

Yoshida, Kenichi; Xie, Jun; Managi, Shunsuke; Yamadera, Satoru

**Working Paper**

## Environmental, social, and governance performance and financial impacts: Comparative analysis of companies in Asia

ADB Economics Working Paper Series, No. 741

**Provided in Cooperation with:**

Asian Development Bank (ADB), Manila

*Suggested Citation:* Yoshida, Kenichi; Xie, Jun; Managi, Shunsuke; Yamadera, Satoru (2024) : Environmental, social, and governance performance and financial impacts: Comparative analysis of companies in Asia, ADB Economics Working Paper Series, No. 741, Asian Development Bank (ADB), Manila,  
<https://doi.org/10.22617/WPS240415-2>

This Version is available at:

<https://hdl.handle.net/10419/305387>

**Standard-Nutzungsbedingungen:**

Die Dokumente auf EconStor dürfen zu eigenen wissenschaftlichen Zwecken und zum Privatgebrauch gespeichert und kopiert werden.

Sie dürfen die Dokumente nicht für öffentliche oder kommerzielle Zwecke vervielfältigen, öffentlich ausstellen, öffentlich zugänglich machen, vertreiben oder anderweitig nutzen.

Sofern die Verfasser die Dokumente unter Open-Content-Lizenzen (insbesondere CC-Lizenzen) zur Verfügung gestellt haben sollten, gelten abweichend von diesen Nutzungsbedingungen die in der dort genannten Lizenz gewährten Nutzungsrechte.

**Terms of use:**

*Documents in EconStor may be saved and copied for your personal and scholarly purposes.*

*You are not to copy documents for public or commercial purposes, to exhibit the documents publicly, to make them publicly available on the internet, or to distribute or otherwise use the documents in public.*

*If the documents have been made available under an Open Content Licence (especially Creative Commons Licences), you may exercise further usage rights as specified in the indicated licence.*



<https://creativecommons.org/licenses/by/3.0/igo/>

# ENVIRONMENTAL, SOCIAL, AND GOVERNANCE PERFORMANCE AND FINANCIAL IMPACTS

COMPARATIVE ANALYSIS OF COMPANIES IN ASIA

*Kenichi Yoshida, Jun Xie, Shunsuke Managi, and Satoru Yamadera*

**NO. 741**

September 2024

**ADB ECONOMICS  
WORKING PAPER SERIES**

ADB Economics Working Paper Series

## Environmental, Social, and Governance Performance and Financial Impacts: Comparative Analysis of Companies in Asia

Kenichi Yoshida, Jun Xie, Shunsuke Managi,  
and Satoru Yamadera

No. 741 | September 2024

The *ADB Economics Working Paper Series* presents research in progress to elicit comments and encourage debate on development issues in Asia and the Pacific. The views expressed are those of the authors and do not necessarily reflect the views and policies of ADB or its Board of Governors or the governments they represent.

Kenichi Yoshida (yoshida.kenichi.440@m.kyushu-u.ac.jp) and Jun Xie (xie.jun.679@m.kyushu-u.ac.jp) are assistant professors and Shunsuke Managi (managi@doc.kyushu-u.ac.jp) is a distinguished professor at Kyushu University. Satoru Yamadera (syamadera@adb.org) is an advisor at the Economic Research and Development Impact Department, Asian Development Bank.



Creative Commons Attribution 3.0 IGO license (CC BY 3.0 IGO)

© 2024 Asian Development Bank  
6 ADB Avenue, Mandaluyong City, 1550 Metro Manila, Philippines  
Tel +63 2 8632 4444; Fax +63 2 8636 2444  
[www.adb.org](http://www.adb.org)

Some rights reserved. Published in 2024.

ISSN 2313-6537 (print), 2313-6545 (PDF)  
Publication Stock No. WPS240415-2  
DOI: <http://dx.doi.org/10.22617/WPS240415-2>

The views expressed in this publication are those of the authors and do not necessarily reflect the views and policies of the Asian Development Bank (ADB) or its Board of Governors or the governments they represent.

ADB does not guarantee the accuracy of the data included in this publication and accepts no responsibility for any consequence of their use. The mention of specific companies or products of manufacturers does not imply that they are endorsed or recommended by ADB in preference to others of a similar nature that are not mentioned.

By making any designation of or reference to a particular territory or geographic area in this document, ADB does not intend to make any judgments as to the legal or other status of any territory or area.

This publication is available under the Creative Commons Attribution 3.0 IGO license (CC BY 3.0 IGO) <https://creativecommons.org/licenses/by/3.0/igo/>. By using the content of this publication, you agree to be bound by the terms of this license. For attribution, translations, adaptations, and permissions, please read the provisions and terms of use at <https://www.adb.org/terms-use#openaccess>.

This CC license does not apply to non-ADB copyright materials in this publication. If the material is attributed to another source, please contact the copyright owner or publisher of that source for permission to reproduce it. ADB cannot be held liable for any claims that arise as a result of your use of the material.

Please contact [pubsmarketing@adb.org](mailto:pubsmarketing@adb.org) if you have questions or comments with respect to content, or if you wish to obtain copyright permission for your intended use that does not fall within these terms, or for permission to use the ADB logo.

Corrigenda to ADB publications may be found at <http://www.adb.org/publications/corrigenda>.

Note:

In this publication, “\$” refers to United States dollars.

## **ABSTRACT**

This study investigated environmental, social, and governance (ESG) performance and its financial impacts across 38 economies from 2013 to 2022, with a special focus on firms in Asia. The main findings are as follows. First, notable disparities in ESG assessments were found across major rating agencies due to a lack of commensurability in ESG elements and evaluation methods. Second, the multilevel model analysis demonstrated considerable space for enhancing the ESG performance of companies in Asia, in contrast to that of their counterparts in Europe. Notably, the ESG practices of firms in Southeast Asia have stronger positive relationships with financial performance. Finally, inclusive wealth significantly moderates the financial impacts of ESG practices and can serve as a valuable sustainability indicator at the national level to inform ESG practices specific to different regions.

**Keywords:** ESG performance, comparative CSR, inclusive wealth, multilevel regression model

**JEL codes:** M14, M41, O16

## 1. Introduction

Global sustainable investment assets totaled approximately \$22.8 trillion in 2016, as reported by the Global Sustainable Investment Alliance (GSIA). By the end of 2018, this amount had increased by approximately 34% to \$30.7 trillion. In 2020, global sustainable investment assets recorded an increase of approximately 15%, reaching \$35.3 trillion.<sup>1</sup> This compares with institutional investors' total assets under management of \$98.4 trillion in 2020 per the GSIA survey. Thus, ESG investments, as classified by the GSIA, constituted more than one-third of total global investments in 2020.

The Principles for Responsible Investment (PRI), which provide guidance on incorporating ESG concerns into investment practice, had garnered more than 5,391 signatories by 31 March 2023. In particular, organizations from the United States (US) and Europe have led the way, with 1,076 PRI signatories in the US, 858 in the United Kingdom (UK) and Ireland, and 407 in France. Meanwhile, 521 signatories were from Asia, including 136 in the People's Republic of China, 123 in Japan, and 262 from the rest of Asia.<sup>2</sup> Although the Asian region lags in terms of the number of PRI signatory organizations, it has grown in economic importance in recent years and become a region with a strong global presence, accounting for approximately 60% of the world's population and 48% of global gross domestic product in 2023. Asian economies are diverse in terms of their economic development paths, sustainability levels, and institutional aspects.

The adoption of ESG practices may vary across economies and have different financial implications in various jurisdictions. For example, European governments have been active in human-rights-related due diligence legislation. According to the latest Global Resilience Index from FM, a risk management firm, European economies are considered resilient business environments for supply chains.<sup>3</sup> Strict global supply chain management also exerts substantial pressure on the progress of ESG engagements worldwide. In the Asian context, conducting a quantitative comparative analysis of ESG performance and its financial impacts on the region's firms is important.

---

<sup>1</sup> Assets for 2016 were reported as of 31 December 2015 for all economies except Japan, which reported as of 31 March 2016. Assets for 2018 were reported as of 31 December 2017 for all economies except Japan, which reported as of 31 March 2018. Assets for 2020 were reported as of 31 December 2019 for all economies except for Japan, which reported as of 31 March 2020. Global Sustainable Investment Alliance. 2021. *Global Sustainable Investment Review 2020*. <https://www.gsi-alliance.org/wp-content/uploads/2021/08/GSIR-20201.pdf>.

<sup>2</sup> Principles for Responsible Investment. 2023. *2022–23 Annual Report*. [https://dwtyzx6upklss.cloudfront.net/Uploads/z/s/n/pri\\_ar2023\\_smaller\\_file\\_8875.pdf](https://dwtyzx6upklss.cloudfront.net/Uploads/z/s/n/pri_ar2023_smaller_file_8875.pdf)

<sup>3</sup> FM. Resilience Index. <https://www.fmglobal.com/research-and-resources/tools-and-resources/resilienceindex/explore-the-data/> (accessed November 30, 2023).

Thus, the purpose of this study is to specifically address the following research questions with a focus on Asia. The first question concerns the differences in rating methodologies and metrics among ESG raters. ESG performance, which is the key factor contributing to ESG investment decisions, mainly refers to the evaluations provided by major ESG raters in the global market. However, current ESG ratings are criticized for their lack of commensurability, which can result in a misunderstanding of ESG practices and thereby confuse investment decisions. As an extension of the work of Keeley et al. (2022), we review six ESG raters—Thomson Reuters' Refinitiv, Bloomberg, MSCI, Arabesque S-Ray, Moody's, and Morningstar ESG—and compare their ESG assessment elements. The second question is how ESG performance differs across economies. We compare this heterogeneity based on multiple ESG ratings and examine the differences after controlling for other firm characteristics. The third question concerns how the financial impact of ESG performance differs across economies. In this study, we specifically analyze sustainability as a stock at the national level. We introduce the inclusive wealth index to measure sustainability at the economy level to examine variations in the financial impact of ESG performance.

Our main findings can be summarized as follows. First, there is a high degree of inconsistency in ESG metrics across major rating agencies and few common metrics among the ESG rating methodologies examined. Second, we found substantial heterogeneity in ESG performance and financial impact across economies. Although individual economies' ESG ratings differ, regional ESG performances show a similar trend based on the results of different ESG raters. On average, the ESG performance of companies in Asia is worse than that of companies in Europe, and this result is robust after controlling for company characteristics. Third, the financial impact of ESG performance depends on the economy's context. Inclusive wealth significantly moderates the financial impact of ESG practices and can serve as a valuable sustainability indicator at the national level to inform ESG practices specific to different regions.

This paper is organized as follows. Section 2 summarizes the relevant literature comparing ESG performance and its financial implications, as well as the macro-level factors that influence the financial impact of ESG practices. Section 3 provides a comprehensive comparison of ESG assessments and the results of a survey of six major ESG raters worldwide. Section 4 discusses the empirical research models and datasets examined. Section 5 presents the empirical results, and section 6 concludes.

## **2. Literature Review**

### **2.1. Comparative ESG Performance**

Corporate social responsibility (CSR) has developed and spread worldwide in recent decades. However, it is often noted that significant disparities exist in CSR practices and performance across different economies and regions. There has been active discussion on comparative CSR, suggesting that CSR systems, explicit or implicit, are influenced by the national business system shaped by historical institutional frameworks (Matten and Moon 2008, Kang and Moon 2012, Zou and Wu 2013). From the perspective of new institutionalism, norms are formed by the institutional environment (i.e., formal and informal social rules), and firms create isomorphisms to acquire legitimacy under those norms (DiMaggio and Powell 1983). Companies that engage in explicit CSR—those that strategically respond to society with greater management discretion—are more likely to be found in liberal market economies (Hall and Soskice 2001), such as the UK and the US. In contrast, companies operating in coordinated market economies, such as Germany and Japan, tend to engage in implicit CSR, which is embedded in institutional regulations and social norms (Matten and Moon 2008). For instance, using a sample of Western European countries, Jackson and Apostolakou (2010) confirmed that countries classified as liberal market economies tend to have superior ESG performance than those classified as coordinated market economies. Using the UK as a case study, Kinderman (2012) analyzed the factors contributing to high ESG performance in countries classified as liberal market economies. Focusing on the period from 1977 to 2010 and observing the rise in neoliberalism, Kinderman (2012) investigated and analyzed the process of establishing CSR and ESG concepts, suggesting that in the societal shift toward neoliberalism, where the “social” aspect tends to be lacking, companies in the UK, which is considered a liberal market economy, have compensated for this lack of social orientation through their activities.

