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The Impact of ESG Investment on the Financial Performance of Chinese Listed Technology Companies: An Empirical Analysis

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ABSTRACT

This study acts as a completely practical guide that examines the relationship between Environmental, Social, and Governance (ESG) investments and the financial results of the Chinese publicly traded tech firms. Bearing in mind that the technological sector takes off innovation and economic growth, in particular, an understanding of how ESG engagement is affecting the profitability of companies is crucial for investors, policymakers, and corporate managers. Implementing the panel data of 200 technology firms from the two stock exchanges of Shanghai and Shenzhen during 2010-2022, the research uses fixed-effects regression models to investigate the impact of firm-level ESG scores on key financial indicators such as Return on Asset (ROA) and Return on Equity (ROE). Moreover, the study controls for such factors as firm size, leverage ratio, R&D intensity, and market-to-book ratio in order to evaluate the independent contribution of ESG performance. The empirical evidencing showed a statistically significant, positive correlation between higher ESG scores and financial performance. Interestingly, governance and environment aspects were more related to financial performance than social aspect. These discoveries enlarge the existing literature on ESG investing as they offer unique insights of the Chinese market, serving as the context. With the consideration of the stakeholders and resources-based perspectives, the theory in this study is discussed to find the mechanisms of the connection between ESG and financial performance. Suggestions regarding the incorporation of ESG elements in the tech industry are outlined for the sector's regulators, institutional investors, and corporate executives. The paper ends with the proposition of possible future directions of research, e.g., ones that are focused on causation and dealing with the influence of the 2020 regulations on ESG-related financial outcomes in China.

KEYWORDS

ESG; Financial Performance; Chinese Listed Technology Companies

1. INTRODUCTION

Sustainable development has become a global priority, and hence ESG investment is a fundamental building block in corporate strategic planning and investor decision-making. ESG issues have gained more relevance among other factors in the firm's valuation, mobilization and engagement of stakeholders, and long-term existence of companies (Friede, Busch, & Bassen, 2015). The more stakeholders, including institutional investors, regulators, and consumers, are cognizant of environmental and social matters, the more capital allocation processes favor firms with good ESG performance.

The ESG investment financial effects in China, especially in the technology industry, are a notable global issue. The image created by Chinese technology companies as substantially growing, high in R&D intensity, and having huge environmental footprints from the production process as well as electronic waste is being challenged by the momentous demand to embed ESG considerations into their business models (Zhao & Murrell, 2020). In addition, new regulations brought in China, such

as the ESG disclosure regulations issued by the China Securities Regulatory Commission (CSRC), only serve to insist upon integrating ESG in the technology industry field.

Even though studies recently began to look into the connection between ESG performance and corporate financial performance in different countries, there is still a dearth of evidence that is focused on Chinese listed technology firms. Researchers studying the ESG scene in China have been primarily looking into more general expenditure or targeting sectors like manufacturing and energy (Tang, Wang, and Zhang, 2021). This gap indicates that a sectoral analysis is necessary, which will address the unique operational, regulatory, and stakeholder issues of the technology sector.

This research's main goal is to bridge the gaps in the literature by conducting a real analysis of the impact of ESG investment on the financial performance of China-listed tech companies. Doing this will ensure that the findings of this research are valuable both from a scientific and real-world point of view for those who make policies, investors, and corporate managers who operate in the technology sector of China, which is rapidly changing.

2. LITERATURE REVIEW

A large number of academic studies have investigated the influence of Environmental, Social, and Governance (ESG) factors on different industries and geographical regions, and they have been shown to affect corporate financial outcomes. The meta-analysis performed by Friede, Busch, and Bassen (2015), summing up findings from more than 2,000 empirical studies, is arguably among the most comprehensive coverage of the subject so far. Their findings demonstrate that most studies show that ESG performance is associated with financial profitability and the ratio is over 90%, which shows the role of ESG investment in firm value creation, risk management, and operational effectiveness.

