \alpha_9 Nature_{i,t} + \alpha_{10} PCPC_{i,t} + \alpha_{11} TEI_{i,t} + \sum Year + \sum Ind + \varepsilon_{i,t} \text{-----}(3)$$

$$CFP_{i,t} = \alpha_0 + \alpha_1 E_{i,t-1} + \alpha_2 S_{i,t-1} + \alpha_3 G_{i,t-1} + \alpha_4 Age_{i,t} + \alpha_5 GDP_{i,t} + \alpha_6 LTA_{i,t} + \alpha_7 Lev_{i,t} + \alpha_8 BMR_{i,t} + \alpha_9 Nature_{i,t} + \alpha_{10} PCPC_{i,t} + \alpha_{11} TEI_{i,t} + \sum Year + \sum Ind + \varepsilon_{i,t} \text{-----}(4)$$

In Eqs.(5-8), the interaction terms of ESG with Nature, PCPC, TEI and LTA are added as independent variables for the regression model to investigate the moderating effects of business ownership, party-building-related indicators and firm size.

$$CFP_{i,t} = \alpha_0 + \alpha_1 ESG_{i,t} + \alpha_2 ESG_{i,t} \times Nature_{i,t} + \alpha_3 Age_{i,t} + \alpha_4 GDP_{i,t} + \alpha_5 LTA_{i,t} + \alpha_6 Lev_{i,t} + \alpha_7 BMR_{i,t} + \alpha_8 Nature_{i,t} + \alpha_9 PCPC_{i,t} + \alpha_{10} TEI_{i,t} + \sum Year + \sum Ind + \varepsilon_{i,t} \text{-----}(5)$$

$$CFP_{i,t} = \alpha_0 + \alpha_1 ESG_{i,t} + \alpha_2 ESG_{i,t} \times PCPC_{i,t} + \alpha_3 Age_{i,t} + \alpha_4 GDP_{i,t} + \alpha_5 LTA_{i,t} + \alpha_6 Lev_{i,t} + \alpha_7 BMR_{i,t} + \alpha_8 Nature_{i,t} + \alpha_9 PCPC_{i,t} + \alpha_{10} TEI_{i,t} + \sum Year + \sum Ind + \varepsilon_{i,t} \text{-----}(6)$$

$$CFP_{i,t} = \alpha_0 + \alpha_1 ESG_{i,t} + \alpha_2 ESG_{i,t} \times TEI_{i,t} + \alpha_3 Age_{i,t} + \alpha_4 GDP_{i,t} + \alpha_5 LTA_{i,t} + \alpha_6 Lev_{i,t} + \alpha_7 BMR_{i,t} + \alpha_8 Nature_{i,t} + \alpha_9 PCPC_{i,t} + \alpha_{10} TEI_{i,t} + \sum Year + \sum Ind + \varepsilon_{i,t} \text{-----}(7)$$

$$CFP_{i,t} = \alpha_0 + \alpha_1 ESG_{i,t} + \alpha_2 ESG_{i,t} \times LTA_{i,t} + \alpha_3 Age_{i,t} + \alpha_4 GDP_{i,t} + \alpha_5 LTA_{i,t} + \alpha_6 Lev_{i,t} + \alpha_7 BMR_{i,t} + \alpha_8 Nature_{i,t} + \alpha_9 PCPC_{i,t} + \alpha_{10} TEI_{i,t} + \sum Year + \sum Ind + \varepsilon_{i,t} \text{-----}(8)$$

### 3.4 Descriptive Statistics

Table 2 displays the descriptive statistics for our sample firms. It presents the number of observations, mean value, standard deviation, median as well as the maximum and minimum value. The table describes critical information about dependent variables (ROE, ROA and TQ), explanatory variables (ESG score and E, S, G) and control variables (Age, LTA, LEV, BMR, Nature, PCPC and TEI).

The mean value of ROA, ROE and TQ, which are employed to evaluate corporate financial performance, are 0.0423, 0.0733 and 1.798, respectively. It can be observed that the median of ROA and TQ are both significantly higher than their mean value, indicating that the majority of firms from the samples hold relatively large ROA and TQ. In contrast, ROE's mean value is found to be slightly lower than its median. With a small standard deviation, we can conclude that the ROE of sample firms is mostly distributed symmetrically.

The mean value and median of ESG derived from our 9-year sample are 21.89 and 20.66, with a standard deviation of 6.271. In terms of individual sections of ESG, Chinese firms presented better performance on Governance, evidenced with a mean G value of 45.22, followed by Social and Environment. E's mean value is observed to be merely 24.73. This reveals that besides focusing on elevating CFP, Chinese companies are also expected to strengthen their social responsibility in environmental protection.

Inspecting the control variables, firms from 6834 observations are 13.27 years old on average. 42.7% of these enterprises are POEs, while others are SOEs. As the ruling and the most pervasive party in China, CPC's members constitute an average of 18.1% of all employees among the firms investigated while 72.5% of all firms from our sample practice two-way entry as a part of the corporate management. Meanwhile, the mean value of GDP, LTA, LEV and BMR are 7.937, 23.20, 0.490 and 0.689 accordingly.

