

RESEARCH ARTICLE

The Analysis of Peer Effects in Environmental, Social, and Governance (ESG) Disclosure: The Role of Firm Performance

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ABSTRACT

Environmental, Social, and Governance (ESG) disclosure has become a central mechanism for firms to signal corporate responsibility and manage stakeholder perceptions. Research suggests that firms' disclosure decisions are influenced not only by internal strategies but also by the behaviors of their peers, leading to intra-industry effects. These effects can take the form of imitation or reciprocal influence, and firm performance may shape how these peer dynamics operate. This study examines the intra-industry peer effect on ESG disclosure, emphasizing the moderating role of firm performance. The sample includes 117 companies listed on the Tehran Stock Exchange from 2012 to 2023. ESG disclosure was measured using a composite index constructed via Principal Component Analysis (PCA). Multiple linear regression models with year-fixed effects were used to test the hypotheses. The results confirm a positive intra-industry peer effect, showing that firms tend to align their ESG disclosure with the overall level of disclosure in their industry. Weak-performing firms imitate high-performing peers, whereas high-performing firms do not follow weaker peers. Low-performing firms also exhibit a reciprocal effect, mutually influencing each other, while high-performing firms display negative reciprocal effects, reflecting strategic differentiation. These findings reveal a performance-based asymmetry in ESG peer dynamics and provide insights into how imitation and reciprocal behaviors vary across firms. The study contributes to the literature on ESG disclosure by clarifying the mechanisms of intra-industry peer effects and offers practical implications for managers and regulators seeking to guide ESG reporting practices.

Introduction

In recent years, environmental, social, and governance (ESG) disclosure has become a central concern for investors, regulators, and other stakeholders. Growing demands for transparency and accountability have compelled firms to improve the quality and credibility of their ESG reporting in order to strengthen stakeholder trust and enhance corporate reputation. Within this evolving landscape, peer influence has emerged as an important mechanism shaping corporate disclosure behavior. Because firms operating within the same industry share structural, technological, and competitive similarities, and are interdependent and often respond strategically to each other's actions. As a result, ESG disclosure decisions are rarely made in isolation; rather, they are influenced by the observable practices of peer firms. This within-industry interdependence can lead to convergence in corporate strategies and reporting practices, a phenomenon whose broader implications have historically been underestimated (Duong et al., 2015).

A growing body of empirical research documents that imitation is a common corporate response to uncertainty and competitive pressure, particularly in the domain of information disclosure (Yang et al., 2017). Rooted in sociological perspectives that emphasize social learning and conformity within reference groups, firms frequently model their decisions on the observed behavior of comparable organizations. Consistent with this view, prior studies have identified peer effects across a wide range of corporate policies, including financing, investment, innovation, and ESG-related activities. For example, in the area of capital structure decisions, Lee et al. (2017) show that firms' leverage choices are significantly shaped by the financing behavior of their industry peers. These findings suggest that peer dynamics are a pervasive feature of corporate decision-making and may play a similarly important role in shaping ESG disclosure practices.

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Despite accumulating evidence on peer effects, an important theoretical question remains insufficiently addressed: Under what conditions are firms more likely to imitate their peers in ESG disclosure? Existing studies indicate that firms tend to emulate higher-quality ESG reporting when such practices become prevalent within their industry (Hu et al., 2022). Peer disclosure thus operates as a benchmarking mechanism, establishing informal standards against which firms are evaluated by investors, customers, and other stakeholders. When peer firms demonstrate superior ESG performance, competitive and reputational pressures intensify, motivating other firms to adjust their own disclosure practices accordingly. However, firms may not respond uniformly to such pressures. A firm's internal characteristics—particularly its financial performance—may shape both its incentives and its capacity to engage in imitation.

