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The impact of ESG performance on financial risk: the moderating role of operational capability and profitability

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1. Introduction

Environmental, Social, and Governance (ESG) performance has increasingly become an important criterion for evaluating corporate transparency, accountability, and sustainability. As stakeholders place greater emphasis on responsible business practices, companies are expected not only to generate financial returns but also to demonstrate commitment to environmental protection, social responsibility, and effective governance. However, empirical evidence regarding the financial consequences of ESG remains inconclusive, particularly in emerging markets characterized by distinct institutional conditions and relatively weak sustainability infrastructures.

One of the major concerns surrounding ESG implementation relates to its effect on firms' financial risk. Although ESG practices may enhance stakeholder trust and long-term sustainability, they often require substantial investments that may increase short-term financial pressures. Consequently, the effect of ESG performance on financial risk remains theoretically and empirically ambiguous. While some studies suggest that ESG reduces financial risk through improved transparency and stakeholder relationships, others argue that implementation costs and inefficient resource allocation may increase financial risk.

Moreover, the effect of ESG performance on financial risk may depend on firm-specific characteristics. In this regard, operational capability and profitability may play important moderating roles. Despite the growing importance of ESG in emerging markets, evidence regarding the effect of ESG performance on financial risk in Iran remains limited and inconsistent. Most previous studies have focused primarily on the direct effect of ESG on financial outcomes and have paid less attention to factors that may influence this effect. Therefore, this study investigates the effect of ESG performance on financial risk in the Iranian capital market while considering the moderating roles of operational capability and profitability.

This study contributes to the literature by providing evidence from the Iranian capital market, extending prior research through the examination of operational capability and profitability as moderating variables, and offering more reliable evidence through robustness and endogeneity analyses.

2. Research Hypotheses

Based on the theoretical foundations and previous empirical evidence, the following hypotheses were developed:

H1: ESG performance has a significant effect on financial risk.

H2: Operational capability moderates the effect of ESG performance on financial risk.

H3: Profitability moderates the effect of ESG performance on financial risk.

3. Methods

This study adopts an applied, descriptive-correlational research design. The statistical population consisted of all firms listed on the Tehran Stock Exchange during the period 2020–2024. After applying the screening criteria and excluding financial, investment, insurance, holding, and project-based firms because of differences in their financial structures and operational characteristics, 263 firms were selected as the final sample.

Financial risk was measured using the Bathory Model (BMM). ESG performance was measured using the localized weighted ESG disclosure model developed by Fakhari et al. (2017), encompassing environmental, social, and governance dimensions adapted to the Iranian institutional context. Operational capability was measured using the total asset turnover ratio (TATO), whereas profitability was measured using return on assets

(ROA). Firm size, sales growth, debt structure, cash holdings, board independence, firm age, and fixed assets were included as control variables.

To test the hypotheses, panel data regression models with year and industry fixed effects were estimated using cluster-robust standard errors. Several robustness tests were conducted. First, the models were re-estimated using firm fixed effects instead of industry fixed effects. Second, an alternative proxy for financial risk based on the inverse Altman Z-score was employed. Finally, to address potential endogeneity and reverse causality, the Two-Stage Least Squares (2SLS) method was used. The industry-year mean ESG score, excluding the focal firm, served as an instrumental variable for ESG performance.

4. Results

The findings indicate that ESG performance has a positive and statistically significant effect on financial risk. These findings may reflect the institutional characteristics of the Iranian capital market, including the costs and uncertainties associated with ESG implementation. Therefore, ESG activities may increase short-term financial pressures and risk exposure in emerging markets characterized by immature ESG institutional infrastructures.

The results further show that operational capability significantly weakens the positive effect of ESG performance on financial risk. Firms with stronger operational capability are better able to manage ESG-related costs and operational complexities, thereby mitigating the positive effect of ESG performance on financial risk. This finding highlights the importance of operational efficiency in reducing the financial consequences associated with ESG activities.

Regarding profitability, the baseline models initially indicated that profitability intensified the positive effect of ESG performance on financial risk. However, after controlling for endogeneity through the 2SLS approach, this moderating effect lost its statistical significance. Therefore, the findings do not provide sufficient evidence to support a stable moderating role of profitability.

The robustness analyses further confirmed the consistency of the main findings. Both the direct positive effect of ESG performance on financial risk and the moderating role of operational capability remained stable across alternative model specifications and estimation methods.

5. Discussion and Conclusion

This study contributes to the ESG literature by providing evidence from an emerging market characterized by institutional weaknesses and limited ESG maturity. The findings demonstrate that ESG activities in the Iranian capital market are associated with higher financial risk. However, firms with stronger operational capability are better positioned to manage the financial pressures associated with ESG implementation.

The findings also suggest that profitability alone may not be sufficient to reduce ESG-related financial risk in a consistent manner. Rather, the effectiveness of ESG implementation appears to depend largely on firms' operational capability and the efficient utilization of organizational resources.

The findings have important theoretical and practical implications. They suggest that the effect of ESG performance on financial risk may vary across institutional environments and depend on firms' internal capabilities. The results further indicate that operational capability plays a critical role in managing ESG-related costs and complexities. Managers should therefore consider operational efficiency when implementing ESG activities, while policymakers may support ESG adoption by improving disclosure practices and institutional infrastructures.

Given the relatively short study period and the lack of uniformity in ESG disclosure practices among firms, future research is encouraged to examine longer time horizons, alternative ESG measures, and different regulatory and economic environments. Further studies may also investigate additional firm-specific characteristics that could influence the effect of ESG performance on financial risk.

Keywords: ESG, Financial Risk, Operational Capability, Profitability.