**Table 2 Descriptive Statistics of Variables**

Variable	Obs	Mean	Std. Dev	Median	Min	Max
ROE	6834	0.0733	0.119	0.0786	-0.617	0.331
ROA	6834	0.0423	0.0545	0.0353	-0.170	0.211
TQ	6834	1.798	1.084	1.431	0.833	6.960
ESG	6834	21.89	6.271	20.66	1.240	64.11
E	6834	10.74	7.581	9.302	0.775	65.63
S	6834	24.73	9.183	22.81	3.509	77.19
G	6834	45.22	5.235	44.64	3.571	64.54
AGE	6834	13.27	6.221	14	2	26
GDP	6834	7.927	1.943	7.7	-2.5	16.4
LTA	6834	23.20	1.332	23.09	20.51	27.05
LEV	6834	0.490	0.197	0.502	0.0782	0.878
BMR	6834	0.689	0.259	0.699	0.144	1.200
Nature	6834	0.427	0.495	0	0	1
PCPC	6834	0.181	0.189	0.118	0	0.892
TEI	6834	0.725	0.447	1	0	1

### 3.5 Correlation Matrix

Table 3 records the Pearson correlation matrix of the variables. First of all, we notice that ESG carries a significant positive impact on ROE (0.0527) and negative impact on TQ (-0.1597). For individual sections, E and S are correlated with ROE and TQ and G is correlated with ROA and TQ significantly. Proxies of party-building – PCPC and TEI, are both negatively correlated with CFP and positively correlated with ESG and its pillar wise components, evidencing the positive impact of the state government on establishing a green and sustainable financial system in China. The coefficients of Nature on CFP indicators are significantly positive while that for ESG and its individual sections are significantly negative. This shows that POEs are more profitable but put in less effort in environment, social and governance undertakings. It can also be inferred that larger firms are more

inclined to take up ESG responsibilities, as a significant positive relationship is found between LTA and ESG. Considering the positive influence of Age on aggregate ESG and its three individual factors, it suggests that older firms tend to have better performance in the ESG criteria. Besides, GDP is negatively correlated with ESG and its individual pillars. Moreover, the significant and positive correlation between LEV and ESG, E, S, G exhibits that more indebted enterprises are more inclined to improve ESG performance.

**Table 3 Correlation Matrix**

Variable	ROE	ROA	TQ	ESG	E	S	G	AGE	GDP	LTA	LEV	BMR	Nature	PCPC	TEI
ROE	1.000														
ROA	0.8698*	1.000													
TQ	0.1659*	0.3518*	1.000												
ESG	0.0527*	0.00860	-0.1597*	1.000											
E	0.0355*	0.00990	-0.1287*	0.9075*	1.000										
S	0.0708*	0.0329*	-0.1074*	0.7902*	0.5669*	1.000									
G	0.0007	-0.0576*	-0.1833*	0.5405*	0.3438*	0.3194*	1.000								
AGE	-0.0556*	-0.1280*	-0.1595*	0.0953*	0.0510*	0.0226	0.2288*	1.000							
GDP	0.0582*	0.0556*	0.0254*	-0.1144*	-0.1042*	-0.0874*	-0.1067*	-0.2043*	1.000						
LTA	0.0797*	-0.0750*	-0.4596*	0.4180*	0.3709*	0.3082*	0.3561*	0.1912*	-0.1661*	1.000					
LEV	-0.1943*	-0.4512*	-0.4414*	0.1163*	0.0863*	0.0758*	0.1674*	0.1940*	0.0293*	0.5179*	1.000				
BMR	-0.1595*	-0.3457*	-0.8479*	0.2009*	0.1663*	0.1400*	0.2205*	0.2114*	-0.0648*	0.5947*	0.4873*	1.000			
Nature	0.0848*	0.1551*	0.2245*	-0.1686*	-0.1292*	-0.1126*	-0.2272*	-0.3073*	-0.0478*	-0.3003*	-0.2177*	-0.2906*	1.000		
PCPC	-0.0646*	-0.1189*	-0.2233*	0.1608*	0.1366*	0.1012*	0.1918*	0.2332*	-0.0016	0.3394*	0.1902*	0.3022*	-0.6199*	1.000	
TEI	-0.0440*	-0.0933*	-0.1772*	0.1085*	0.0878*	0.0542*	0.1631*	0.2611*	0.0576*	0.2204*	0.1741*	0.2220*	-0.5551*	0.6323*	1.000

Notes: This table shows pairwise Pearson correlation coefficients for all variables used in the analysis. \* (\*\*, \*\*\*) indicates significance at 10% (5%, 1%) level, respectively.

## 4. Empirical Results

This subsection explains the experimental regression results attained from our fixed effect model. The main impact of ESG on CFP and moderating effects of variables based on interaction terms are investigated, while heterogeneity analysis according to different groups is also conducted.

### 4.1 Main Impacts of ESG on CFP

Table 4 shows that the ESG score has distinctive impacts on three major indicators of financial performance. ESG has a significantly positive effect on ROE (0.0142\*\*), significantly negative impact on TQ (-0.0808\*\*\*) and a nearly significantly positive correlation (p value is 0.2860) with

ROA. The result pinpoints that a higher ESG score promotes a firm's accounting performance while diminishing its market value in the current year. As analysed earlier, firms aiming for higher ESG scores cater to the prevailing trend of green consumerism, maintain closer bonds with stakeholders and function more efficiently and effectively. However, the negative effect of ESG on TQ contradicts with our hypothesis. This may be justified as a majority of stock market investors in China tend to be more short-sighted and speculative (Tan et al., 2008). They make profits through short-term trading of shares instead of holding stocks in the long run. Hence, Chinese investors currently tend to be more focused on firms' CFP in the short term and suspect that improving ESG performance will entail sacrifice of short-term CFP. This results in an underestimation of the market value of a firm, leading to lower stock prices and lower TQ. Therefore, Hypothesis 1 is partially proven.

**Table 4 Regression Result – Aggregate ESG**

<i>Variables</i>	(1) ROE		(2) ROA		(3) TQ	
	Coefficients	P-value	Coefficients	P-value	Coefficients	P-value
ESG	0.0142*	0.0785	0.00389	0.2860	-0.0808***	0.0006
AGE	-0.0000280	0.9463	-0.0000987	0.6330	0.00124	0.2807
GDP	0.00136	0.2779	0.000784	0.1507	0.000297	0.9367
LTA	0.0329***	0.0000	0.0151***	0.0000	0.0818***	0.0000
LEV	-0.0456***	0.0000	-0.0394***	0.0000	-0.0397**	0.0191
BMR	-0.0817***	0.0000	-0.0487***	0.0000	-2.421***	0.0000
Nature	0.0181***	0.0027	0.00868***	0.0016	-0.0306	0.1051
PCPC	-0.0199	0.2897	-0.00689	0.3843	0.0741	0.1658
TEI	0.00449	0.4055	0.00195	0.4319	-0.0119	0.4663
Constant	-0.788***	0.0000	-0.377***	0.0000	-1.147***	0.0000
Industry FE	Yes		Yes		Yes	
Year FE	Yes		Yes		Yes	
Adj. R-squared	0.1848		0.3528		0.9322	

Notes: This table presents the regression results for the independent variable ESG and dependent variables ROE, ROA and TQ, reported in Column (1), (2) and (3). The regression controls for Age, GDP, LTA, LEV, BMR, PCPC as well as the dummy variables of Nature and TEI. Fixed effects include year and industry and Adj. R-squared is reported. \* (\*\*, \*\*\*) indicates significance at 10% (5%, 1%) level, respectively. Standard errors are heteroskedasticity robust, clustered by the corporation.