Prior research provides indirect evidence that corporate performance influences peer dynamics. Leary and Roberts (2014) and Chen and Ma (2017) suggest that firm-specific conditions affect the strength of within-industry peer effects. In the context of ESG, Hu et al. (2022) argue that poorly performing firms are more likely to imitate the disclosure practices of high-performing peers in order to enhance legitimacy and reduce survival risk. Similarly, Shen and Su (2012) find that firms in emerging markets frequently mimic the ESG behaviors of more successful competitors. These findings imply an inverse relationship between firm performance and reliance on peer disclosure: The weaker a firm's performance, the stronger its tendency to imitate industry leaders (Hu et al., 2022). Nevertheless, the moderating role of corporate performance in ESG peer effects has not been systematically examined. Whether financial strength reduces dependence on peer benchmarks or alters the nature of peer interaction remains an open empirical question.

This study addresses this gap by examining the peer effect in ESG disclosure with a particular focus on the moderating role of corporate performance. Specifically, we investigate whether firms with weaker financial performance exhibit stronger imitative behavior in response to peer ESG disclosure and whether financially stronger firms rely less on such benchmarking mechanisms. Furthermore, we distinguish between reciprocal and imitative peer effects, thereby providing a more nuanced understanding of how disclosure practices diffuse within industries.

Our analysis is conducted in the context of the Iranian capital market, an emerging economy characterized by evolving ESG practices and developing disclosure standards. To the best of our knowledge, no prior domestic study has examined the peer effect in ESG disclosure while incorporating the moderating influence of firm performance. Existing local research, such as Jodaki et al. (2023) and Kordestani and Jafari Sough (2023), has explored peer effects in areas such as earnings management and investment decisions, but ESG disclosure remains largely unexamined. By focusing on ESG reporting within this institutional setting, our study extends the literature on peer effects to a new and policy-relevant domain.

This research contributes to the literature in three important ways. First, it extends the growing body of research on peer effects in ESG disclosure by providing evidence from an emerging market characterized by distinct institutional, regulatory, and informational environments. By examining peer dynamics in a developing economy, the study offers contextual validation and boundary-condition insights that complement existing evidence largely derived from developed markets. Second, rather than treating peer effects as homogeneous, this study conceptualizes corporate performance as a boundary condition that systematically shapes the direction and intensity of intra-industry peer influence. By demonstrating performance-based asymmetries in peer responses, the paper moves beyond uniform peer-effect assumptions and highlights how strategic positioning affects disclosure behavior. Third, by explicitly distinguishing between imitative and reciprocal peer effects—and showing that reciprocal dynamics can be either positive (convergence) or negative (strategic differentiation)—the study refines the theoretical understanding of how ESG disclosure practices diffuse within industries. This differentiation clarifies the mechanisms underlying peer influence and provides a more nuanced framework for analyzing ESG disclosure dynamics.

The remainder of the paper proceeds as follows. The next section presents the theoretical framework and reviews the relevant empirical literature. We then describe the research design and methodology, followed by the empirical findings. The final section discusses the implications of the results and offers concluding remarks and suggestions for future research.

Theoretical Framework

Corporate Social Responsibility (CSR) emphasizes ethics, health, education, environmental protection, social welfare, and corporate governance. In recent decades, industrial advancement alongside limited natural resources and environmental constraints has heightened societal attention to environmental preservation. Growing stakeholder demands have encouraged companies to engage in environmental and social responsibilities to achieve sustainable economic development that improves the quality of life for employees, their families, the environment, and society at large (Eccles & Serafeim, 2013). Corporate sustainability encompasses all activities and strategies that meet current stakeholder needs while preserving human and natural resources for the future. It integrates CSR and corporate governance into a broader framework, emphasizing long-term organizational responsibility (Chen & Ma, 2017).

Within this framework, ESG factors—environmental, social, and governance—serve as the primary non-financial dimensions for assessing corporate sustainability. The environmental dimension addresses the factors managers and investors prioritize when making investment decisions, which vary by industry. For example, carbon emissions are of critical concern for a coal-powered plant but less relevant for a bank (Eccles & Serafeim, 2013). Common environmental considerations include climate change risk, environmental accidents, water and energy management, greenhouse gas emissions and air pollution, waste and wastewater management, and biodiversity impacts. The social dimension focuses on human rights, workforce health and safety, product safety, non-discrimination, and the social concerns of customers, employees, and supply chains. The significance of particular social factors depends on company type and context; for instance, human rights issues are more critical in developing societies that rely on low-cost labor than in developed economies with skilled workforces (Eccles & Serafeim, 2013). Corporate governance, the third dimension, defines the system of practices and processes by which a company is directed and controlled, outlining the distribution of rights and responsibilities among the board of directors, managers, shareholders, and other stakeholders, and establishing rules for decision-making (Bernardi & Stark, 2016). ESG disclosure—the formal communication of environmental, social, and governance information to stakeholders—enhances transparency, allowing society to evaluate corporate actions, resource consumption, and sustainability practices, while guiding firms toward responsible development (Goldesin & Yang, 2017). Although