Given the availability of extensive nonfinancial data over the past decade, quantitative assessments of ESG performance have become increasingly common as a reference for investment decisions. Empirical studies also confirm that ESG performance varies across countries and regions. For instance, Bouyé and Menville (2020) noted that ESG performance shows converging explanatory power at the country level.<sup>4</sup> Evidence also exists that the diversity of institutional systems across countries has an impact on ESG performance. Tolmie, Lehnert, and Zhao (2020) analyzed the impact of institutional pressures at the national level on the CSR

---

<sup>4</sup> In addition, evidence exists that the effectiveness of ESG scores in mitigating information asymmetries varies by country and regional institutional characteristics (Bilyay-Erdogan 2022).



activities of multinational corporations. They used a hierarchical linear model to examine 47 developed and developing countries and found that self-transcendence among societal values measured at the country level has a positive impact on CSR activities. In particular, the focus has been on analyzing developing countries in this context in recent years. For instance, analyses focusing on Libya, Pakistan, and the Middle East and North Africa, respectively, were conducted by Alshbili and Elamer (2020); Khan, Lockhart, and Bathurst (2021); and Jamali et al. (2020). The motivation for these studies is the assertion that the ESG performance of individual companies in developing countries is more dispersed than in advanced industrialized countries, suggesting greater potential for influence from institutional factors at the national level. However, there remains a gap in comparative analysis focusing on Asian economies.

In conducting a comparative analysis, addressing specific issues related to ESG ratings is also necessary. Unlike hard information from financial statements and other sources, the status of ESG management is ascertained from highly asymmetric information that is positioned as soft information for investors. The current criticism is that some of the key ESG metrics reflect the amount of information disclosed rather than the substance, resulting from a desire to avoid conflicts with stakeholders (Raghunandan and Rajgopal 2022). Some studies also suggest cautious consideration of the uniqueness and diversity of ESG metrics (Keeley et al. 2022; Stolyow and Paugam 2023). Against this backdrop, we focus on the comparison of different ESG ratings and discuss the differences in ESG performance at both the company and economy levels.

## **2.2. Financial Impacts of ESG Practices in Different Contexts**

The relationship between ESG management and financial performance has been a point of contention among experts in economics and finance theory for a long time (Friedman 1970; Bénabou and Tirole 2010; Albuquerque, Koskinen, and Zhang 2019). In line with the findings of Lins, Servaes, and Tamayo (2017), several studies have reported that investing in companies that implement ESG management has a resilience effect, reducing the risk of share price declines during macro shocks (Albuquerque et al. 2020; Garel and Petit-Romec 2021; Yoo, Keeley, and Managi 2021). Investors generally aim to maximize returns by seeking out and investing in companies with potentially higher firm valuations. Previous research shows that although the impact of ESG management on financial performance, such as return on assets (ROA) and return on equity (ROE), is unclear, the trend is that ESG management contributes to a lower cost of capital, which is shown to form part of the discount rate in the discounted cash flow methodology (Keeley et al. 2022). In other words, ESG management may at least have a positive impact on long-term shareholder value (Gillan, Koch, and Starks 2021; Keeley et al. 2022). Financial

materiality in ESG information has also been widely discussed in recent literature. Xie et al. (2023) found that the failure to integrate financial materiality into ESG management is perceived as a significant risk by investors.

On the other hand, increasing attention has been given in recent years to the influence of institutional characteristics at the national or regional level on the relationship between ESG management and corporate performance. Edmans (2011) noted that companies with high levels of employee satisfaction tend to have Jensen's alpha above the benchmark.<sup>5</sup> However, regarding a global comparative analysis, this relationship is not consistent and is influenced by the liquidity of the labor market across countries and regions (Edmans et al. 2023). In addition, the diversity of institutional systems regarding sustainability across countries also affects this relationship (Vargas-Santander et al. 2023, Zhang and Zi 2021). Vargas-Santander et al. (2023) conducted a multilevel data analysis using a broad international sample of companies from 47 countries and found that country sustainability negatively moderated the relationship between ESG management and financial performance. A high national level of sustainability is associated with a strong societal demand for legitimacy, driving companies to bear higher costs for enhanced ESG practices to maintain their legitimacy. As a result, companies operating in a country with high sustainability tend to have greater ESG performance but lower financial benefits from ESG practices.

However, the institutional factors typically used in previous studies may fail to capture regional sustainability due to possible deviations between policy and implementation. In this study, we provide a novel perspective by using inclusive wealth as the proxy for regional sustainability, which allows for the measurement of natural capital, human capital, and produced capital. The inclusive wealth index is a framework that represents wealth beyond mere economic value (Dasgupta 2021) and addresses sustainability challenges—such as environmental and ecosystem degradation, water pollution, and rising inequality—that cannot be adequately assessed using gross domestic product alone (UNU-IHDP and UNEP 2014, Managi and Kumar 2018, UNEP 2023). In this study, we propose that the relationship between ESG performance and financial performance varies across economies, which can be explained by the sustainability level indicated by the inclusive wealth index.

---

<sup>5</sup> Jensen's alpha is a performance measure that calculates the excess return of an investment portfolio over its expected return, based on the risk-adjusted returns of a benchmark portfolio, typically reflecting the portfolio manager's ability to generate returns above the market.

### 3. ESG Ratings and Performance Comparison

#### 3.1. Comparison of ESG Rating Methods

This section compares the ESG rating methods used by the main ESG rating agencies in terms of their procedures and assessment elements. According to the work of Keeley et al. (2022), **Table 1** summarizes the ESG evaluation methods used by six ESG raters: Thomson Reuters' Refinitiv, Bloomberg, MSCI, Arabesque S-Ray, Moody's, and Morningstar ESG. Morningstar evaluates ESG risk, and the other five agencies provide ESG performance ratings. Regarding basic information, ESG scores typically range from 0 to 100 points, except for MSCI, which uses a scale of 0 to 10 points. Refinitiv, MSCI, Moody's, and Morningstar also provide grade evaluations commonly used in portfolio selection. The frequency of updates (e.g., daily, monthly, or annually) varies among raters. Most assessments are based on corporate disclosures and public information collected from NGOs, the media, and other sources.

As noted in previous studies, the disparities in ESG ratings are mainly due to the different scopes and rating procedures used (Berg, Kölbel, and Rigobon 2022; Chatterji et al. 2016). As shown in **Table 1**, the assessment scopes have two main directions: performance and risk rating. Regarding performance evaluation, there are two main aspects to consider: ESG information transparency and specific performance in relation to risk, opportunities, leadership, and implementation. In contrast, Morningstar ESG assesses unmanaged risk. In terms of rating procedures, data-driven evaluation is a common method among major raters. However, not all rating agencies fully disclose their rating methodology. The available materials indicate that rating procedures in several rating agencies incorporate varying degrees of analyst reviews combined with data-driven evaluations. The assessment results also consider weighted adjustments based on industrial and regional features, financial returns, and risk factors, which differ across all raters.

[insert **Table 1** here]

On the other hand, the detailed ESG assessment elements largely differ across raters. As an extension of the work of Keeley et al. (2022), the Venn diagram in **Figure 1** compares the assessed ESG elements across four major ESG raters: Refinitiv, MSCI, S-Ray, and Bloomberg. Notably, only three elements overlap for all four raters in the environmental area, while there is one common element in governance and no common elements in the social area. Refinitiv and MSCI ESG have high originality, with at least 30% of the original assessment elements. Overall,

the use of different rating methods and ESG elements can lead to notable disparities in ESG rating results.

[insert **Figure 1** here]

### 3.2. Comparison of ESG Performance

In this section, we compare the ESG results of different rating agencies and regions. **Figure 2** shows the correlations between the ESG scores of the six investigated ESG raters. Unsurprisingly, the correlations between ESG scores are generally low, with most being lower than 0.5. The strongest correlation is between the S-Ray and Refinitiv E scores at 0.764. In addition to the work of Keeley et al. (2022), Morningstar's ESG score assesses risk and reveals an inverse correlation with ESG ratings from other raters. However, the negative correlations are also low, and the strongest correlation is  $-0.343$  for the S score from S-Ray.

[insert **Figure 2** here]

Nevertheless, a consistent trend emerges when comparing the average ESG performance across regions. **Figure 3** demonstrates that Europe's ESG performance and risk outperform those of other regions. ESG performance in Africa is adequate; however, the sample size is smaller than in other regions. Also, only top-ranked firms were assessed, which may introduce sample bias. In Asia, ample room remains to improve ESG performance. In section 5.1, further discussion is included on the multilevel model used to compare economy- and regional-level impacts on ESG performance.

[insert **Figure 3** here]

We further examine the relationship between ESG and carbon performance, with a focus on climate change issues. **Table 2** shows the correlations between ESG and E scores and carbon performance across the six raters. Four indicators are used as a proxy for carbon performance: CO<sub>2</sub> equivalent emissions, yearly changes in emissions, carbon intensity, and yearly changes in carbon intensity. Generally, a negative correlation exists between ESG and E scores, and carbon emissions performance, albeit at extremely low levels. Most of the results show no significant relationship after firm characteristics are controlled for (**Table A2**). We distinguish between high- and low-carbon-intensity firms to investigate whether high-emission sectors, typically energy and

materials, have stronger correlations. The ESG scores of high-carbon-intensity firms are more effective at capturing carbon performance than those of low-carbon-intensity firms, whereas the correlations are also low (**Table A3**). Carbon emissions performance is part of the ESG evaluation. However, due to the large number of other assessment metrics and limited carbon emission disclosures, the final overall scores cannot accurately reflect carbon performance. Thus, specific carbon emissions performance assessments need to be developed.

[insert **Table 2** here]

#### 4. Multilevel Regression Model

We specify a multilevel model as shown in equations (1) and (2) to examine the economy effect on ESG performance. The dependent variables are ESG performance, indicated by the ESG score, and the scores for components E, S, and G. At level 1 (firm level), for firm  $i$  in economy  $j$ , *Firm characteristics<sub>ij</sub>* denotes the logarithm of sales, ROA, and financial leverage in the previous year.  $X_{ij}$  controls for year and sector. Level 2 introduces a random intercept to test the economy effect on ESG performance.

Level 1: Firm level

$$ESG\ performance_{ij} = \beta_{0j} + \textit{Firm characteristics}_{ij}\beta_f + X_{ij}\beta_c + \epsilon_{ij} \quad (1)$$

Level 2: Economy level

$$\beta_{0j} = \gamma_{00} + \mu_{0j} \quad (2)$$

Then, as shown in equations (3)–(5), we test the financial impact of ESG performance at the firm and economy levels. At level 1,  $CFP_{ij}$  denotes corporate financial performance, which is proxied by two indicators: (i) the accounting-based measure, ROA; and (ii) the market-based measure, Tobin's Q.  $ESG\ score_{ij}$  denotes ESG performance as described above. Equation (3) further controls for sales, financial leverage, year, and sector. We specify level 2 as shown in equations (4) and (5) by introducing the random intercept and random slope of the ESG score. Furthermore, we construct cross-level specifications in equations (6) and (7) based on inclusive wealth per capita at the economy level to examine the moderating effects of economy-level sustainability on the financial impact of ESG performance. Here, we also test cross-level multilevel

models by using component inclusive wealth indicators, including produced capital, human capital, and natural capital per capita.

Level 1: Firm level

$$CFP_{ij} = \beta_{0j} + \beta_{1j}ESG\ score_{ij} + \textbf{Firm characteristics}_{ij}\beta_f + X_{ij}\beta_c + \epsilon_{ij} \quad (3)$$

Level 2: Economy level

$$\beta_{0j} = \gamma_{00} + \mu_{0j} \quad (4)$$

$$\beta_{1j} = \gamma_{10} + \mu_{1j} \quad (5)$$

Cross level: Inclusive wealth per capita at the economy level

$$\beta_{0j} = \gamma_{00} + \gamma_{01}IW\ per_j + \mu_{0j} \quad (6)$$

$$\beta_{1j} = \gamma_{10} + \gamma_{11}IW\ per_j + \mu_{1j} \quad (7)$$

ESG scores are collected from Moody's ESG database, which provides specific ESG ratings based on three aspects of ESG activities: leadership, implications, and results. Financial indicators are collected from Refinitiv Eikon. Inclusive wealth data are provided by the *Inclusive Wealth Report 2023* (UNEP 2023). **Table 3** shows the basic statistics of the key variables in this study. The sample used in this study covers 38 economies from 2013 to 2022 (**Table A1**).