Table 5 examines the one-year lagging effect of ESG score on financial performance. The one-year lagging aggregate ESG only has a significantly negative correlation with TQ (-0.0703\*\*\*). The effect of Age on CFP is rather trivial. It is observed from Table 4 and Table 5 that LTA shows a strongly positive link with all three dependent variables at 1% significance level, proving the theory of the economies of scale, which refers to the cost advantage experienced by a firm when it increases its level of output. Both LEV and BMR are significantly negatively correlated with all three corporate financial indicators.

**Table 5 Regression Result – One Year Lagging Aggregate ESG**

<i>Variables</i>	(1) ROE		(2) ROA		(3) TQ	
	Coefficients	P-value	Coefficients	P-value	Coefficients	P-value
ESG	0.00928	0.2892	0.000924	0.8097	-0.0703**	0.0121
AGE	0.000311	0.4830	0.000107	0.6123	0.00152	0.2307
GDP	0.00194	0.1618	0.00105*	0.0647	0.00284	0.5293
LTA	0.0338***	0.0000	0.0156***	0.0000	0.0790***	0.0000
LEV	-0.0511***	0.0000	-0.0408***	0.0000	-0.0463***	0.0091
BMR	-0.0858***	0.0000	-0.0516***	0.0000	-2.380***	0.0000
Nature	0.0155**	0.0144	0.00696**	0.0139	-0.0240	0.2351
PCPC	-0.0214	0.2924	-0.00901	0.2701	0.0848	0.1228
TEI	0.00286	0.6280	0.00159	0.5412	-0.0198	0.2711
Constant	-0.853***	0.0000	-0.404***	0.0000	-1.061***	0.0000
Industry FE	Yes		Yes		Yes	
Year FE	Yes		Yes		Yes	
Adj. R-squared	0.1994		0.3809		0.9329	

Notes: This table presents the regression results for one-year lagging ESG and dependent variables ROE, ROA and TQ, reported in Column (1), (2) and (3). The regression controls for Age, GDP, LTA, LEV, BMR, PCPC as well as the dummy variables of Nature and TEI. Fixed effects include year and industry and Adj. R-squared is reported. \* (\*\*, \*\*\*) indicates significance at 10% (5%, 1%) level, respectively. Standard errors are heteroskedasticity robust, clustered by the corporation.

From Table 6, which displays the influence of pillar wise ESG scores over the three variables serving as signals of CFP, it can be seen that S is positively associated with ROE (0.0141\*\*) and ROA (0.00502\*) and G is negatively associated with TQ (-0.0857\*\*). Such results provide insight



into the ESG–CFP relationship. It also illustrates that ESG’s positive impact on ROE and ROA is mainly attributed to the positive impact exerted by S. On the other hand, the negative effect of ESG on TQ is largely due to the significantly negative correlation between G score and TQ. From the result of one-year lagging effect of individual dimensions of ESG on CFP shown in Table 7, we recognise no significant relationships besides the negative link between G and TQ at a high significance level of 1%. E score bears no significant correlation with any of the three dependent variables. Furthermore, the impact of control variables over CFP remains roughly unchanged.

**Table 6 Regression Result –Pillar Wise Aggregate ESG**

<i>Variables</i>	(1) ROE		(2) ROA		(3) TQ	
	Coefficients	P-value	Coefficients	P-value	Coefficients	P-value
E	-0.000314	0.9292	-0.000160	0.9169	-0.00994	0.2828
S	0.0141**	0.0234	0.00502*	0.0720	-0.0248	0.1720
G	-0.0177	0.2581	-0.00728	0.2985	-0.0857**	0.0443
AGE	0.0000650	0.8747	-0.0000633	0.7584	0.00135	0.2346
GDP	0.00133	0.2847	0.000775	0.1538	0.0000860	0.9816
LTA	0.0334***	0.0000	0.0152***	0.0000	0.0811***	0.0000
LEV	-0.0453***	0.0000	-0.0392***	0.0000	-0.0392**	0.0206
BMR	-0.0819***	0.0000	-0.0487***	0.0000	-2.420***	0.0000
Nature	0.0178***	0.0032	0.00860***	0.0017	-0.0303	0.1093
PCPC	-0.0206	0.2718	-0.00708	0.3701	0.0753	0.1586
TEI	0.00476	0.3772	0.00204	0.4107	-0.0121	0.4584
Constant	-0.729***	0.0000	-0.354***	0.0000	-0.953***	0.0001
Industry FE	Yes		Yes		Yes	
Year FE	Yes		Yes		Yes	
Adj. R-squared	0.1855		0.3534		0.9322	

Notes: This table presents the regression results for pillar wise ESG (E, S and G) and dependent variables ROE, ROA and TQ, reported in Column (1), (2) and (3). The regression controls for Age, GDP, LTA, LEV, BMR, PCPC as well as the dummy variables of Nature and TEI. Fixed effects include year and industry and Adj. R-squared is reported. \* (\*\*, \*\*\*) indicates significance at 10% (5%, 1%) level, respectively. Standard errors are heteroskedasticity robust, clustered by the corporation.