ESG activities incur costs, they are expected to improve long-term reputation, credibility, financial performance, competitiveness, and reduce overall risk, including bankruptcy risk (Healy & Palepu, 2001).

Transparent ESG disclosure also functions as a management tool for signaling corporate performance and governance quality to external investors. By clearly communicating ESG performance, firms respond to increasing societal and stakeholder expectations, helping them align strategies with sustainable development goals (Eccles & Serafeim, 2013). Moreover, ESG practices contribute to long-term corporate value by informing investors, enhancing trust, and potentially reducing costs and risks associated with environmental or social mismanagement.

Given the growing importance of ESG, firms often look to their industry peers as behavioral benchmarks. The peer effect refers to the process by which the actions of one firm are endogenously influenced by the behavior of its peers, with the goal of improving decision-making, reducing uncertainty, or gaining competitive advantage (Manski, 1993; Chen & Ma, 2017). In finance and accounting literature, Han et al. (1989) were among the first to examine how peer firms—companies within the same industry whose behaviors mutually influence one another—affect corporate decisions. Early studies on peer effects, such as their influence on individual and household decisions (Georgarakos et al., 2014) or criminal behavior (Glaeser et al., 1996), originated in sociology, highlighting that imitative behavior within social groups is common and observable—a pattern equally relevant to corporate contexts.

Empirical evidence in the corporate domain demonstrates that firms often mimic the policies and disclosure practices of their peers (Adhikari & Agrawal, 2018; Leary & Roberts, 2014). The strength of this imitation is higher in industries where managers face greater uncertainty, possess lower internal information quality, or operate in early lifecycle stages characterized by volatile investments (Cho et al., 2023). For example, changes in a firm's earnings-per-share can trigger corresponding adjustments in peer firms' performance (Kordestani & Jafari, 2023). Additionally, the financial performance of peer firms can influence a company's accounting choices, including discretionary accruals, reflecting the significant impact of peer behavior on corporate decision-making. In line with this, studies have shown that companies often benchmark and imitate the investment behavior of their industry peers to guide their own strategy, determine optimal investment levels, and avoid the costs associated with repeated operational trial-and-error (Jodaki et al., 2023).

Two complementary theoretical perspectives explain why firms imitate their peers. The information-based theory posits that imperfect information drives firms to learn from and emulate peers' actions (Lieberman & Asaba, 2006). The competition-based theory complements this perspective by emphasizing that companies in competitive environments mimic peers' strategies to avoid redundant costs and mitigate the risk of investment failure (Cho et al., 2023). Peer influence operates via two mechanisms. First, managers gain positive informational benefits when peer disclosures complement their private information, particularly under conditions of high external uncertainty (Cheng et al., 2013). Second, managers exercise caution in disclosure when market participants hold rational expectations about their motives, with peer behavior shaping perceived risks (Peress, 2010).

Social Learning Theory further supports the phenomenon of imitation, suggesting that organizations acquire new behaviors by observing and emulating others (Ali Rind et al., 2023). Institutional Theory emphasizes that imitation helps firms gain legitimacy within their business environment (DiMaggio & Powell, 1983). Herding behavior in finance occurs when managers or investors follow peers' actions rather than relying solely on private information, driven by the fear of isolation or individual error (Devenow & Welch, 1996). Competitive pressures accelerate imitation, especially in ESG reporting, as firms seek to meet or surpass peer benchmarks (Porter, 1980). Empirical evidence demonstrates that the performance of peers can positively influence a firm's own disclosure practices, moderated by institutional and competitive contexts (Leary & Roberts, 2014; Machokoto et al., 2021; Shen and Su, 2012). Moreover, managerial characteristics, including political attitudes, can shape the magnitude of peer effects on ESG activities.