[insert **Table 3** here]

## 5. Empirical Results

### 5.1. ESG Performance of Firms in Asia

**Table 4** presents the impacts of firm characteristics on ESG performance. In general, higher sales and financial leverage in the previous year have a significant positive relationship with ESG performance. According to the resource-based view of firms, ESG strategies require sufficient firm resources for implementation and maintenance, especially for environmental strategies (Aragón-Correa and Sharma 2003). Firms with higher sales and those that have utilized financial leverage effectively may perform better in terms of their ESG initiatives. However, historical profitability has no significant relationship with ESG performance, except for the E score, suggesting that financial success in the past may not necessarily translate directly to strong ESG performance.

[insert **Table 4** here]

**Figure 4** compares the economy-level effects on ESG performance after firm-level effects are controlled for. Several representative economies in Europe are selected for comparison with companies in Asia. Consistent with the discussion in section 3, ESG performance is better in European economies than in Asian economies, even after controlling for firm-level effects. France, the UK, and Germany are ranked highest among the entire sample, followed by Australia and New Zealand. Among Asian economies, Singapore is ranked highest. As shown in **Figure 5**, ESG scores and component scores show similar trends, with little difference in rankings.

[insert **Figure 4** here]

[insert **Figure 5** here]

## 5.2. Financial Impacts of ESG Performance

This section describes the financial impacts of ESG performance and compares the differences across economies. As shown in **Table 5**, on average, the overall and component ESG scores have no significant association with ROA. On the other hand, the total ESG score is positively related to Tobin's Q, and the S score has a similar result. According to previous studies, ROA is an accounting-based measure of financial performance, which often leads to inconsistent results regarding the financial impact of ESG performance (Keeley et al. 2022). ESG initiatives are not without cost. They require sufficient corporate resources and can also be financially burdensome in the short term. However, most of the literature agrees on the positive impact of ESG strategies in reducing management risk and enhancing corporate sustainability, which often leads to higher firm value (Keeley et al. 2022). Our results provide supportive evidence for this view.

[insert **Table 5** here]

Examining different regions reveals different financial implications for ESG initiatives. **Figures 6–8** compare the financial impact of ESG performance in the selected economies. The financial impacts vary across economies; however, most have no significant relationship with ROA (see Figure 6 panel a). For the impacts on Tobin's Q, positive and significant effects are found in Indonesia, Malaysia, and France, while negative impacts are found in Japan and the Republic of Korea (see Figure 6 panel b). The results for ESG components have similar trends, suggesting that firms in Southeast Asia are more likely to have positive financial impacts (see Figure 7).

[insert **Figure 6** here]

[insert **Figure 7** here]

[insert **Figure 8** here]

### 5.3. Moderating Effects of Inclusive Wealth

In this section, we examine the potential reasons for the varying financial outcomes observed across different economies and regions. The heterogeneity of financial impacts across economies is assumed to be related to the socioeconomic context in which a company operates, especially economy-level sustainability (Vargas-Santander et al. 2023). In this study, we introduce inclusive wealth as an indicator of economy-level sustainability to explore the macro factors that moderate the financial impact of ESG performance. As shown in **Table 6**, the firm-level (level 1) results are consistent with the results in **Table 5**, suggesting no significant association with ROA and a significantly positive relationship with Tobin's Q. The cross-level interactions show no significant results for ROA but significantly negative results for Tobin's Q for the three ESG component scores. These results suggest that firms in an economy with higher inclusive wealth per capita find it more difficult to gain higher firm value by implementing ESG initiatives. One possible explanation is that companies in economies with higher inclusive wealth may face stiffer competition in terms of ESG performance, making it difficult to differentiate ESG strategies. On the other hand, companies with lower inclusive wealth have more opportunities to benefit from ESG initiatives, thereby increasing their competitiveness. These results suggest that the level of inclusive wealth helps explain the difference in the financial impact of ESG performance across economies, consistent with the findings of previous research using integrated economy-level sustainability policy indicators (Vargas-Santander et al. 2023).

[insert **Table 6** here]

In **Table 7**, we further investigate the moderating effects by using decomposed inclusive wealth per capita—that is, produced capital, human capital, and natural capital per capita. Similarly, significant financial impacts are found in Tobin's Q. The financial benefits of ESG practices are expected to come from future increases in company value, which is also highly dependent on regional socioeconomic contexts. As shown in the cross-level interaction results, the financial impacts of the E score are significantly moderated by economy-level inclusive wealth,



and they have a negative coefficient. Specifically, firms in economies with higher produced capital per capita find it more difficult to achieve profitability through environmental practices, which also translates into a weakened market reaction that can lead to slower growth or even a decline in firm value. These results are consistent with other studies based on inclusive wealth, which means that the total moderating effects of inclusive wealth come largely from produced capital.

Interestingly, the results in **Table 7** show that human capital significantly moderates the financial impact of the E score in a positive way. Innovative technology and management are the key factors in determining whether environmental practices can generate additional profits that cover the costs. Human capital measures the educational and health capital in certain regions and is considered the basis of production. In other words, higher human capital per capita increases the likelihood of firms engaging in innovative environmental practices. At the same time, more human capital is associated with greater environmental awareness, providing a larger potential market for companies' environmental practices. In addition, we also find that natural capital significantly moderates the effect of the E score on ROA, albeit with a smaller coefficient, which partially supports the argument that environmental practices have a better financial impact in economies where natural capital is higher.

[insert **Table 7** here]

## 6. Conclusion

We compare the ESG rating methods of the six main global ESG raters and provide empirical evidence to show the heterogeneity in ESG performance and financial impact across economies and regions. We further introduce inclusive wealth, an economy-level sustainability indicator, to examine its moderating effects on the financial impact of ESG performance. The investigation is based on a global dataset from 2013 to 2022, with a particular focus on companies in Asia. Our main findings are as follows.

First, the ESG scores of different ESG raters exhibit high inconsistency. Most correlations between ESG ratings are less than 0.5, which can be a source of confusion in investment decisions. One main reason is the great disparity in the assessed ESG items, and only a few common items can be found across the investigated raters. In addition, both objective and subjective assessment processes increase the variability of the ESG performance results. However, the inconsistency is largely reduced when comparing average ESG performance at the economy level. On average, European firms show superior ESG performance, particularly in comparison to their Asian counterparts. The financial outcomes of employing ESG practices differ across regions and

economies. On average, financial benefits are more pronounced when assessed via Tobin's Q than when assessed via ROA, an accounting-based measure.

We find that ESG practices are more beneficial for enterprises located in Southeast Asia. On the other hand, businesses operating in developed areas such as Europe may face stiffer competition when implementing ESG strategies, making it more difficult to achieve favorable financial results. Finally, economy-level sustainability matters to the financial impact of ESG practices. Along with decomposed produced, human, and natural capital, inclusive wealth serves as a reference indicator that guides and adjusts ESG practices at the firm level. Specifically, corporate ESG practices have greater financial benefits in the context of lower produced capital per capita and higher human capital per capita.

Accordingly, the following policy implications can be suggested for business practitioners and financial institutions. First, for both institutional and individual investors, a common ESG assessment methodology is needed to improve comparability to identify the financial impact of ESG practices (i.e., financial materiality). In addition, the transparency of the ESG assessment process needs to be enhanced to prevent confusion and ensure clarity in understanding ESG scores when comparing different ESG performance results. In practice, the International Financial Reporting Standards' Sustainability Disclosure Standards, issued on 26 June 2023, can provide a common basis for corporate sustainability elements. On the other hand, there is no one-size-fits-all solution since the financial impact of ESG practices varies across economies. Business practitioners need to consider the materiality of the company itself and the socioeconomic context in which it operates. As a regional sustainability indicator, inclusive wealth can serve as a valuable indicator to inform region-specific ESG solutions.

## TABLES AND FIGURES

**Table 1: Comparison of ESG Rating Methods**

Rater	Performance Rating					Risk Rating
	Refinitiv	Bloomberg	MSCI	S-Ray	Moody's	Morningstar
<b>Score range</b>	0~100	0~100	0~10	0~100	0~100	0~100
<b>Grade range</b>	D- to A+ (12 grades)		CCC to AAA (7 grades)		-- to ++ (5 grades)	Negligible to Severe (5 grades)
<b>Assessment scope</b>	Disclosure and performance	Disclosure	Performance (management capability) given both risks and opportunities	Performance given long- and short-term risks and opportunities	Leadership, implementation, and results	Unmanaged ESG risk
<b>Rating method</b>	Full data-driven evaluation	Disclosure-based evaluation	Analysts' review	Data-driven evaluation and human oversight	Data-driven evaluation and human oversight	Data-driven evaluation and human oversight
<b>Weight</b>	Data-based intra- and inter-industry adjustment	Industry adjustment	Industry adjustment Risk and opportunity exposure adjustment	Static review and data-based adjustment (sector- and industry-level, equal- and market-cap-weighted monthly index returns)	Industry-specific materiality based on the risk to stakeholders and companies	Region- and industry-based adjustment
<b>Data sources</b>	Company disclosure Media sources	Company disclosure	Company disclosure Media sources Specialized datasets (e.g., government databases, NGOs, and academia)	Company disclosure Media sources NGOs	Open-source information coming from companies (e.g., websites, annual reports, press releases, brochures, catalogs, and investor presentations)	Company ESG management data Regional and industry-based risk exposure database
<b>Update frequency</b>	Monthly	Annually	Monthly	Daily	Annually	Monthly

Source: Adapted from Keeley et al. (2022).

**Table 2: Correlations Between ESG Performance and Carbon Performance**

		CO <sub>2</sub> Equivalent Emissions	CO <sub>2</sub> Equivalent Emissions Change	CO <sub>2</sub> Intensity	CO <sub>2</sub> Intensity Change
CO <sub>2</sub> Emissions	CO <sub>2</sub> Equivalent Emissions (1,000 tons)	1.00			
	CO <sub>2</sub> Equivalent Emissions Change (%)	0.01	1.00		
	CO <sub>2</sub> Intensity	0.41***	0.00	1.00	
	CO <sub>2</sub> Intensity Change (%)	0.02	0.96***	0.01	1.00
Refinitiv	ESG score	-0.03	0.02	-0.12***	0.01
	E score	0.10***	0.01	-0.08***	0.02
Bloomberg	ESG score	0.10***	0.00	0.07**	0.00
	E score	0.12***	-0.03	0.06*	-0.03
MSCI	ESG score	-0.08**	0.02	-0.14***	0.01
	E score	-0.11***	-0.01	-0.19***	-0.01
S-Ray	ESG score	-0.05	-0.01	0.00	0.00
	E score	0.10***	0.00	0.03	0.01
Moody's	ESG score	0.06*	-0.04	0.03	-0.04
	E score	0.10***	-0.05	0.04	-0.05
MorningStar	ESG score	0.07**	-0.01	0.03	-0.03
	E score	0.04	-0.01	0.00	-0.03

E = environmental, G = governance, S = social.

Notes: CO<sub>2</sub> equivalent emissions are total carbon dioxide (CO<sub>2</sub>) and CO<sub>2</sub> equivalent emissions in thousand tons, which are equal to the sum of direct (scope 1) and indirect (scope 2) emissions. CO<sub>2</sub> intensity is the total CO<sub>2</sub> emissions to revenues in millions of USD. Correlations are calculated based on a sample of 971 firm-year observations from 2016 to 2019 by all available CO<sub>2</sub> indicators, ESG scores, and E scores. The significance levels are denoted as follows: \*p<0.1, \*\*p<0.05, and \*\*\*p<0.01.

Source: Authors' calculations.