**Table 7 Regression Result – One Year Lagging Pillar Wise Aggregate ESG**

<i>Variables</i>	(1) ROE		(2) ROA		(3) TQ	
	Coefficients	P-value	Coefficients	P-value	Coefficients	P-value
E	0.000995	0.7987	0.0000223	0.9892	-0.00557	0.6088
S	0.00569	0.3923	0.00196	0.4982	-0.0249	0.2866
G	-0.0121	0.5349	-0.00719	0.3925	-0.0971*	0.0790
AGE	0.000369	0.4019	0.000132	0.5263	0.00166	0.1855
GDP	0.00192	0.1658	0.00104*	0.0677	0.00267	0.5525
LTA	0.0342***	0.0000	0.0157***	0.0000	0.0788***	0.0000
LEV	-0.0510***	0.0000	-0.0407***	0.0000	-0.0457**	0.0102
BMR	-0.0861***	0.0000	-0.0517***	0.0000	-2.380***	0.0000
Nature	0.0152**	0.0163	0.00690**	0.0148	-0.0242	0.2340
PCPC	-0.0219	0.2819	-0.00908	0.2652	0.0855	0.1201
TEI	0.00301	0.6092	0.00163	0.5300	-0.0203	0.2601
Constant	-0.808***	0.0000	-0.382***	0.0000	-0.815***	0.0030
Industry FE	Yes		Yes		Yes	
Year FE	Yes		Yes		Yes	
Adj.						
R-squared	0.1992		0.3809		0.9329	

Notes: This table presents the regression results for one-year lagging pillar wise ESG (E, S and G) and dependent variables ROE, ROA and TQ, reported in Column(1), (2) and (3). The regression controls for Age, GDP, LTA, LEV, BMR, PCPC as well as the dummy variables of Nature and TEI. Fixed effects include year and industry and Adj. R-squared is reported. \* (\*\*, \*\*\*), indicates significance at 10% (5%, 1%) level, respectively. Standard errors are heteroskedasticity robust, clustered by the corporation.

## 4.2 Moderating Effects Analysis Based on the Interaction Term

PCPC, TEI, Nature and LTA are moderators of the relationship between ESG and CFP.

### 4.2.1 ESG and CFP: The Moderating Role of Party-Building-Related Index

Tables 8-9 show the moderating roles when using TEI and PCPC as proxies for party-building activities, respectively. In both tables, the coefficients of the interaction terms ROE and ROA are significantly positive while that for TQ is significantly negative. The sign of coefficients of the interaction term is opposite to that of the main effect, demonstrating that the party-building-related moderators reduce the positive impact of ESG on ROE and ROA while alleviating the negative effect of ESG score on TQ.

One possible explanation can be that the enterprise managers with stronger party-related backgrounds tend to practise undertakings that improve firms' ESG performance instantaneously, disregarding firms' long-term development strategies during their tenure. Such myopic objectives disturb the equilibrium between enterprises' short-term and long-term investment decision-makings, weakening the positive relationship between ESG and accounting indicators ROE and ROA. In addition, stock market investors may believe that firms with stronger party-building activities have access to greater support from the government and party committees, which might take the form of reduced taxation, alleviated responsibilities on environmental protection, access to business opportunities, etc. Hence, higher stock prices can be obtained when investors yield an over-prediction of the market value of firms, thus reducing the negative impact of ESG on TQ to some extent. In this way, Hypothesis 2 is verified.

**Table 8 Regression Result – Moderating Effect of TEI**

<i>Variables</i>	(1) ROE		(2) ROA		(3) TQ	
	Coefficients	P-value	Coefficients	P-value	Coefficients	P-value
ESG	0.0286*	0.0661	0.0124*	0.0860	-0.153***	0.0010
AGE	-0.0000302	0.9418	-0.000100	0.6274	0.00125	0.2749
GDP	0.00137	0.2740	0.000790	0.1470	0.000244	0.9481
LTA	0.0330***	0.0000	0.0152***	0.0000	0.0816***	0.0000
LEV	-0.0458***	0.0000	-0.0395***	0.0000	-0.0386**	0.0229
BMR	-0.0816***	0.0000	-0.0486***	0.0000	-2.421***	0.0000
Nature	0.0179***	0.0031	0.00853***	0.0019	-0.0294	0.1219
PCPC	-0.0194	0.3028	-0.00657	0.4070	0.0714	0.1824
TEI	0.0619	0.2353	0.0359	0.1274	-0.300**	0.0421
ESG*TEI	-0.0191	0.2583	-0.0113	0.1371	0.0956**	0.0491
Constant	-0.830***	0.0000	-0.402***	0.0000	-0.936***	0.0000
Industry FE	Yes		Yes		Yes	
Year FE	Yes		Yes		Yes	
Adj. R-squared	0.1850		0.3532		0.9323	

Notes: This table presents the regression results of the moderating effect of TEI, illustrated by the interaction term (ESG\*TEI). The independent variable is ESG and dependent variables ROE, ROA and TQ are reported in Column (1), (2) and (3). The regression controls for Age, GDP, LTA, LEV, BMR, PCPC as well as the dummy variables of Nature and TEI. Fixed effects include year and industry and Adj. R-squared is reported. \* (\*\*, \*\*\*) indicates significance at 10% (5%, 1%) level, respectively. Standard errors are heteroskedasticity robust, clustered by the corporation.