In summary, ESG disclosure is shaped both by the intrinsic importance of sustainability practices and by the behavior of peer firms. Firms benchmark against peers to guide strategic decisions, manage investment risks, and align with industry norms (Hu et al., 2022). Peer imitation is therefore a critical mechanism through which intra-industry ESG practices diffuse, generating positive informational externalities, promoting transparency, and enhancing overall sustainability. Based on this framework, the first research hypothesis is proposed:

Hypothesis 1: There is a positive intra-industry peer effect in ESG disclosure.

In today's competitive business environment, firms are compelled to present their activities in a favorable manner to attract stakeholders, secure capital under advantageous conditions, and ensure long-term survival. Corporate performance plays a central role in this process. It reflects the outcomes of organizational activities and indicates the extent to which firms achieve their strategic objectives and create value for stakeholders (Neely, 2005). For managers, performance is directly tied to compensation and job security, which can incentivize strategic behavioral responses, including informational imitation of other firms (Scott, 2012; Sunder, 1997).

Although prior evidence shows that ESG disclosure at the industry level is influenced by peer behavior (Hu et al., 2022; Leary & Roberts, 2014), such influence does not operate uniformly across firms. The intensity and direction of peer effects depend on firms' internal conditions, particularly their performance level. Whether a firm is high- or low-performing shapes its access to resources, credibility in capital markets, stakeholder pressures, and strategic motivations regarding ESG disclosure (Cao et al. 2019; Hu et al., 2022). High-performing firms typically possess greater financial flexibility and reputational capital, which enhances the perceived credibility of their ESG disclosures. In contrast, low-performing firms face stronger legitimacy concerns and greater pressure to conform to industry expectations (Hu et al., 2022; Suchman, 1995).

In this sense, corporate performance can be viewed as a key condition that influences whether firms are more likely to engage in reciprocal interaction with similar peers or to imitate more successful firms. Within the intra-industry peer effect literature, two distinct mechanisms can be identified: Reciprocal peer effects and mimetic peer effects. A reciprocal peer effect arises when firms with comparable performance levels mutually adjust their disclosure practices in response to one another. This mechanism reflects strategic benchmarking and competitive alignment among similar firms. Because these firms operate under comparable resource constraints and competitive pressures, they monitor each other closely and tend to converge in disclosure intensity (Hu et al., 2022).

By contrast, a mimetic peer effect represents asymmetric imitation across performance tiers. Drawing on social comparison arguments (Festinger, 1954) and legitimacy considerations (Suchman, 1995), lower-performing firms may imitate the disclosure practices of higher-performing firms to reduce legitimacy gaps, enhance their image, and alleviate stakeholder pressure. Such imitation is typically one-directional. High-performing firms, endowed with stronger credibility and benchmark status, lack incentives to mimic weaker competitors, as doing so could dilute their signaling value and competitive differentiation (Hu et al., 2022).

From the perspective of Legitimacy Theory, high-performing firms enjoy stronger social standing and sufficient resources, which allow them to engage in ESG disclosure as a credible strategic choice rather than a reactive measure (Suchman, 1995). Signaling Theory further suggests that ESG disclosure by strong firms conveys credible information about their superior capabilities and long-term sustainability (Hu et al., 2022). Because these firms compete for reputation, capital, and stakeholder trust, they are likely to benchmark against one another, leading to mutual adjustment in ESG disclosure practices. Among high-performing firms, ESG disclosure therefore becomes an area in which companies seek to remain aligned with similarly successful competitors in order to maintain their relative standing in the market. However, they are unlikely to imitate weaker firms, whose disclosures may carry lower credibility and weaker strategic value. Adopting the disclosure practices of lower-performing firms could weaken their competitive position and reduce the distinctiveness of their sustainability signals.