**Table 3: Descriptive Statistics**

	<b>Mean</b>	<b>SD</b>	<b>Min</b>	<b>Max</b>
ROA (%)	4.44	5.63	−6.70	17.08
Tobin's Q	1.18	0.90	0.50	3.92
Ln(sales)	23.33	3.07	0.00	33.34
Leverage (%)	0.62	0.24	−0.01	3.61
ESG score	33.20	12.12	5.00	77.00
E score	29.78	17.75	0.00	91.00
S score	30.80	12.54	4.00	84.00
G score	39.85	13.11	1.00	86.00
IW per (\$10,000)	55.54	25.23	0.00	132.05
HC per (\$10,000)	34.71	15.42	0.71	78.21
PC per (\$10,000)	16.95	7.68	0.00	39.59
NC per (\$10,000)	4.62	5.88	0.00	40.83

E = environmental, G = governance, HC = human capital per capita, IW = inclusive wealth per capita, NC = natural capital per capita, PC = produced capital per capita, ROA = return on assets, S = social.

Notes: ESG scores range from 0 to 100. In equation (3), the scale of the ESG score is adjusted to a maximum of 10 points. Inclusive wealth is calculated at 2015 constant United States dollars.

Source: Authors' calculations based on data collected from Moody's ESG, Refinitiv Eikon, and Inclusive Wealth Report.

**Table 4: Multilevel Regression Results for the ESG Score**

	<b>ESG score</b>	<b>E score</b>	<b>S score</b>	<b>G score</b>
$\ln(\text{sales})_{t-1}$	2.185*** (0.045)	3.327*** (0.071)	2.128*** (0.046)	1.472*** (0.043)
$\text{ROA}_{t-1}$	0.002 (0.014)	0.074*** (0.023)	-0.022 (0.015)	-0.003 (0.014)
$\text{Leverage}_{t-1}$	1.071*** (0.386)	0.98 (0.621)	1.058*** (0.400)	1.306*** (0.370)
Year fixed	YES	YES	YES	YES
Sector fixed	YES	YES	YES	YES
Observations	13927	13927	13927	13927
Log Likelihood	-49,969.48	-56,569.19	-50,473.86	-49,370.21
AIC	99,986.97	113,186.4	100,995.7	98,788.42
BIC	100,168	113,367.4	101,176.7	98,969.42

AIC = Akaike Information Criterion, BIC = Bayesian Information Criterion, E = environmental, G = governance, ROA = return on assets, S = social.

Notes: The significance levels are as follows: \* $p < 0.1$ , \*\* $p < 0.05$ , and \*\*\* $p < 0.01$ .

Source: Authors' calculations based on data collected from Moody's ESG and Refinitiv Eikon.

**Table 5: Effects of ESG Performance on Financial Performance**

	ROA				Tobin's Q			
ESG score	−0.001 (0.099)				0.037* (0.019)			
E score		0.042 (0.064)				0.023 (0.014)		
S score			−0.068 (0.088)				0.028* (0.016)	
G score				0.041 (0.089)				0.017 (0.018)
ln(Sales)	0.440*** (0.025)	0.429*** (0.025)	0.456*** (0.025)	0.440*** (0.024)	−0.114*** (0.004)	−0.112*** (0.004)	−0.113*** (0.004)	−0.109*** (0.004)
Leverage	−8.716*** (0.200)	−8.694*** (0.200)	−8.718*** (0.201)	−8.748*** (0.201)	−0.907*** (0.029)	−0.900*** (0.029)	−0.908*** (0.029)	−0.911*** (0.029)
Year fixed	YES	YES	YES	YES	YES	YES	YES	YES
Sector fixed	YES	YES	YES	YES	YES	YES	YES	YES
Observations	16323	16323	16323	16323	16327	16327	16327	16327
Log Likelihood	−50,198.1	−50,186.92	−50,202.16	−50,212.54	−18,856.2	−18,847.25	−18,865.7	−18,868.37
AIC	10,0450.2	10,0427.8	10,0458.3	10,0479.1	37,766.4	37,748.5	37,785.4	37,790.73
BIC	10,0658.1	10,0635.7	10,0666.2	10,0687	37,974.32	37,956.42	37,993.32	37,998.65

AIC = Akaike Information Criterion, BIC = Bayesian Information Criterion, E = environmental, G = governance, ROA = return on assets, S = social.

Notes: The significance level is denoted as follows: \*p<0.1, \*\*p<0.05, and \*\*\*p<0.01. The coefficient indicates the impact of a 10-point change in the ESG score.

Source: Authors' calculations based on data collected from Moody's ESG and Refinitiv Eikon.

**Table 6: Financial Impact of ESG Performance Moderated by Inclusive Wealth per Capita**

	ROA				Tobin's Q			
<b>Level 1</b>								
ESG score	0.07 (0.188)				0.065* (0.038)			
E score		0.015 (0.115)				0.040** (0.020)		
S score			−0.044 (0.175)				0.061* (0.032)	
G score				0.245 (0.160)				0.016 (0.028)
ln(sales)	0.453*** (0.030)	0.438*** (0.030)	0.461*** (0.030)	0.452*** (0.029)	−0.112*** (0.005)	−0.111*** (0.005)	−0.112*** (0.004)	−0.111*** (0.004)
Leverage	−8.515*** (0.242)	−8.501*** (0.242)	−8.506*** (0.242)	−8.519*** (0.242)	−0.919*** (0.035)	−0.917*** (0.035)	−0.919*** (0.035)	−0.915*** (0.035)
Year fixed	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Sector fixed	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
<b>Level 2</b>								
IW	0.011 (0.012)	0.002 (0.009)	0.011 (0.011)	0.02 (0.012)	−0.0002 (0.003)	−0.0002 (0.003)	0.001 (0.003)	0.002 (0.003)
<b>Cross-level</b>								
ESG score * IW	−0.001 (0.003)				−0.0005 (0.001)			
E score * IW		0.002 (0.002)				−0.001* (0.000)		
S score * IW			−0.002 (0.003)				−0.001* (0.001)	
G score * IW				−0.004 (0.003)				−0.001** (0.001)
Observations	11,264	11,264	11,264	11,264	11,263	11,263	11,263	11,263
Log Likelihood	−34,729.8	−34,727.8	−34,728.9	−34,729.1	−13,105.1	−13,106.9	−13,106.1	−13,102.7
AIC	69,509.52	69,505.68	69,507.71	69,508.24	26,260.17	26,263.75	26,262.28	26,255.42
BIC	69,692.76	69,688.91	69,690.95	69,691.47	26,443.4	26,446.98	26,445.52	26,438.65

AIC = Akaike Information Criterion, BIC = Bayesian Information Criterion, E = environmental, G = governance, IW = inclusive wealth per capita, ROA = return on assets, S = social.

Notes: The significance level is denoted as follows: \*p<0.1, \*\*p<0.05, and \*\*\*p<0.01. The coefficient indicates the impact of a 10-point change in the ESG score. The sample examined is from 2015 to 2022, after the launch of the Sustainable Development Goals.

Source: Authors' calculations based on data collected from Moody's ESG and Refinitiv Eikon.



**Table 7: Financial Impact of ESG Moderated by Produced, Human, and Natural Capital per Capita**

ROA					Tobin's Q			
Level 1								
ESG score	0.19 (0.203)				0.083** (0.040)			
E score		0.118 (0.123)				0.048** (0.021)		
S score			0.049 (0.186)				0.079** (0.034)	
G score				0.342* (0.180)				0.028 (0.031)
ln(sales)	0.457*** (0.030)	0.445*** (0.030)	0.465*** (0.030)	0.456*** (0.030)	-0.112*** (0.005)	-0.111*** (0.005)	-0.112*** (0.005)	-0.112*** (0.005)
Leverage	-8.426*** (0.244)	-8.417*** (0.244)	-8.414*** (0.244)	-8.424*** (0.244)	-0.900*** (0.036)	-0.899*** (0.036)	-0.901*** (0.036)	-0.896*** (0.036)
Year fixed	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Sector fixed	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Level 2								
PC	-0.09 (0.136)	-0.014 (0.099)	-0.082 (0.121)	-0.204 (0.124)	0.039 (0.031)	0.021 (0.022)	0.011 (0.025)	0.0003 (0.027)
HC	0.072 (0.067)	0.014 (0.048)	0.067 (0.059)	0.137** (0.061)	-0.023 (0.015)	-0.014 (0.011)	-0.007 (0.013)	-0.001 (0.013)
NC	-0.028 (0.050)	-0.025 (0.037)	-0.028 (0.045)	0.017 (0.051)	0.019 (0.012)	0.019* (0.010)	0.024** (0.011)	0.024** (0.012)
Observations	10,994	10,994	10,994	10,994	10,993	10,993	10,993	10,993
Log Likelihood	-33,906.4	-33,899.9	-33,905.4	-33,906.6	-12,821.7	-12,822.4	-12,824.1	-12,821.6
AIC	67,870.83	67,857.89	67,868.79	67,871.2	25,701.39	25,702.85	25,706.23	25,701.14
BIC	68,082.67	68,069.74	68,080.63	68,083.04	25,913.24	25,914.69	25,918.08	25,912.98
Cross-level								
ESG score * PC	-0.029 (0.034)				-0.013* (0.007)			
ESG score * HC	0.007 (0.017)				0.005 (0.004)			
ESG score * NC	0.014 (0.013)				0.0004 (0.003)			
E score * PC		-0.062*** (0.017)				-0.009*** (0.003)		
E score * HC		0.029*** (0.008)				0.003** (0.001)		
E score * NC		0.015* (0.008)				0.0005 (0.001)		

*Continued on the next page*

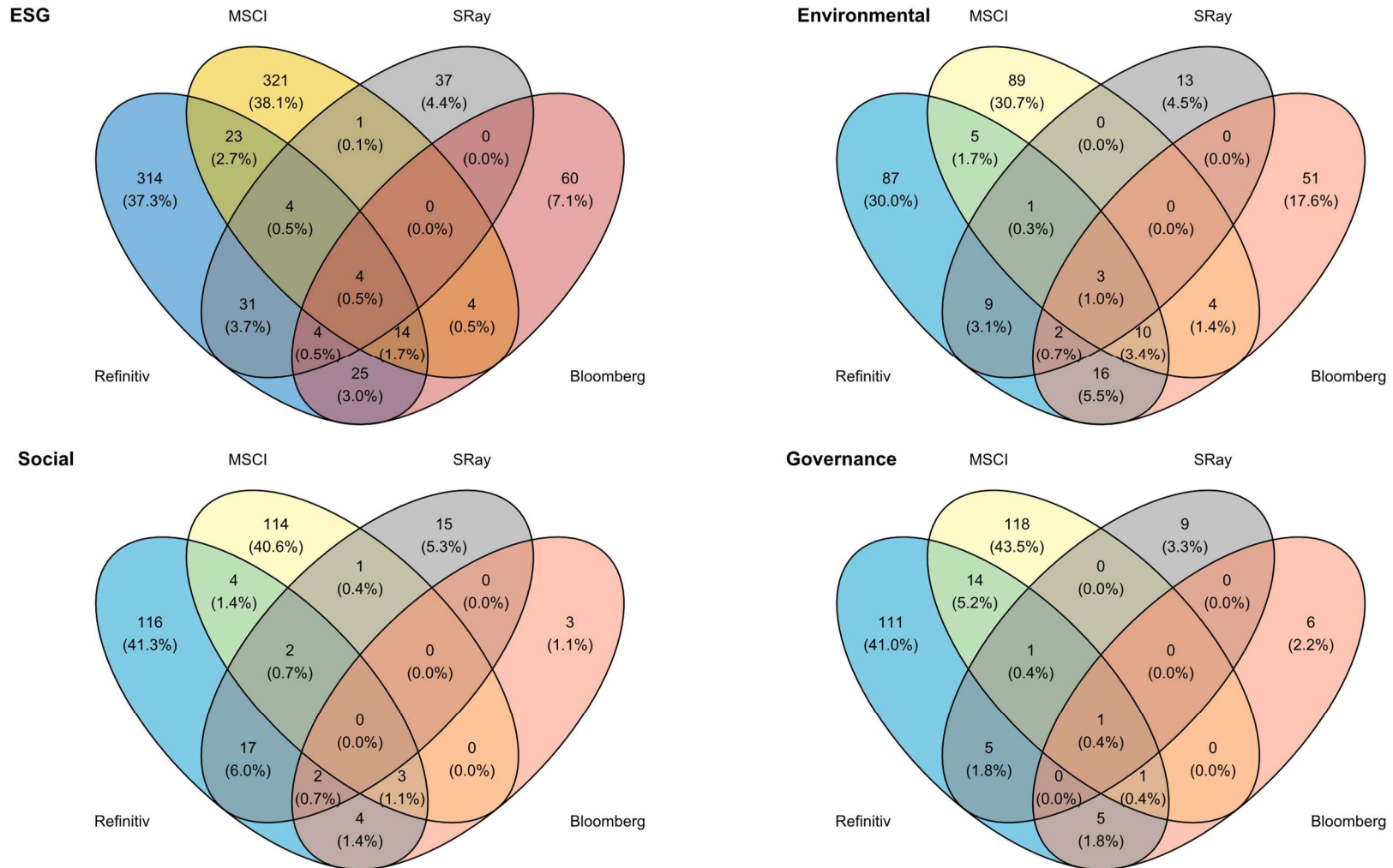
	ROA				Tobin's Q			
S score * PC				−0.035 (0.028)				−0.004 (0.005)
S score * HC				0.01 (0.014)				0.0001 (0.002)
S score * NC				0.014 (0.011)				−0.001 (0.002)
G score * PC				0.007 (0.024)				−0.0005 (0.004)
G score * HC				−0.012 (0.012)				−0.001 (0.002)
G score * NC				−0.0004 (0.011)				−0.001 (0.002)
Observations	10,994	10,994	10,994	10,994	10,993	10,993	10,993	10,993
Log Likelihood	−33,906.4	−33,899.9	−33,905.4	−33,906.6	−12,821.7	−12,822.4	−12,824.1	−12,821.6
AIC	67,870.83	67,857.89	67,868.79	67,871.2	25,701.39	25,702.85	25,706.23	25,701.14
BIC	68,082.67	68,069.74	68,080.63	68,083.04	25,913.24	25,914.69	25,918.08	25,912.98

AIC = Akaike Information Criterion, BIC = Bayesian Information Criterion, E = environmental, G = governance, HC = human capital per capita, IW = inclusive wealth per capita, NC = natural capital per capita, PC = produced capital per capita, S = social.