**Table 9 Regression Result – Moderating Effect of PCPC**

<i>Variables</i>	(1) ROE		(2) ROA		(3) TQ	
	Coefficients	P-value	Coefficients	P-value	Coefficients	P-value
ESG	0.0285**	0.0119	0.0110**	0.0362	-0.124***	0.0002
AGE	-0.0000492	0.9056	-0.000109	0.5960	0.00131	0.2549
GDP	0.00137	0.2737	0.000790	0.1472	0.000258	0.9452
LTA	0.0331***	0.0000	0.0152***	0.0000	0.0813***	0.0000
LEV	-0.0457***	0.0000	-0.0394***	0.0000	-0.0393**	0.0202
BMR	-0.0819***	0.0000	-0.0488***	0.0000	-2.420***	0.0000
Nature	0.0187***	0.0020	0.00896***	0.0012	-0.0324*	0.0876
PCPC	0.243*	0.0754	0.125**	0.0345	-0.733**	0.0440
TEI	0.00368	0.4944	0.00155	0.5303	-0.00936	0.5679
ESG*PCPC	-0.0844**	0.0485	-0.0423**	0.0225	0.259**	0.0234
Constant	-0.833***	0.0000	-0.399***	0.0000	-1.010***	0.0000
Industry FE	Yes		Yes		Yes	
Year FE	Yes		Yes		Yes	
Adj. R-squared	0.1855		0.3536		0.9323	

Notes: This table presents the regression results of the moderating effect of PCPC, illustrated by the interaction term (ESG\*PCPC). The independent variable is ESG and dependent variables ROE, ROA and TQ are reported in Column (1), (2) and (3). The regression controls for Age, GDP, LTA, LEV, BMR, PCPC as well as the dummy variables of Nature and TEI. Fixed effects include year and industry and R-squared is reported. \* (\*\*, \*\*\*) indicates significance at 10% (5%, 1%) level, respectively. Standard errors are heteroskedasticity robust, clustered by the corporation.

#### **4.2.2 ESG and CFP: The Moderating Role of Corporate Nature**

Besides party-building-related indicators, the business ownership is another critical moderating factor to be considered when explaining the ESG–CFP link. Table 10 records the moderating effect of the ownership of firms, namely state-owned or public-owned. It can be seen that the coefficient of the interaction term of Nature and ESG is significantly positive for ROE (0.0305\*), ROA (0.0145\*\*) and significantly negative (-0.0962\*\*) for TQ. We argue that compared to SOEs, POEs are more motivated to advertise and publicise their efforts in executing ESG practices, and they tend to translate their existing efforts in improving ESG performance into maximising profits, thus enhancing their accounting performance indicators (ROE & ROA). However, excessive public exposure causes investors to perceive that these firms' devotion to ESG practices compromise their

development in other areas, which makes such firms less competitive in the short run. The shrink in confidence for such firms will result in public underestimation of the firm's market value, which in turn lowers TQ. Hence, Hypothesis 3 is supported.

**Table 10 Regression Result – Moderating Effect of Nature**

<i>Variables</i>	(1) ROE		(2) ROA		(3) TQ	
	Coefficients	P-value	Coefficients	P-value	Coefficients	P-value
ESG	0.0329**	0.0125	0.0128**	0.0383	-0.140***	0.0001
AGE	-0.0000517	0.9004	-0.000110	0.5934	0.00132	0.2508
GDP	0.00138	0.2700	0.000794	0.1445	0.000230	0.9509
LTA	0.0332***	0.0000	0.0153***	0.0000	0.0809***	0.0000
LEV	-0.0461***	0.0000	-0.0396***	0.0000	-0.0382**	0.0246
BMR	-0.0818***	0.0000	-0.0487***	0.0000	-2.421***	0.0000
Nature	-0.0741	0.1261	-0.0353	0.1112	0.261**	0.0460
PCPC	-0.0191	0.3093	-0.00650	0.4111	0.0716	0.1810
TEI	0.00470	0.3830	0.00205	0.4083	-0.0125	0.4423
ESG*Nature	0.0305*	0.0534	0.0145**	0.0437	-0.0962**	0.0218
Constant	-0.848***	0.0000	-0.406***	0.0000	-0.956***	0.0000
Industry FE	Yes		Yes		Yes	
Year FE	Yes		Yes		Yes	
Adj. R-squared	0.1856		0.3537		0.9323	

Notes: This table presents the regression results of the moderating effect of Nature, illustrated by the interaction term (ESG\*Nature). The independent variable is ESG and dependent variables ROE, ROA and TQ are reported in Column (1), (2) and (3). The regression controls for Age, GDP, LTA, LEV, BMR as well as the dummy variables of Nature and TEI. Fixed effects include year and industry and Adj. R-squared is reported. \* (\*\*, \*\*\*) indicates significance at 10% (5%, 1%) level, respectively. Standard errors are heteroskedasticity robust, clustered by the corporation.

#### **4.2.3 ESG and CFP: The Moderating Role of Corporate Size**

Empirical results of the moderating effect of LTA are recorded in Table 11. The results are impressive as the coefficient of both interaction terms on all three dependent variables are significant at 1% level. Coefficients of the interaction terms for ROE and ROA are negative (-0.0844\*\* and -0.0423\*\*), which aligns with our initial hypothesis. In comparison to small and medium-sized

enterprises (SMEs), larger firms have already started to take up more ESG responsibilities and carry out related activities, which is evidenced by the correlation coefficient (0.4180\*) between LTA and ESG. The diminishing marginal returns of putting efforts in ESG activities reduce the firms' profitability and diminish the positive ESG-CFP relationship. Nevertheless, the coefficient of the interaction term for TQ is positive (0.259\*\*). This inconsistency can be explained as large firms are more willing and capable of performing market value management, which acts as a stabiliser for their stock market value. As they pull up their stock prices, it scales down the negative impact of ESG on TQ. Hence, Hypothesis 4 is supported.