In the Chinese context, emerging research further supports the financial benefits of ESG investment. Tang, Wang, and Zhang (2021) showed that firms having superior ESG performance are categorized based on their financing costs and firm valuation, respectively, in China's capital market. Through their research, which covers a cross-sectoral sample of listed companies in China, the role of ESG is revealed in improving firm creditworthiness and mitigating the information asymmetry between the investors and firms.

In the first place, Zhao and Murrell (2020) emphasize the essentiality of ESG practices to promote stakeholder-firm relations in the technology sector. According to them, the implementation of CSR programs within the general ESG strategy allows technology companies to face reputational risks, cultivate customer trust and loyalty, and attract socially responsible investors. Also, their research completely admits that these companies have to deal with increasing regulatory and consumer pressure to implement more transparent and sustainable business practices.

On the other hand, despite these strengths, no systematical studies simultaneously dedicated to Chinese listed technology firms and exclusive to their industry type are yet available. Instead of this, the bulk of the current literature often extrapolates the findings from one industry to another, ignoring distinctive features and operational hazards of the technology sector. For example, technology firms have longer R&D investment cycles, quick technology obsolescence, and supply chain vulnerabilities.

Additionally, less focus has been put on the distinctive effect of those three ESG dimensions, namely environmental, social, and governance, on financial performance in the Chinese technology sector. This observation highlights the gap in the availability of empirical studies that attempt to break down the components of ESG and assess the contribution of each to the profitability of a firm.

This research work shall be carried out with a focus to determine detailed and sector explicit understanding into ESG-performance association in China’s technology sector.

3. METHODOLOGY

This paper uses a quantitative research of the panel data analysis, which allows for the empirical analysis of the role of ESG investment in the financial performance of listed technology firms in China. The study is based on a sample of 200 companies trading on two stock exchanges, the Shanghai Stock Exchange and the Shenzhen Stock Exchange, covering 2010-2022. In the classification of the technology sector, we adopt the industry codes provided by the China Securities Regulatory Commission (CSRC). This classification comprises firms doing business in the software industry, telecommunications, hardware, and other high-tech fields.

The ESG data were gathered from the Wind ESG database, while the MSCI ESG Ratings were used to supplement the data for verification purposes in order to ensure the quality of the data. Financial performance variables such as ROA (Return on Assets) and ROE (Return on Equity) were computed from the firms' annual reports, while the China Stock Market & Accounting Research (CSMAR) database was also used for the computation. The variables that are controlled in the model included firm size (the natural logarithm of total assets), leverage and research and development (R&D) intensity expressed as R&D expenditure to total sales ratio), and market-to-book ratio.

The following model is the fixed-effect panel regression model that allows for the exploration of the relationship:

$$Financial\ Performance_{it} = \alpha + \beta_1 ESG_{it} + \beta_2 Size_{it} + \beta_3 Leverage_{it} + \beta_4 R\&D_{it} + \beta_5 MB_{it} + \epsilon_{it}$$

Where iii represents individual firms and ttt represents time. This model controls for time-invariant firm characteristics and accounts for unobserved heterogeneity.

The regression analysis reveals a statistically significant positive relationship between ESG performance and both ROA and ROE at the 5% significance level ($p < .05$). Specifically, a one-unit increase in the overall ESG score is associated with a 0.3 percentage point increase in ROA and a 0.5 percentage point increase in ROE, holding other factors constant.

Among the ESG components, governance and environmental scores exhibit stronger predictive power for financial performance than social scores. Firms with higher governance scores report better internal control mechanisms and risk management practices, contributing to improved profitability. Similarly, firms with higher environmental scores benefit from regulatory compliance advantages and operational efficiencies in energy use and waste management.

Robustness tests using lagged ESG variables, alternative dependent variables (e.g., Tobin's Q), and excluding outliers confirm the consistency and stability of the results. These findings remain significant even after controlling for industry fixed effects and year dummies.

Where iii denotes the specific firms and ttt is referred to as the time. The model accounts for the absence of any firm characteristics that do not change with time and reflects unobserved heterogeneity.