Notes: The significance level is denoted as follows: \*p<0.1, \*\*p<0.05, and \*\*\*p<0.01. The coefficient indicates the impact of a 10-point change in the ESG score. The sample examined is from 2015 to 2022, after the launch of the Sustainable Development Goals.

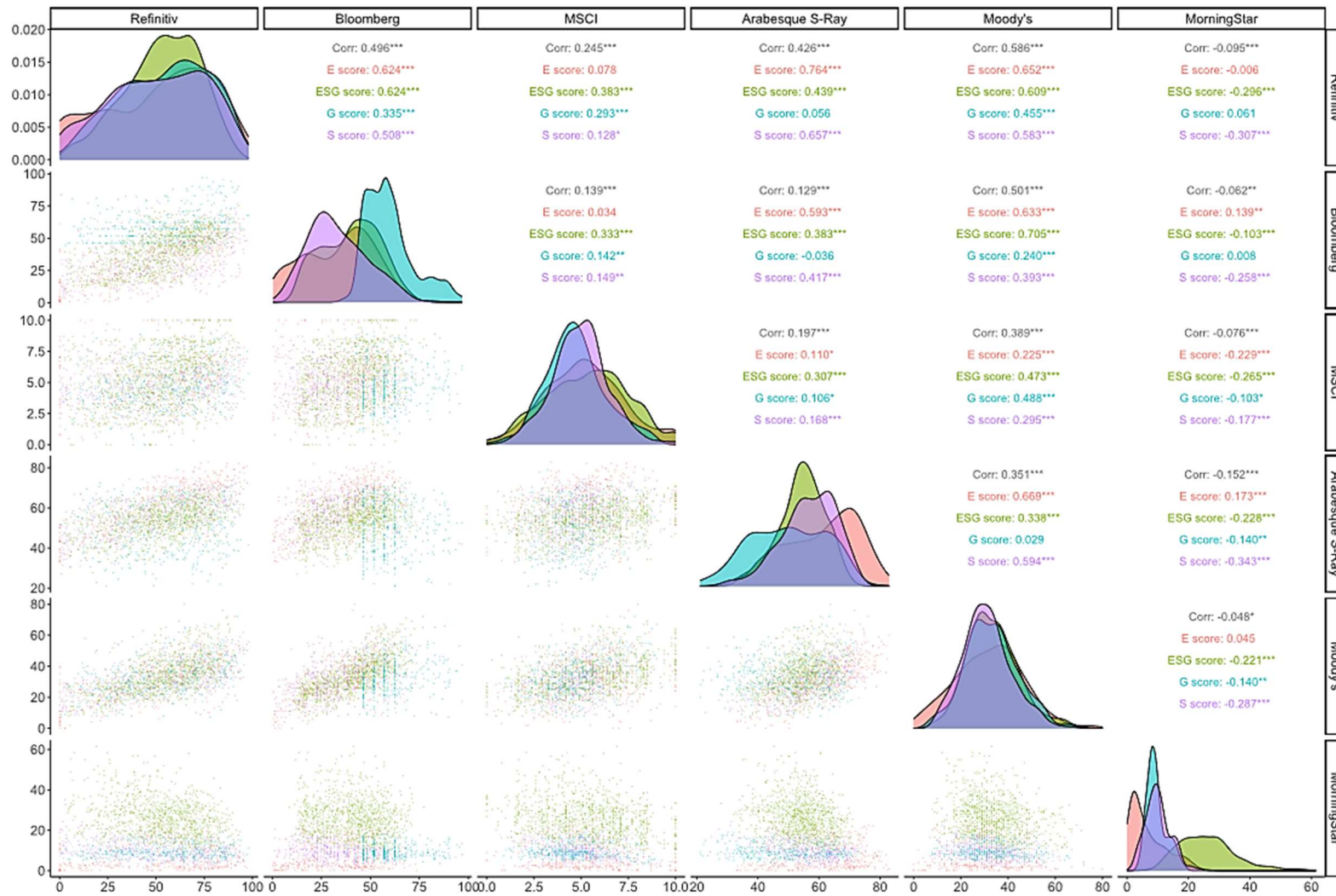
Source: Authors' calculations based on data collected from Moody's ESG and Refinitiv Eikon.

**Figure 1: Inconsistent Assessment Items Across ESG Raters**



Note: This figure shows the percentage of common assessment elements among the four environmental, social, and governance (ESG) raters.  
Source: Adapted from Keeley et al. (2022).

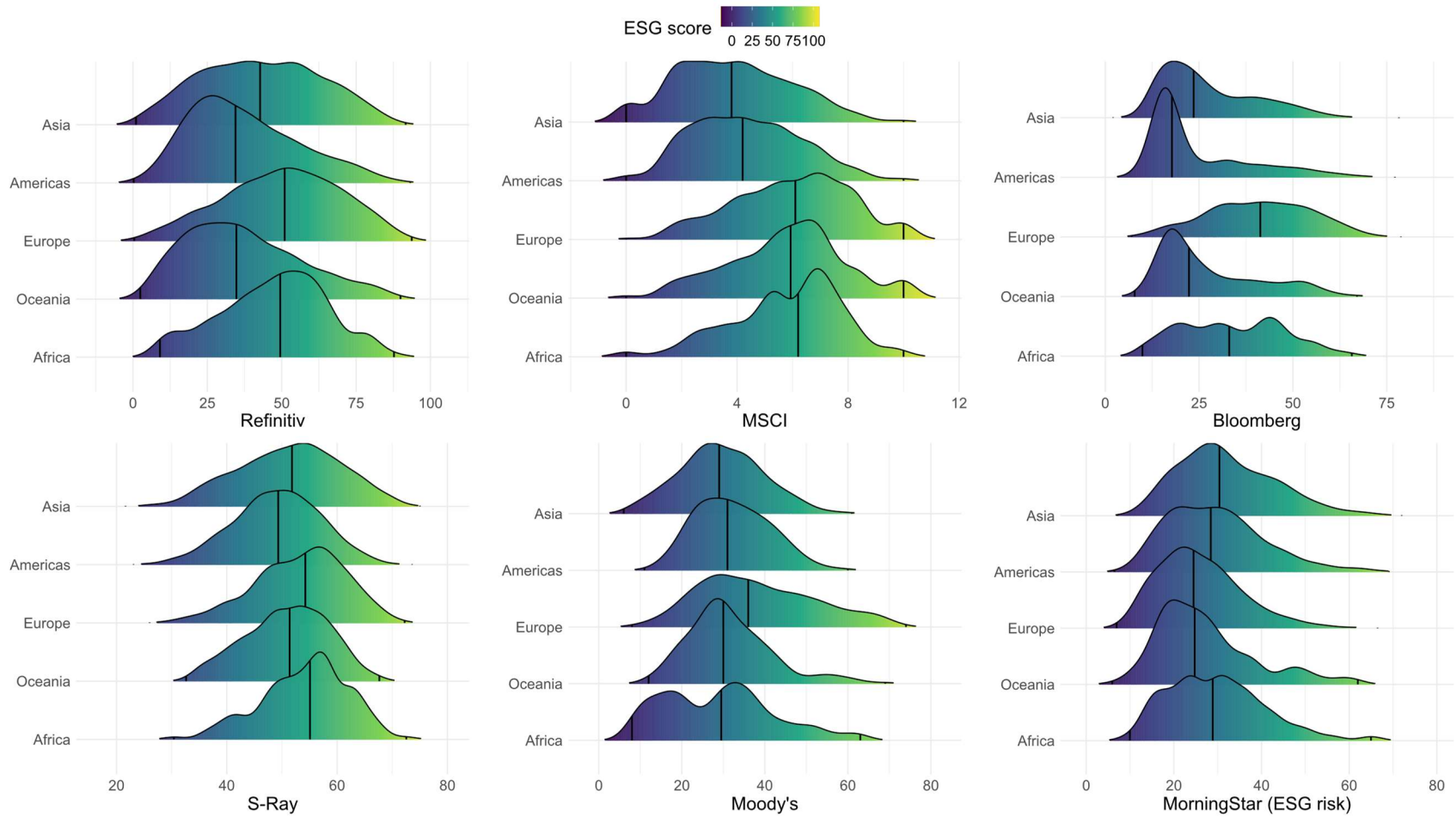
**Figure 2: Correlations Among ESG Scores from Different ESG Raters**



Note: The figure shows the correlations among environmental, social, and governance (ESG) scores from six ESG raters based on a sample of firms with ESG ratings from all six raters in 2019.

Source: Adapted from Keeley et al. (2022).

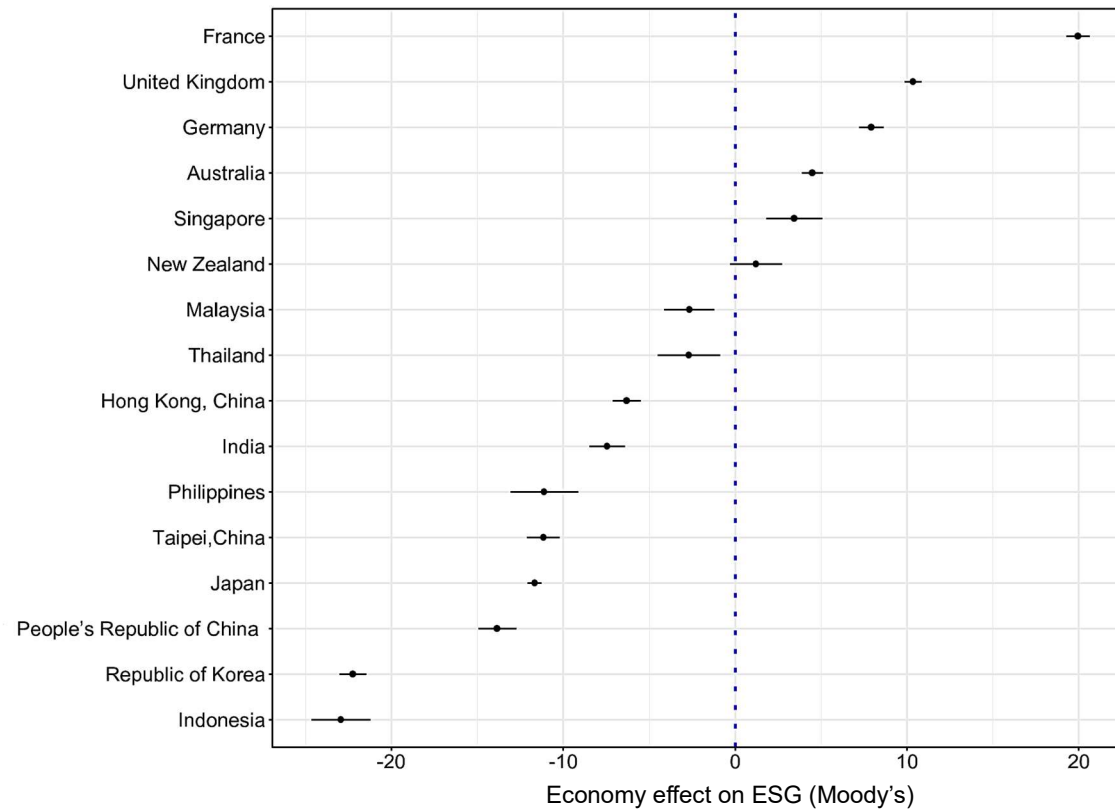
**Figure 3: Comparison of ESG Scores by Region**



Note: This figure shows the distribution and median level of environmental, social, and governance (ESG) performance by region based on a 2019 sample from each rating agency.