**Table 11 Regression Result – Moderating Effect of LTA**

<i>Variables</i>	(1) ROE		(2) ROA		(3) TQ	
	Coefficients	P-value	Coefficients	P-value	Coefficients	P-value
ESG	0.599***	0.0000	0.314***	0.0000	-1.227***	0.0012
AGE	-0.000202	0.6238	-0.000191	0.3512	0.00158	0.1689
GDP	0.00120	0.3359	0.000701	0.1940	0.000603	0.8720
LTA	0.111***	0.0000	0.0565***	0.0000	-0.0710	0.1615
LEV	-0.0470***	0.0000	-0.0401***	0.0000	-0.0369**	0.0300
BMR	-0.0848***	0.0000	-0.0503***	0.0000	-2.415***	0.0000
Nature	0.0182***	0.0024	0.00870***	0.0013	-0.0307	0.1023
PCPC	-0.0222	0.2354	-0.00809	0.2999	0.0785	0.1416
TEI	0.00424	0.4944	0.00155	0.5303	-0.00936	0.5679
ESG*LTA	-0.0844**	0.0485	-0.0423**	0.0225	0.259**	0.0234
Constant	-0.833***	0.0000	-0.399***	0.0000	-1.010***	0.0000
Industry FE	Yes		Yes		Yes	
Year FE	Yes		Yes		Yes	
Adj. R-squared	0.1855		0.3536		0.9323	

Notes: This table presents the regression results of the moderating effect of LTA, illustrated by the interaction term (ESG\*LTA). The independent variable is ESG and dependent variables ROE, ROA and TQ are reported in Column (1), (2) and (3). The regression controls for Age, GDP, LTA, LEV, BMR as well as the dummy variables of Nature and TEI. Fixed effects include year and industry and Adj. R-squared is reported. \* (\*\*, \*\*\*) indicates significance at 10% (5%, 1%) level, respectively. Standard errors are heteroskedasticity robust, clustered by the corporation.



#### 4.2.4 Moderating Effect Diagram via PCPC and LTA

Considering the continuous moderators PCPC and LTA, Figs. 1-6 are plotted to illustrate the relationship between ESG and proxies of CFP (ROA, ROE and TQ) under different levels of the value of moderators. We define high and low value of moderators as adding or subtracting the standard deviation to the mean value of the moderator. High and low level of ESG is also calculated by adding or subtracting its standard deviation to its mean value. By combining two sets of moderators and ESG values pairwise and substituting them into the regression model (Eqs.(6) and (8)), the corresponding regression relationship between ESG and CFP can be obtained under different levels of moderators.

In Figs.1-3, the blue solid line and the red dashed line represent the regression line that reflects the correlation between ESG and CFP of firms with low and high PCPC, respectively. It can be observed that both lines are upward sloping in Fig.1 and downward sloping in Fig.3, showing a positive relationship between ESG and ROE and a negative correlation between ESG and TQ. Moreover, we can see that the gradient of the blue solid line is significantly steeper than the gradient of the red dashed line, demonstrating that a higher PCPC, which acts as an indicator of party-building, further weakens the pre-existing correlation between ESG and ROE/TQ. In Fig.2, the gradient directions of two lines are opposite, indicating that the positive regression relationship with low PCPC is reduced until it becomes a negative correlation in the presence of high PCPC. This also demonstrates the significant moderating effect of the PCPC indicator.

In Figs.4-6, the relationship between ESG and CFP of firms with low or high LTA are illustrated using the blue solid line and the red dashed line, respectively. The gradient of the blue solid line in Figs.4-5 is positive, while that of the red dashed line is slightly negative. This shows that as a moderator, the high LTA reverses the positive impact of ESG on CFP to a negative impact, thus leading to the negative gradient of the red dashed line. In Fig.6, the red dashed line has a milder downward slope compared to the blue line, which proves that higher LTA tends to reduce the negative impact of ESG on TQ.