Taken together, corporate performance shapes both the intensity and direction of intra-industry peer effects in ESG disclosure. High-performing firms are expected to exhibit reciprocal peer effects within their own group while refraining from imitating weaker firms. Based on this framework, the hypotheses 2 and 3 are proposed:

Hypothesis 2: In high-performing firms, there is a reciprocal within-industry peer effect in ESG disclosure with other high-performing firms.

Hypothesis 3: In high-performing firms, there is no imitative within-industry peer effect in ESG disclosure with low-performing firms.

Conversely, low-performing firms experience greater pressure from stakeholders, capital markets, and regulators to improve transparency and accountability. According to Stakeholder Theory, such firms are motivated to emulate successful companies to secure investor confidence and customer support (Freeman, 1984). Empirical evidence supports this asymmetric imitation pattern. Bammer and Paulin (2006) show that poorly-performing firms in competitive environments face social pressure to imitate rivals, which can stimulate ESG disclosure improvements. Bolognesi et al. (2025) show that ESG transparency is shaped by both stakeholder and regulatory pressures. Under voluntary disclosure regimes, stakeholder demands—particularly from employees and environmentally sensitive industries—drive higher transparency. However, in mandatory regimes, regulatory pressure becomes the dominant force, with evidence also suggesting cross-market spillover effects on firms outside the regulated region. In the context of intra-industry peer effects, Hu et al. (2022) demonstrate that poorly-performing firms are inclined toward informational imitation of high-performing peers. These findings align with the notion of rational imitation; whereby weaker firms selectively imitate stronger firms to improve legitimacy and competitive positioning.

At the same time, convergence dynamics may also occur within the cohort of low-performing firms. To avoid marginalization and maintain a minimum level of legitimacy, weaker firms may mutually adjust their disclosure practices among themselves. Although the quality and substance of such disclosures may differ from those of high-performing firms, this process can still generate reciprocal peer effects within the lower performance tier (DiMaggio & Powell, 1983; Hu et al., 2022). Hence, low-performing firms are expected to engage in mimetic imitation of high-performing firms and to display reciprocal adjustment within their own cohort. Accordingly, the hypotheses 4 and 5 are proposed:

Hypothesis 4: In low-performing firms, there is an imitative within-industry peer effect in ESG disclosure with high-performing firms.

Hypothesis 5: In low-performing firms, there is a reciprocal within-industry peer effect in ESG disclosure with other low-performing firms.

Research method

This study is applied in purpose and descriptive-correlational in nature. To test the hypotheses, multiple regression models and EViews12 were employed.

The statistical population of this study consists of companies listed on the Tehran Stock Exchange (TSE) during the period 2012–2023. The final sample was selected according to several criteria to ensure data consistency and comparability. Specifically, only companies that were listed on the TSE before 2012 and whose fiscal year ends on March 19th were included, while companies operating in the financial intermediation sectors, such as banking, insurance, or investment, were excluded. Firms were also required to have complete annual data for all variables throughout the research period and to have maintained a consistent fiscal year-end during this time. To ensure reliable calculation of industry-level variables, industries with fewer than five firms were excluded. After applying these selection criteria, the final sample comprises 117 companies across 12 industries. The detailed procedure for sample selection is presented in Table (1).

Table 1. Sample Selection Criteria

Step	Criteria	Number of Firms
1	Companies listed on the Tehran Stock Exchange (TSE) by the end of 2023	438
	Companies listed after 2012 on the TSE	56
2	Companies with fiscal year-end not on March 19 or with a change in fiscal year	86
3	Companies in financial intermediation sectors (banks, investment, leasing)	95

4	Companies with missing financial data during the study period	49
5	Companies in industries with fewer than five members	35
Final Sample		117

To test the first hypothesis, consistent with the methodology of [Hu et al. \(2022\)](#), the following regression model was employed:

$$ESG_{i,t} = \alpha + \beta_1 ESG_Industry_{j,t-1} + \beta_2 Size_{i,t} + \beta_3 CR_{i,t} + \beta_4 LEV_{i,t} + \beta_5 Tobin's\ Q_{i,t} + \beta_6 Grow_{i,t} + \beta_7 Auditor_size_{i,t} + \beta_8 Opin_{i,t} + \varepsilon_i \quad (1)$$

ESG_{i,t} represents the ESG disclosure score of firm *i* in year *t*. **ESG_Industry_{j,t-1}** denotes the industry-level ESG disclosure score for industry *j* in the previous year, excluding firm *i*. **SIZE** is firm size. **CR** is ownership concentration. **LEV** represents financial leverage. **Tobin's Q** measures firm performance. **Grow** is the operating income growth rate. **Auditor_Size** denotes auditor size, and **Opin** represents the audit opinion.