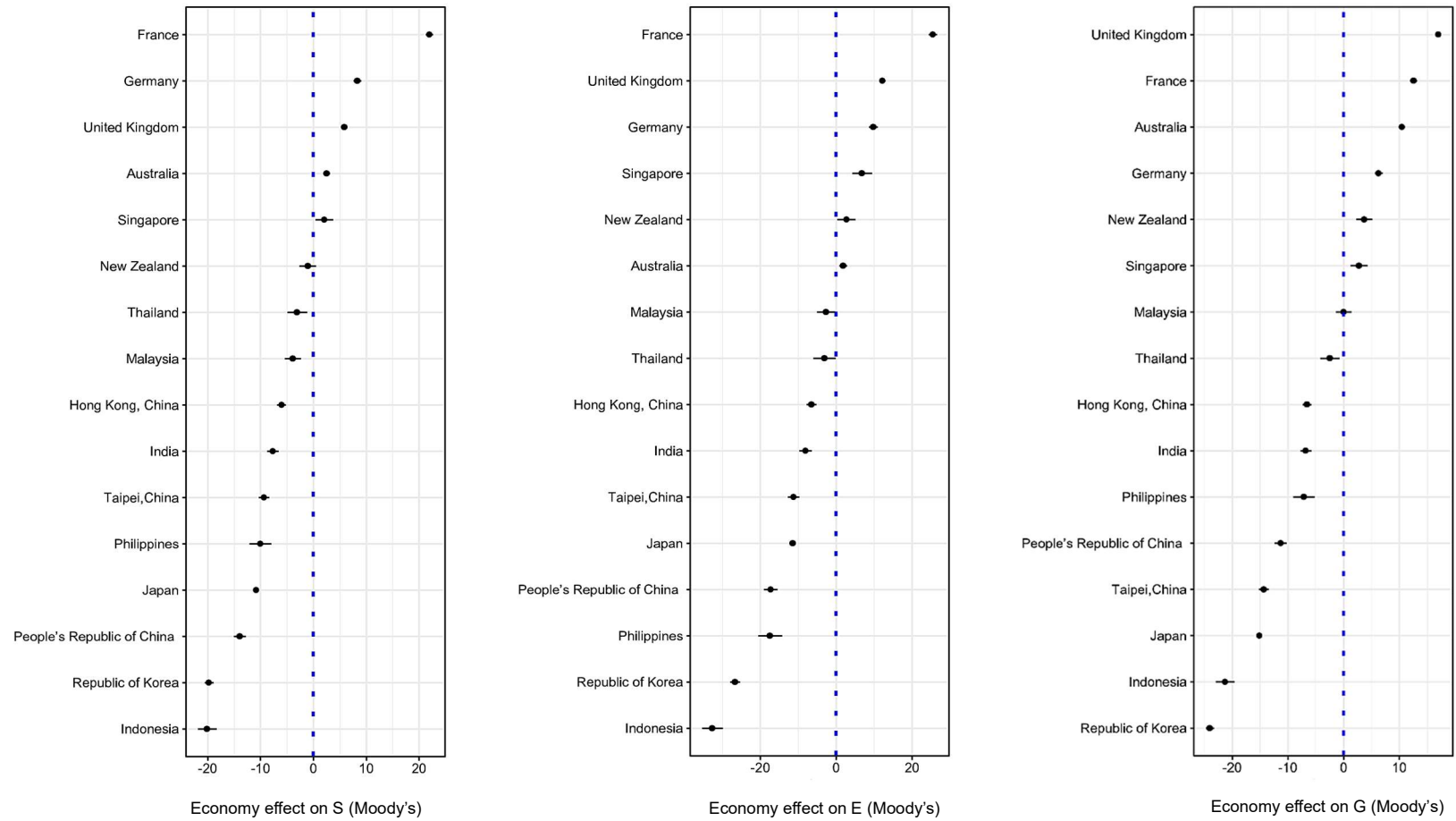
Source: Authors' calculations.

**Figure 4: Economy Effect on ESG Performance**

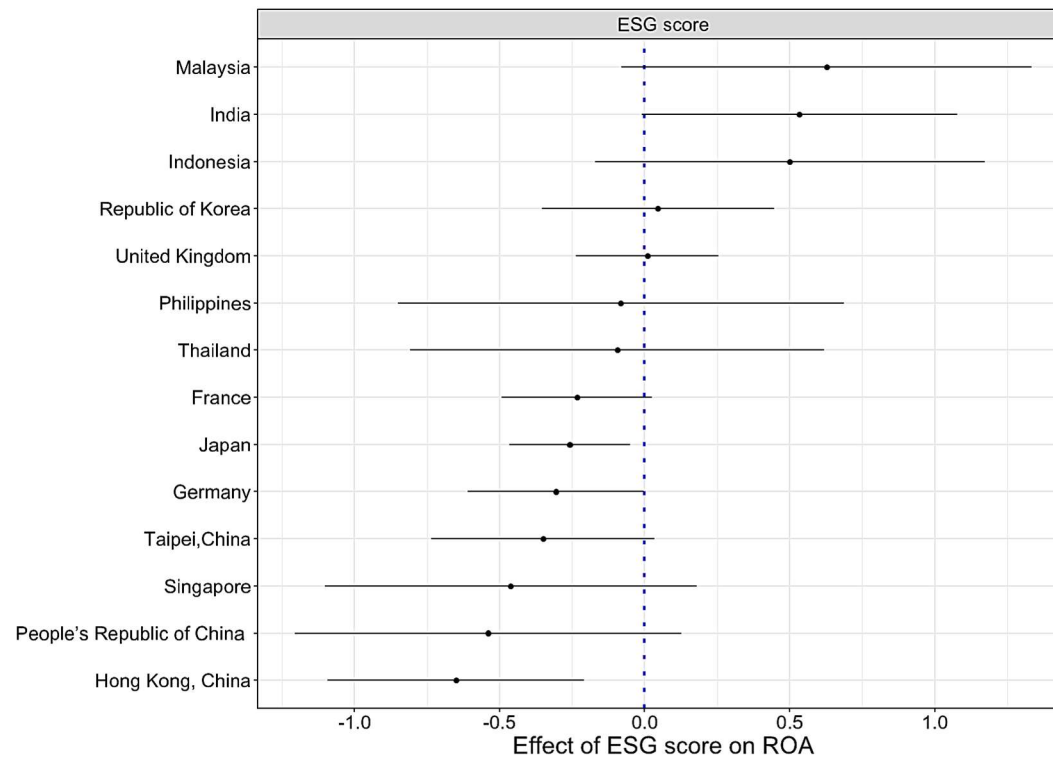


Source: Authors' calculations.

**Figure 5: Economy Effect on ESG Component Scores**



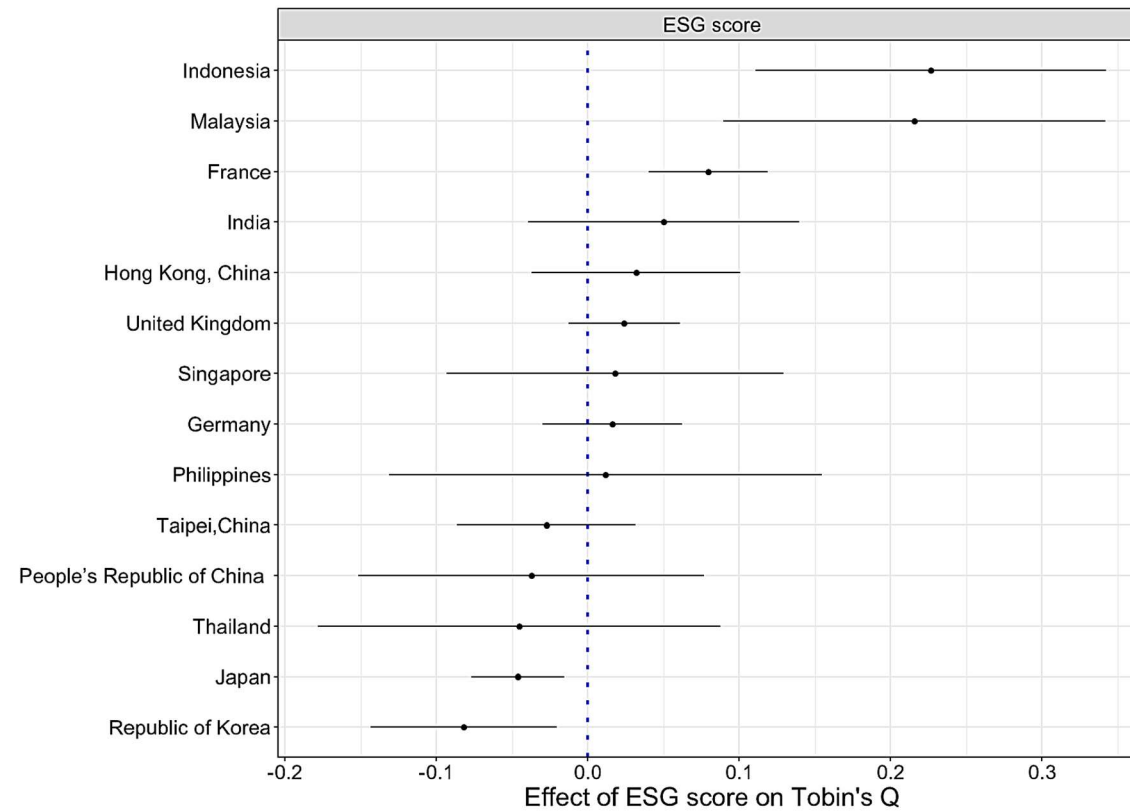
*Continued on the next page*



Source: Authors' calculations.