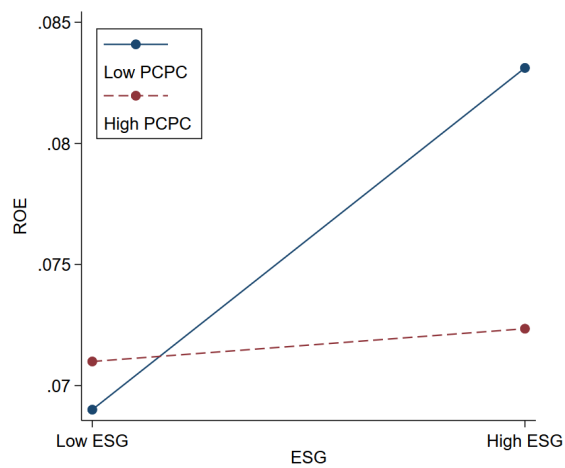


Fig.1 Moderating effects of PCPC on ROE

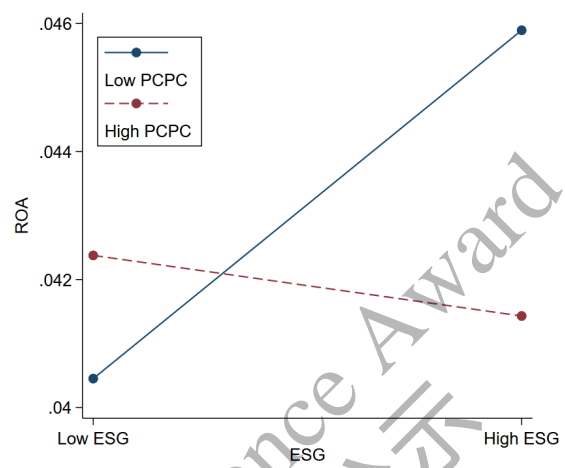


Fig.2 Moderating effects of PCPC on ROA

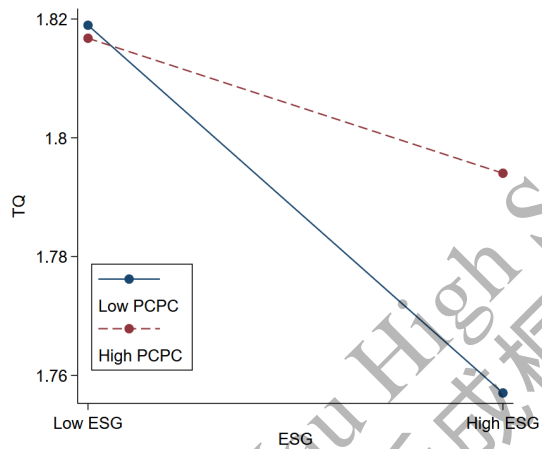


Fig.3 Moderating effects of PCPC on TQ

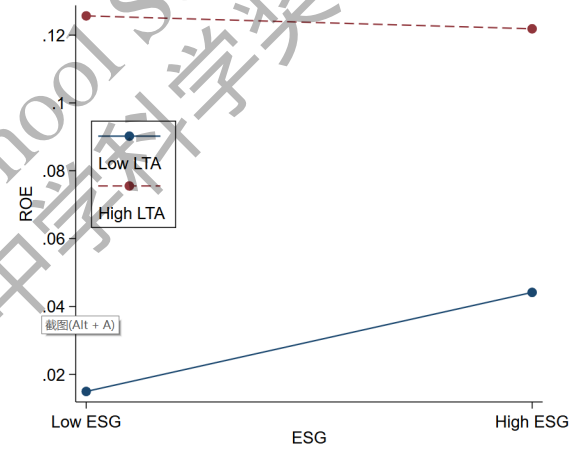


Fig.4 Moderating effects of LTA on ROE

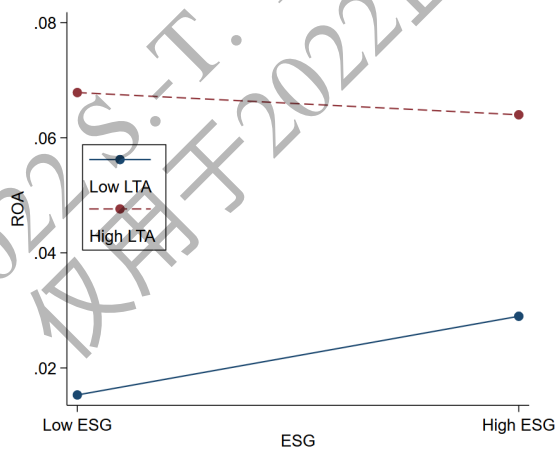


Fig.5 Moderating effects of LTA on ROA

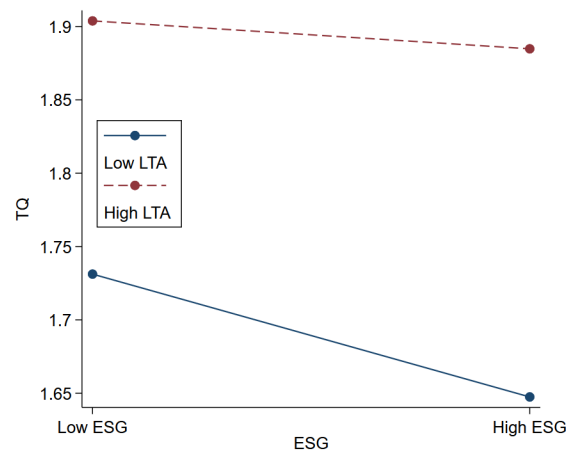


Fig.6 Moderating effects of LTA on TQ



### 4.3 Heterogeneity Analysis According to Different Groups

In Section 4.2, we implemented the moderating effect analysis based on interaction terms. In this section, we split the whole data sample into two main groups according to different criteria and conduct the fixed effect regression within each subgroup to analyse the sample heterogeneity.

From results shown in Tables 12-15, it can be observed that there is a significantly negative correlation between ESG and TQ for all groupings. For groups of firms with low PCPC, private-owned and with low LTA, there is a significant positive correlation between ESG and ROA, ROE. There is also a significantly positive correlation between ESG and ROA for the group whose TEI = 0. Although the coefficient of ESG is not considered significant with respect to the 10% benchmark, the ESG-ROE relationship is positive for the group whose TEI = 0, and its P value is slightly higher than 0.1. However, for firms with high PCPC, TEI = 1, state-owned or with high LTA, no significant relationship is observed between ESG and ROA/ROE. Such results are largely consistent with our heterogeneity test using interaction terms of moderators and ESG.

**Table 12 Grouped Regression Result – TEI**

	(1) ROE		(2) ROA		(3) TQ	
	TEI=1	TEI=0	TEI=1	TEI=0	TEI=1	TEI=0
ESG	0.00798 (0.3770)	0.0241 (0.1231)	-0.000151 (0.9694)	0.0132* (0.0675)	-0.0739*** (0.0028)	-0.0907* (0.0688)
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	4953	1881	4953	1881	4953	1881
Adj. R-squared	0.1985	0.1910	0.3729	0.3338	0.9283	0.9392

Notes: This table presents the regression results in which samples are grouped by the TEI value into TEI=1 and TEI=0. The independent variable is ESG and dependent variables ROE, ROA and TQ are reported in Column (1), (2) and (3). The regression controls for Age, GDP, LTA, LEV, BMR as well as the dummy variables of Nature and TEI. Fixed effects include year and industry and Adj. R-squared is reported. \* (\*\*, \*\*\*) indicates significance at 10% (5%, 1%) level, respectively. P value is shown in parentheses. Standard errors are heteroskedasticity robust, clustered by the corporation.

**Table 13 Grouped Regression Result – PCPC**

	(1) ROE		(2) ROA		(3) TQ	
	High PCPC	Low PCPC	High PCPC	Low PCPC	High PCPC	Low PCPC
ESG	0.00276 (0.7912)	0.0236** (0.0320)	-0.00320 (0.4637)	0.0101* (0.0544)	-0.0810*** (0.0041)	-0.0782** (0.0253)
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	3413	3421	3413	3421	3413	3421
Adj. R-squared	0.1927	0.1927	0.3923	0.3352	0.9271	0.9360

Notes: This table presents the regression results in which samples are grouped into high PCPC and low PCPC with reference to the median as the benchmark. The independent variable is ESG and dependent variables ROE, ROA and TQ are reported in Column (1), (2) and (3). The regression controls for Age, GDP, LTA, LEV, BMR as well as the dummy variables of Nature and TEI. Fixed effects include year and industry and Adj. R-squared is reported. \* (\*\*, \*\*\*) indicates significance at 10% (5%, 1%) level, respectively. P value is shown in parentheses. Standard errors are heteroskedasticity robust, clustered by the corporation.