The coefficient β_1 represents the effect of industry-level ESG disclosure on firm-level ESG disclosure that is, the within-industry peer effect. In support of the first hypothesis, β_1 is expected to be positive and statistically significant, indicating the presence of this peer effect in ESG disclosure practices.

To test the second and third hypotheses, firms were divided into two groups strong and weak performers based on their annual performance. This classification utilized the median performance value as the threshold: Firms performing above the sample median were categorized as strong performers, while those below the median were classified as weak performers. This grouping was conducted separately for each year. The median was selected as the classification criterion because it is robust to outliers and asymmetric data distributions, ensuring the creation of balanced and comparable groups. Using the mean instead could have distorted the classification due to the influence of extreme performers, potentially compromising the generalizability of the results.

Following the methodology of [Hu et al. \(2022\)](#), regression model (2) was estimated using the sample of strong-performing firms to test the second and third hypotheses.

$$ESG_{i,t} = \alpha + \beta_1 H_ESG_Industry_{j,t-1} + \beta_2 L_ESG_Industry_{j,t-1} + \beta_3 Size_{i,t} + \beta_4 CR_{i,t} + \beta_5 LEV_{i,t} + \beta_6 Grow_{i,t} + \beta_7 Auditor_Size_{i,t} + \beta_8 Opin_{i,t} + \varepsilon_{i,t} \quad (2)$$

Where:

H_ESG_Industry_{j,t-1}: The average ESG disclosure score of all high-performing firms in industry *j*, excluding the focal firm *i*, calculated based on the ESG scores of these peer firms in the prior year. This ensures that the focal firm's own score does not contribute to the industry-level measure.

L_ESG_Industry_{j,t-1}: The average ESG disclosure score of all low-performing firms in industry *j*, excluding the focal firm *i*, calculated based on the ESG scores of these peer firms in the prior year.

All other variables are defined as in Equation (1).

Since regression model (2) is estimated using the sample of high-performing firms, the coefficient β_1 represents the influence of ESG disclosure by high-performing peers on the ESG disclosure of other high-performing firms within the same industry. In other words, this coefficient captures the reciprocal peer effect. If β_1 is positive and statistically significant, it would provide support for the second hypothesis. The coefficient β_2 represents the influence of ESG disclosure by low-performing peers on the ESG disclosure of high-performing firms within the same industry, reflecting what is known as the imitative peer effect. If β_2 is statistically insignificant, it would provide support for the third hypothesis.

To test the fourth and fifth hypotheses, regression model (2) is estimated using the sample of low-performing firms. Consequently, the coefficient β_1 now represents the influence of ESG disclosure by high-performing peers on the ESG disclosure of low-performing firms within the same industry. A positive and statistically significant β_1 would indicate the presence of an imitative peer effect (where low-performing firms mimic high-performing ones), providing support for the fourth hypothesis. The coefficient β_2 represents the influence of ESG disclosure by other low-performing peers on a given low-performing firm's own ESG disclosure within the industry. In other words, this coefficient captures a reciprocal peer effect among low performers. If β_2 is positive and statistically significant, it would provide support for the fifth hypothesis.

Research variables

The variables used in this research, following the study by [Hu et al. \(2022\)](#), include dependent, independent, moderating, and control variables, each of which is described below.

Dependent Variable: The dependent variable is the corporate ESG disclosure score. Following [Fakhari et al. \(2017\)](#), we conducted a content analysis of board of directors' reports using a checklist methodology. Each ESG indicator was assigned a score of 1 if present and 0 if absent. Separate scores were computed for the Environmental (E), Social (S), and Governance (G) dimensions.