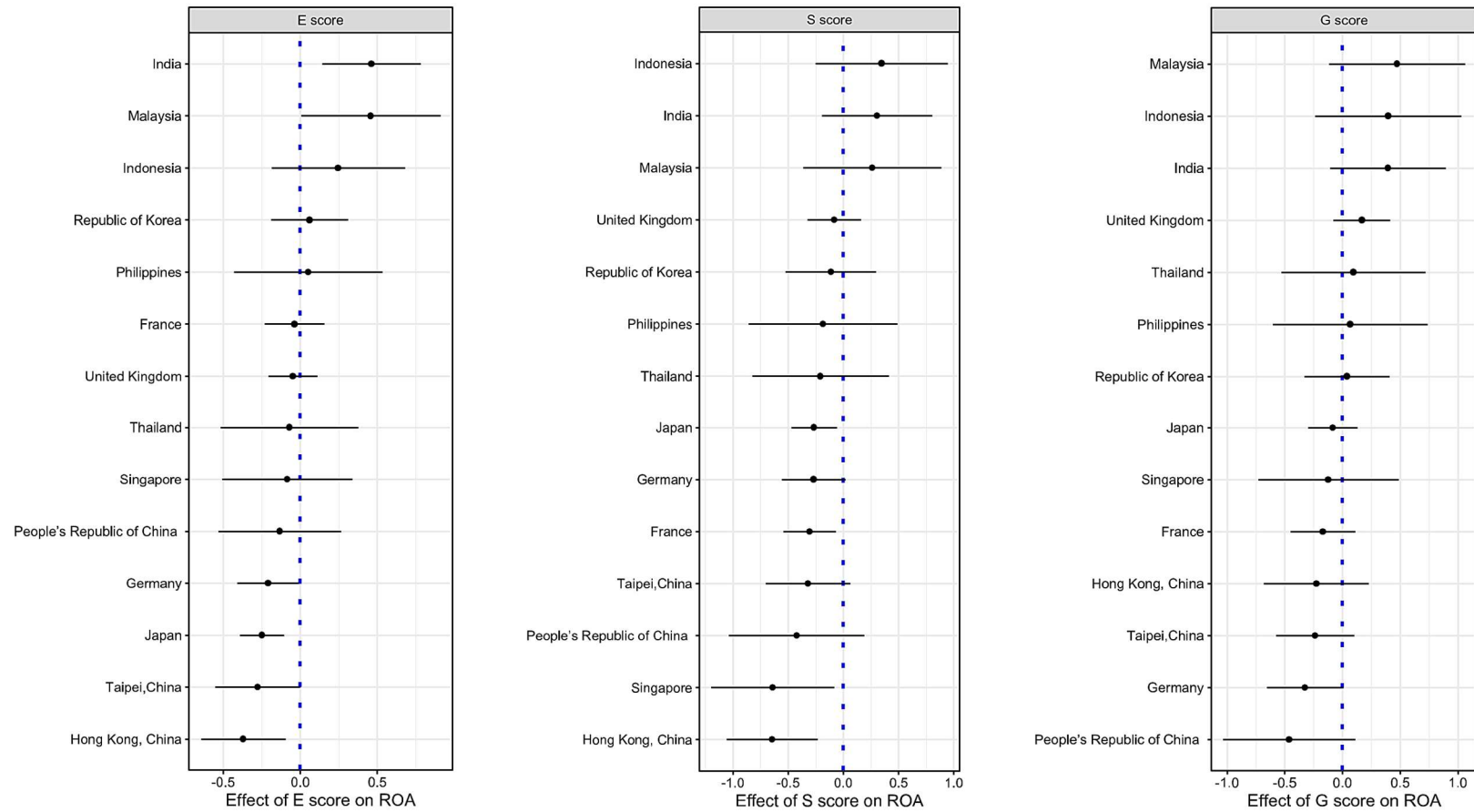


**Figure 6: Financial Impacts of ESG Performance Across Economies**



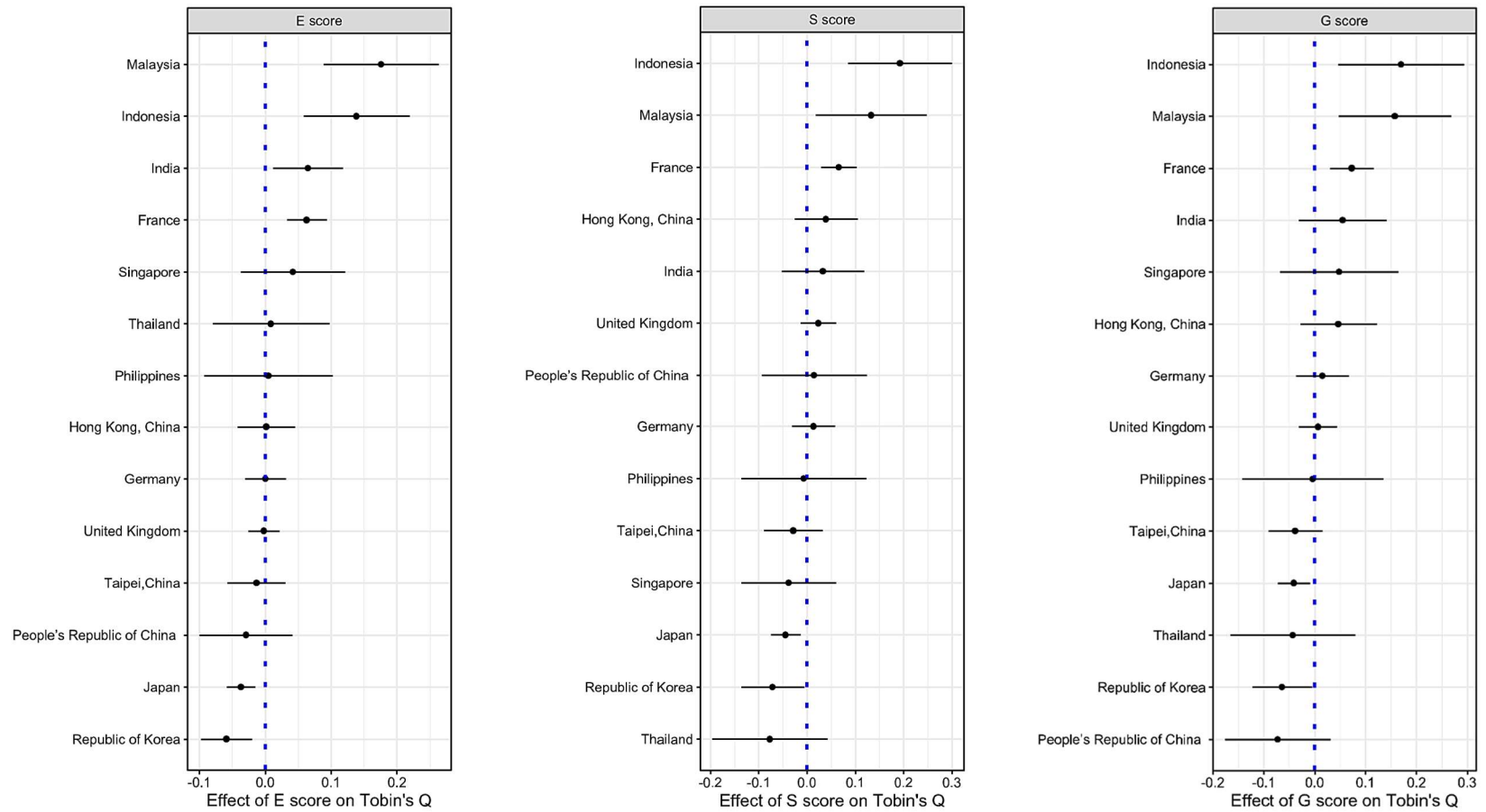
Source: Authors' calculations.

**Figure 7: Effects of ESG Scores on Return on Assets Across Economies**



Source: Authors' calculations.

**Figure 8: Effects of ESG Scores on Tobin's Q Across Economies**



Source: Authors' calculations.

## APPENDIX

**Table A1: Sample Distribution by Year and Economy**

<b>Year</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>
Australia	52	35	54	32	216	169	211	356	228	164
Austria	15	13	18	12	17	12	23	33	31	18
Belgium	12	19	19	23	16	25	33	52	48	25
Brazil	20	56	48	35	31	31	34	53	45	24
Canada	27	57	33	108	129	144	131	233	164	114
Chile	5	21	17	17	13	15	13	28	25	12
People's Republic of China	14	76	70	59	60	67	47	115	80	72
Denmark	16	11	12	13	15	12	21	30	29	15
Finland	15	19	15	18	19	24	22	40	38	16
France	75	86	101	95	97	101	194	246	228	144
Germany	65	81	107	94	101	99	135	191	178	103
Hong Kong, China	46	41	71	39	69	54	67	126	102	63
India	18	51	48	43	29	35	27	58	37	40
Indonesia	11	20	23	15	16	11	16	20	12	11
Ireland	8	11	10	13	11	12	13	23	21	10
Israel	0	0	0	0	12	25	14	32	24	19
Italy	26	48	40	49	41	53	75	100	94	78
Japan	265	106	273	111	384	229	390	542	435	266
Malaysia	11	36	28	21	21	18	19	32	17	21
Mexico	9	27	21	17	17	16	20	27	21	9
Morocco	36	6	40	43	13	43	43	43	43	3
Netherlands	30	36	28	45	27	48	42	78	73	31
New Zealand	1	3	3	4	29	28	27	51	32	25
Norway	12	8	14	9	14	11	24	34	34	17
Philippines	2	16	13	16	7	15	6	20	12	12
Poland	3	21	15	16	8	17	8	21	15	10
Republic of Korea	31	75	65	55	64	76	66	129	94	76
Russian Federation	10	12	19	9	15	10	14	22	10	2
Singapore	21	12	21	14	19	18	17	35	29	18
South Africa	21	36	44	21	33	16	30	43	32	20
Spain	27	37	43	57	39	49	61	80	68	45
Sweden	23	29	19	31	20	39	37	76	74	41
Switzerland	31	33	29	34	26	34	66	89	88	48
Taipei, China	34	53	82	37	60	24	58	73	48	54
Thailand	8	21	15	14	13	12	13	23	16	19
Türkiye	6	19	22	7	16	7	16	23	14	12
United Kingdom	108	123	111	131	238	267	251	445	392	172
United States	274	477	357	588	468	712	588	995	887	505

Source: Authors' compilation.

**Table A2: The Relationships Between ESG Performance and Carbon Performance**

	Emissions (1)	Emissions Change (2)	Intensity (3)	Intensity Change (4)	Emissions (5)	Emissions Change (6)	Intensity (7)	Intensity Change (8)
ESG score (Moody's)	-18.606 (13.13)	0.56 (4.03)	-5.567 (4.30)	0.013 (0.04)				
E score (Moody's)					-14.459* (7.95)	-0.969 (2.47)	-3.012 (2.60)	-0.001 (0.03)
leverage	-568.307 (820.05)	-37.991 (290.89)	-225.709 (268.68)	-0.489 (3.19)	-554.539 (820.03)	-39.547 (290.88)	-224.232 (268.71)	-0.499 (3.19)
ROA	-19.34 (14.98)	-4.428 (4.31)	-10.234** (4.92)	-0.042 (0.05)	-18.921 (14.98)	-4.387 (4.32)	-10.166** (4.92)	-0.042 (0.05)
Firm size	1,697.708*** (267.86)	17.616 (90.26)	-94.37 (87.87)	0.193 (1.00)	1,706.467*** (267.92)	18.432 (90.25)	-93.206 (87.90)	0.199 (1.00)
Constant	-41,040.060*** (9916.75)	-153.987 (2561.26)	2,239.40 (3250.54)	-1.909 (28.30)	-41,558.650*** (9925.03)	-148.802 (2561.08)	2,176.30 (3253.74)	-1.821 (28.29)
Observations	8,003	5,107	7,994	5,143	8,003	5,107	7,994	5,143
R <sup>2</sup>	0.95	0.931	0.977	0.925	0.95	0.931	0.977	0.925
Adjusted R <sup>2</sup>	0.926	0.873	0.966	0.863	0.926	0.873	0.966	0.863

E = environmental, G = governance, S = social.

Notes: The results are based on fixed effect models as follows:  $CO_2 Performance_{it} = \beta_0 + \beta_1 ESG score_{it} + Control_{it}\beta + \sigma_i + \sigma_t + \varepsilon_{it}$ .

The control variables include financial leverage, return on assets, firm size, sector, and economy. The significance levels are denoted as follows: \*p<0.1, \*\*p<0.05, and \*\*\*p<0.01.

Source: Authors' calculations based on data from Moody's ESG and Refinitiv Eikon.

**Table A3: Correlations Between ESG Performance and Carbon Performance  
for High- and Low-Carbon Intensity Groups**

		CO <sub>2</sub> Equivalent Emissions		CO <sub>2</sub> Equivalent Emissions Change		CO <sub>2</sub> Intensity		CO <sub>2</sub> Intensity Change	
		High	Low	High	Low	High	Low	High	Low
CO <sub>2</sub> emission	CO <sub>2</sub> Equivalent Emissions ('000 tons)	1.00	1.00						
	CO <sub>2</sub> Equivalent Emissions Change (%)	0.02	-0.01	1.00	1.00				
	CO <sub>2</sub> Intensity	0.24***	0.32***	0.01	0.08	1.00	1.00		
	CO <sub>2</sub> Intensity Change (%)	0.02	0.01	0.99***	0.84***	0.01	0.11	1.00	1.00
Refinitiv	ESG score	0.00	-0.01	0.04	-0.02	-0.21***	-0.02	0.04	-0.09
	E score	0.23***	0.09	0.06	-0.03	-0.19***	0.14**	0.06	-0.06
Bloomberg	ESG score	0.11*	0.13*	0.06	-0.01	0.07	0.12*	0.05	-0.01
	E score	0.15**	0.15**	0.06	-0.04	0.04	0.14**	0.05	-0.04
MSCI	ESG score	-0.08	0.01	0.04	-0.03	-0.23***	0.10	0.04	-0.03
	E score	0.00	0.14**	0.09	0.01	-0.17**	-0.04	0.09	0.04
S-Ray	ESG score	-0.10	-0.17**	0.00	-0.01	0.04	-0.04	0.01	0.02
	E score	0.14**	0.18**	0.00	-0.12*	0.00	0.21***	0.01	-0.16**
Moody's	ESG score	0.02	0.11	-0.04	-0.04	-0.03	0.16**	-0.03	-0.09
	E score	0.14**	0.18***	-0.07	-0.01	0.03	0.19***	-0.06	-0.05
MorningStar	ESG score	0.04	0.10	-0.09	0.04	-0.03	0.06	-0.09	0.00
	E score	0.05	0.13*	-0.07	0.02	-0.05	0.05	-0.08	-0.02

E = environmental, G = governance, S = social.