**Table 14 Grouped Regression Result – Nature**

	(1) ROE		(2) ROA		(3) TQ	
	SOE	POE	SOE	POE	SOE	POE
ESG	0.00245 (0.8075)	0.0245* (0.0583)	-0.00297 (0.4901)	0.0109* (0.0712)	-0.0708** (0.0141)	-0.0992** (0.0115)
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	3917	2917	3917	2917	3917	2917
Adj. R-squared	0.1940	0.2071	0.3617	0.3525	0.9246	0.9375

Notes: This table presents the regression results in which samples are grouped by the corporate ownership into SOEs and POEs. The independent variable is ESG and dependent variables ROE, ROA and TQ are reported in Column (1), (2) and (3). The regression controls for Age, GDP, LTA, LEV, BMR as well as the dummy variables of Nature and TEI. Fixed effects include year and industry and Adj. R-squared is reported. \* (\*\*, \*\*\*) indicates significance at 10% (5%, 1%) level, respectively. P value is shown in parentheses. Standard errors are heteroskedasticity robust, clustered by the corporation.

**Table 15 Grouped Regression Result – LTA**

	(1) ROE		(2) ROA		(3) TQ	
	High LTA	Low LTA	High LTA	Low LTA	High LTA	Low LTA
ESG	0.000366 (0.9686)	0.0235* (0.0971)	0.00137 (0.6899)	0.013* (0.0573)	-0.0765*** (0.0016)	-0.0681* (0.0795)
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	3417	3417	3417	3417	3417	3417
Adj. R-squared	0.1781	0.1420	0.4287	0.2928	0.9171	0.9348

Notes: This table presents the regression results in which samples are grouped into high LTA and low LTA with reference to the median as the benchmark. The independent variable is ESG and dependent variables ROE, ROA and TQ are reported in Column (1), (2) and (3). The regression controls for Age, GDP, LTA, LEV, BMR as well as the dummy variables of Nature and TEI. Fixed effects include year and industry and Adj. R-squared is reported. \* (\*\*, \*\*\*) indicates significance at 10% (5%, 1%) level, respectively. P-value is shown in parentheses. Standard errors are heteroskedasticity robust, clustered by the corporation.

## 5. Conclusion

### 5.1 Research Conclusion

This study investigates the ESG–CFP correlation as well as the moderating effects of party-building-related indicators, firm ownership and firm size using data of A-share listed Chinese companies from 2011 to 2019, whose ESG score is extracted from Bloomberg.

Fixed effect model is employed for the OLS regression in order to eliminate the fixed effects imposed by year and industry. To demonstrate the robustness of the empirical analysis, three dependent variables, namely ROE, ROA and TQ, act as proxies for CFP, indicating both accounting and market performances, respectively. Explanatory variables are ESG and its three individual pillars, while control variables include Age, GDP, LTA, LEV, BMR, Nature, PCPC and TEI.

Experimental results from our regression analysis suggest that ESG bestows a positive impact on ROA and ROE while TQ is found to be negatively associated with ESG. Pillar wise analysis shows that the former relationship is mainly due to the positive effect exerted by S and the later relationship is attributed to the negative relationship between G and TQ.

This study also explores the moderating effect of party-building activities, which has never been delved into in the past. Employing PCPC and TEI as proxies for party-building and through regression analysis, this paper concludes that party-building diminishes the relationship found between ESG and the CFP indicators. Furthermore, this paper examines the moderating effect of firm ownership and finds that SOEs tend to reduce the original link between ESG and CFP while POEs amplify it. We also testify that firm size reduces the ESG–CFP relationship.

## ***5.2 Policy Recommendations***

Based on the various results we have obtained, we would like to propose the following policy suggestions. Firstly, since a significantly positive association between ESG and ROE is determined, shareholders should acknowledge that ESG can actually raise their returns and thus become more willing to invest according to ESG ratings and divert more company resources in sectors related to ESG to further reap more profits. As the positive relationship between ESG and ROA is not as significant as the ESG-ROE link, the authority should consider introducing regulations that adjust companies' operation models in order to align the interest of shareholders and stakeholders, so that the effect of ESG on CFP can be extended to numerous stakeholders as well. With regards to the negative correlation between ESG and TQ, since the Chinese stock market falls short in reflecting the long-term value of ESG information, relevant departments should implement measures to let stock investors recognise the significance of ESG and the benefits it brings to a firm's long-term value creation.

Secondly, as the integration of ESG reporting into China's financial system is still at its stage of infancy, a standardised ESG evaluation framework has not been fully developed yet. Taking data from different ESG rating agencies may lead to conflicting conclusions on the final ESG-CFP association examined, which may induce confusion in investors about the financial returns they could expect when investing according to ESG scores. This accentuates the paramount importance of establishing an official and unified ESG rating system, which may help to determine a more consistent relationship between ESG and CFP.

Lastly, our research also finds that party-building indicators may curtail the positive influence of ESG on accounting measures of CFP, suggesting that the central authority's large degree of participation in a company's operation through party-building activities could be sometimes counterproductive. Hence, party committees should reconsider their governance decisions and possibly prevent the efforts of party-building from backfiring. This will enable the ESG system to

really make a difference to our capital market and play a more crucial role in helping China achieve her endeavour in myriad national agendas such as environmental protection and poverty alleviation.

### ***5.3 Avenue of Research***

Considering the results of existing literature, it is concluded that the primary limitation of this study lies in its restricted sample size, which only focuses on China for less than a decade. Future researchers may use data that cover a longer period of time or extend their studies to other countries and economies. Similar studies can focus on developed economies, such as the United States, to identify contrasting features with the Chinese economy, or other emerging economies to spot similar characteristics that resonate with the Chinese context. Moreover, the ESG data extracted from Bloomberg may be incomprehensive as there is no single fixed method to calculate ESG score, thus the regression results obtained can be different. Lastly, as a newly introduced assessment criterion in China, ESG and its moderators' effects may not be fully unfolded and identified yet due to its short presence.

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