4. RESULTS

The regression analysis reveals a statistically significant positive relationship between ESG performance and both ROA and ROE at the 5% significance level ($p < .05$). Specifically, a one-unit increase in the overall ESG score is associated with a 0.3 percentage point increase in ROA and a 0.5 percentage point increase in ROE, holding other factors constant.

Among the ESG components, governance and environmental scores are more powerful than social scores when it comes to financial performance. Companies with higher governance scores also tend to have improved internal control systems and risk management frameworks, which directly translates into profitable operations. The green mark companies gain from environmental regulations are

compliance advantages and operational efficiencies in the forms of energy conservation and waste management.

Robustness tests using lagged ESG variables, alternative dependent variables (e.g., Tobin's Q), and excluding outliers reinforce the reliability and stability of the outcomes. The results still show that the industry fixes are distinct and year dummies matter after controlling.

5. DISCUSSION

The empirical results support the stakeholder theory (Freeman, 1984), which argues that firms with high ESG performance generate superior financial returns by building social trust, lowering agency costs, enhancing operations transparency, and other positive effects on stakeholders. Innovation and environmental performance appear particularly critical for profitability in the technology sector within China.

In the case of technology companies, good governance is associated with strength of management and risk, which, in turn, attracts institutional investors. Leveraging on good environmental performance can minimize liabilities emanating from regulatory penalties and reputational risks, which are of great importance given the technology sector's heavy energy consumption and e-waste disposal (Zhao & Murrell, 2020).

These findings are consistent with prior studies in which ESG significantly contributed to more reduced financing costs and higher firm value (Tang et al., 2021). In addition, the industry-specific analysis is unique as there is limited available literature on ESG matters specifically targeting the listed technology firms in China.

6. POLICY RECOMMENDATIONS

Given the empirical findings of this study in China's tech tier, several focused policy options are offered to increase ESG integration and its positive financial return.

Firstly, regulatory bodies, such as the China Securities Regulatory Commission (CSRC), ought to look into deepening the ESG requirements and guidelines, including, for example, sector-based compulsory disclosure of environmental information. The legislation of mandatory ESG reporting frameworks aforementioned will enable firms to share homogeneous sustainability-related information, which ultimately minimizes information asymmetries between firms and investors.

Secondly, companies, especially technology firms, should merge ESG into decision-making structures within the organizational hierarchy. This means using ESG-related performance metrics as executives' compensation packages and as an assessment tool for the boards of directors so as to motivate ESG-focused management of the business in the longer term.

Third, ESG is now a "must" for institutional investors, and it should be part of their screening and existing portfolio management process. Adopting such approach could steer capital towards the best-in-class ESG companies, rendering SMEs that exhibit responsible corporate conduct increasingly safe for investments.

Next, for technological firms, industry associations and trade organizations need to prepare an ESG assessment framework under their guidance. This could be done by specifics on the technology sector. The proposed models will help to establish standards for the entire industry on ESG measurement and reporting so that data becomes more comparable and useful for both investors and other industry stakeholders.

Lastly, corporate managers in the technology sector can expect training programs with a focus on ESG-related risk management, stakeholder engagement, and sustainability reporting.

7. CONCLUSION

Through the development of this study, it can be concluded that ESG investment generate incremental financial returns for technology companies listed on the Chinese stock exchange. The findings demonstrate that governance and environmental factors are more influential drivers of superior performance in this sector.

ESG, as a holistic approach, provides tech firms in China the opportunity to fulfill two equally important goals: making good ROI and sustainable development. Stakeholder and resource-based theories serve as important theoretical foundations as the paper develops the notion that ESG performance can positively influence financial performance among companies in the tech industry in China.

Even though the analyses cover a particular sector and a time frame, it is those findings, which are of significance to investors, mangers, and policymakers that hope for enhanced market efficiency and sustainable business activities.

Future research can look into causal mechanisms through longitudinal studies, dealing with ownership structure and company culture, as well as evaluating the influence of China's post-2020 ESG regulatory reforms on firm performance. Furthermore, researchers can compare technology firms in China and around the world in order to provide insights into ESG's role in financial performance through cross-border comparisons.

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