Notes: The two groups are divided based on their carbon intensity levels. Among the full sample, the high-intensity group comprises those above the 75th percentile, while the low-intensity group comprises those below the 25th percentile. Correlations are calculated based on a high-carbon intensity group with 226 firm-year observations and a low-carbon intensity group with 213 firm-year observations from 2016 to 2019. The high-carbon intensity group includes firms mainly from the following sectors: materials (41.2%), industrial (21.2%), energy (15.5%), and utilities (13.7%). The low-carbon intensity group includes firms mainly from the following sectors: financial (58.7%), industrial (8.5%), consumer discretionary (8.0%), and communication services (7.5%). The significance level is denoted as follows:

\*p<0.1, \*\*p<0.05, and \*\*\*p<0.01.

Source: Authors' calculations based on data from Refinitiv Eikon and multiple ESG databases.

## REFERENCES

- Albuquerque, Rui, Yrjö Koskinen, Shuai Yang, and Chendi Zhang. 2020. "Resiliency of Environmental and Social Stocks: An Analysis of the Exogenous COVID-19 Market Crash." *The Review of Corporate Finance Studies* 9 (3): 593–621. <https://doi.org/10.1093/rcfs/cfaa011>.
- Albuquerque, Rui, Yrjö Koskinen, and Chendi Zhang. 2019. "Corporate Social Responsibility and Firm Risk: Theory and Empirical Evidence." *Management Science* 65 (10): 4451–69. <https://doi.org/10.1287/mnsc.2018.3043>.
- Alshbili, Ibrahim, and Ahmed A. Elamer. 2020. "The Influence of Institutional Context on Corporate Social Responsibility Disclosure: A Case of a Developing Country." *Journal of Sustainable Finance and Investment* 10 (3): 269–93. <https://doi.org/10.1080/20430795.2019.1677440>.
- Aragón-Correa, J. Alberto, and Sanjay Sharma. 2003. "A Contingent Resource-Based View of Proactive Corporate Environmental Strategy." *Academy of Management Review* 28 (1): 71–88. <https://doi.org/10.5465/AMR.2003.8925233>.
- Bénabou, Roland, and Jean Tirole. 2010. "Individual and Corporate Social Responsibility." *Economica* 77 (305): 1–19. <https://doi.org/10.1111/j.1468-0335.2009.00843.x>.
- Berg, Florian, Julian F. Kölb, and Roberto Rigobon. 2022. "Aggregate Confusion: The Divergence of ESG Ratings." *Review of Finance*. <https://doi.org/10.1093/rof/rfac033>.
- Bilyay-Erdogan, Seda. 2022. "Corporate ESG Engagement and Information Asymmetry: The Moderating Role of Country-Level Institutional Differences." *Journal of Sustainable Finance and Investment*, 1–37. <https://doi.org/10.1080/20430795.2022.2128710>.
- Bouyé, Eric, and Diane Menville. 2020. "The Convergence of Sovereign ESG Ratings." *SSRN Electronic Journal*. <https://doi.org/10.2139/ssrn.3568547>.
- Chatterji, Aaron K., Rodolphe Durand, David I. Levine, and Samuel Touboul. 2016. "Do Ratings of Firms Converge? Implications for Managers, Investors and Strategy Researchers." *Strategic Management Journal* 37 (8): 1597–614. <https://doi.org/10.1002/smj.2407>.
- Dasgupta, Partha. 2021. *The Economics of Biodiversity: The Dasgupta Review*. London: HM Treasury.

- DiMaggio, Paul J., and Walter W. Powell. 1983. "The Iron Cage Revisited: Institutional Isomorphism and Collective Rationality in Organizational Fields." *American Sociological Review* 48 (2): 147. <https://doi.org/10.2307/2095101>.
- Edmans, Alex. 2011. "Does the Stock Market Fully Value Intangibles? Employee Satisfaction and Equity Prices." *Journal of Financial Economics* 101 (3): 621–40. <https://doi.org/10.1016/j.jfineco.2011.03.021>.
- Edmans, Alex, Darcy Pu, Chendi Zhang, and Lucius Li. 2023. "Employee Satisfaction, Labor Market Flexibility, and Stock Returns Around the World." *Management Science*. <https://doi.org/10.1287/mnsc.2023.4889>.
- Friedman, Milton. 1970. "The Social Responsibility of Business Is to Increase Its Profits." In *Corporate Ethics and Corporate Governance, Volume 6*, 173–78. Springer Berlin Heidelberg. [https://doi.org/10.1007/978-3-540-70818-6\\_14](https://doi.org/10.1007/978-3-540-70818-6_14).
- Garel, Alexandre, and Arthur Petit-Romec. 2021. "Investor Rewards to Environmental Responsibility: Evidence from the COVID-19 Crisis." *Journal of Corporate Finance* 68: 101948. <https://doi.org/10.1016/j.jcorpfin.2021.101948>.
- Gillan, Stuart L., Andrew Koch, and Laura T. Starks. 2021. "Firms and Social Responsibility: A Review of ESG and CSR Research in Corporate Finance." *Journal of Corporate Finance* 66 101889. <https://doi.org/10.1016/j.jcorpfin.2021.101889>.
- Hall, Peter, and David Soskice. 2001. *Varieties of Capitalism: The Institutional Foundations of Comparative Advantage*. Oxford: Oxford University Press.
- Jackson, Gregory, and Androniki Apostolakou. 2010. "Corporate Social Responsibility in Western Europe: An Institutional Mirror or Substitute?" *Journal of Business Ethics* 94 (3): 371–94. <https://doi.org/10.1007/s10551-009-0269-8>.
- Jamali, Dima, Tanusree Jain, Georges Samara, and Edwina Zoghbi. 2020. "How Institutions Affect CSR Practices in the Middle East and North Africa: A Critical Review." *Journal of World Business* 55 (5): <https://doi.org/10.1016/j.jwb.2020.101127>.
- Kang, Nahee, and Jeremy Moon. 2012. "Institutional Complementarity between Corporate Governance and Corporate Social Responsibility: A Comparative Institutional Analysis of Three Capitalisms." *Socio-Economic Review* 10 (1): 85–108. <https://doi.org/10.1093/ser/mwr025>.



- Keeley, Alexander Ryota, Andrew J. Chapman, Kenichi Yoshida, Jun Xie, Janaka Imbulana Arachchi, Shutaru Takeda, and Shunsuke Managi. 2022. "ESG Metrics and Social Equity: Investigating Commensurability." *Frontiers in Sustainability* 3. <https://doi.org/10.3389/frsus.2022.920955>.
- Khan, Majid, James Lockhart, and Ralph Bathurst. 2021. "The Institutional Analysis of CSR: Learnings from an Emerging Country." *Emerging Markets Review* 46 (October 2020): 100752. <https://doi.org/10.1016/j.ememar.2020.100752>.
- Kinderman, Daniel. 2012. "'Free Us Up So We Can Be Responsible!' The Co-Evolution of Corporate Social Responsibility and Neo-Liberalism in the UK, 1977–2010." *Socio-Economic Review* 10 (1): 29–57. <https://doi.org/10.1093/ser/mwr028>.
- Lins, Karl V., Henri Servaes, and Ane Tamayo. 2017. "Social Capital, Trust, and Firm Performance: The Value of Corporate Social Responsibility during the Financial Crisis." *The Journal of Finance* 72 (4): 1785–824. <https://doi.org/10.1111/jofi.12505>.
- Managi, Shunsuke, and Pushpam Kumar. 2018. *Inclusive Wealth Report 2018*. Oxfordshire: Routledge. <https://doi.org/10.4324/9781351002080>.
- Matten, Dirk, and Jeremy Moon. 2008. "'Implicit' and 'Explicit' CSR: A Conceptual Framework for a Comparative Understanding of Corporate Social Responsibility." *Academy of Management Review* 33 (2): 404–24. <https://doi.org/10.5465/AMR.2008.31193458>.
- Raghunandan, Aneesh, and Shiva Rajgopal. 2022. "Do ESG Funds Make Stakeholder-Friendly Investments?" *Review of Accounting Studies* 27 (3): 822–63. <https://doi.org/10.1007/s11142-022-09693-1>.
- Stolowy, Hervé, and Luc Paugam. 2023. "Sustainability Reporting: Is Convergence Possible?" *Accounting in Europe* 20 (2): 139–65. <https://doi.org/10.1080/17449480.2023.2189016>.
- Tolmie, Carri Reisdorf, Kevin Lehnert, and Hongxin Zhao. 2020. "Formal and Informal Institutional Pressures on Corporate Social Responsibility: A Cross-Country Analysis." *Corporate Social Responsibility and Environmental Management* 27 (2): 786–802. <https://doi.org/10.1002/csr.1844>.
- United Nations Environmental Programme (UNEP). 2023. *Inclusive Wealth Report 2023: Measuring Sustainability and Equity*. <https://doi.org/10.59117/20.500.11822/43131>.

- International Human Dimensions Programme on Global Environmental Change (UNU-IHDP) and UNEP. 2014. *Inclusive Wealth Report 2014: Measuring Progress toward Sustainability*. Cambridge: Cambridge University Press.
- Vargas-Santander, Karen Gloria, Susana Álvarez-Diez, Samuel Baixauli-Soler, and María Belda-Ruiz. 2023. "Corporate Social Responsibility and Financial Performance: Does Country Sustainability Matter?" *Corporate Social Responsibility and Environmental Management*. <https://doi.org/10.1002/csr.2539>.
- Xie, Jun, Yoshitaka Tanaka, Alexander Ryota Keeley, Hidemichi Fujii, and Shunshuke Managi. 2023. "Do Investors Incorporate Financial Materiality? Remapping the Environmental Information in Corporate Sustainability Reporting." *Corporate Social Responsibility and Environmental Management*. <https://doi.org/10.1002/csr.2524>.
- Yoo, Sunbin, Alexander Ryota Keeley, and Shunsuke Managi. 2021. "Does Sustainability Activities Performance Matter during Financial Crises? Investigating the Case of COVID-19." *Energy Policy* 155: 112330. <https://doi.org/10.1016/J.ENPOL.2021.112330>.
- Zhang, Jing, and Shuang Zi. 2021. "Socially Responsible Investment and Firm Value: The Role of Institutions." *Finance Research Letters* 41: 101806. <https://doi.org/10.1016/j.frl.2020.101806>.
- Zou, Jie, and Changqi Wu. 2013. "From Implicit CSR to Explicit CSR: A Framework for Understanding of CSR of Chinese Firms in Africa." *Academy of Management Proceedings* 1 (1): aomafr.2012.032. <https://doi.org/10.5465/aomafr.2012.0326>.

# **Environmental, Social, and Governance Performance and Financial Impacts**

## *Comparative Analysis of Companies in Asia*

This paper investigates environmental, social, and governance (ESG) performance and financial impacts across 38 economies from 2013 to 2022, with a particular focus on Asian firms. The key findings in the paper include disparities in ESG assessments due to differing methods among rating agencies, significant potential for ESG improvement in Asian companies compared with their European counterparts, and relatively stronger positive financial impacts of ESG practices in Southeast Asia.

## **About the Asian Development Bank**

ADB is committed to achieving a prosperous, inclusive, resilient, and sustainable Asia and the Pacific, while sustaining its efforts to eradicate extreme poverty. Established in 1966, it is owned by 68 members—49 from the region. Its main instruments for helping its developing member countries are policy dialogue, loans, equity investments, guarantees, grants, and technical assistance.



**ASIAN DEVELOPMENT BANK**

6 ADB Avenue, Mandaluyong City

1550 Metro Manila, Philippines

[www.adb.org](http://www.adb.org)