To construct a composite ESG disclosure score, Principal Component Analysis (PCA) was applied to these three dimensions. Only the first principal component, which explained 64.38% of the total variance, was retained. Factor loadings were positive and balanced across E (0.597), S (0.604), and G (0.528). It should be noted that these coefficients were derived from the current study's dataset, not taken from [Fakhari et al. \(2017\)](#). The resulting composite ESG score is calculated as:

$$ESG = (0.5969 \times E) + (0.6039 \times S) + (0.5280 \times G) \quad (3)$$

ESG: The composite Environmental, Social, and Governance disclosure score

E: The Environmental dimension

S: The Social dimension

G: The Governance dimension

The construction of the composite ESG index using PCA, including the explained variance and factor loadings, is presented in the result section.

Independent variable: The independent variable is industry-level ESG disclosure (ESG_Industry). This variable is computed by taking the mean ESG score of all industry peers, excluding the focal firm (i).

Grouping variable: Firm performance (Tobin's Q) is used as a grouping variable to divide the sample into high- and low-performing firms. This approach allows us to examine differences in peer influence on ESG disclosure across performance groups without using a classical interaction term. Tobin's Q is calculated based on Equation (4).

$$\text{Tobin's Q} = \frac{\text{Market Value of Equity} + \text{Book Value of Debt}}{\text{Book Value of Total Assets}} \quad (4)$$

Market Value of Equity = Number of Outstanding Shares × Market Price Per Share at end year

Control Variables

In this study, the variables that may influence the ESG disclosure of companies, following the research of Hu et al. (2022), Khouzin et al. (2018), and Akbas (2014), were controlled. These variables are as follows:

Company Size (SIZE): The natural logarithm of total assets.

Ownership Concentration (CR): Equal to the sum of the percentage of ownership held by shareholders owning at least 5% of the company's shares (Baharmoghadam et al., 2013).

Financial Leverage (LEV): The ratio of total liabilities to total assets.

Tobin's Q: The ratio of the market value of assets (book value of debt plus the market value of equity) to the book value of the company's assets. In Hypotheses 2–5, Tobin's Q is removed from the set of control variables and included as a grouping variable to examine its effect on the peer influence in ESG disclosure.

Operating Income Growth Rate (Grow): The difference between the operating income of year t and year t-1 divided by the operating income of year t-1.

Auditor Size (Auditor_size): If the company's audit is conducted by the Audit Organization or auditing firms with an "A" rating, it is assigned a value of 1; otherwise, it is 0. This dichotomization follows standard practice in prior accounting researches such as Hu et al. (2022), where binary coding is commonly used to simplify analysis and reflect meaningful distinctions in audit quality.

Audit Opinion (Opin): If the auditor has issued an adverse or qualified opinion, the value is 1; otherwise, it is 0. Binary coding is widely used in the literature to facilitate numerical analysis while preserving the interpretive meaning of audit opinions.

Results

Table (2) presents the descriptive statistics for the study's main variables. To mitigate the effect of outliers, the data were winsorized at the 1st and 99th percentiles.

Table 2. Descriptive Statistics

Variable	Mean	Median	Max	Min	Std. Dev
ESG	9.4059	9.6425	19.7059	0.0000	3.7781
ESG_ Industry	8.9814	8.8784	15.3887	4.2750	1.7823
Tobin's Q	2.4461	1.8869	6.8592	1.0174	1.5194
CR	0.6876	0.7300	1.0000	0.0000	0.2030
LEV	0.5283	0.5286	0.8693	0.1761	0.1708
GROW	0.5462	0.3043	3.8152	-1.3241	1.1889
SIZE	15.2177	14.9380	21.8994	10.5329	1.8230

According to Table (2), the ESG disclosure score, with a mean of 9.406 and a median of 9.643, covers a wide range from zero to 19.706. This indicates that the sample comprises firms with varying levels of disclosure. The industry-level ESG disclosure has a mean of 8.981 and a median of 8.878. The close alignment of these values indicates a relative convergence in disclosure practices among firms within the same industry. Furthermore, the firm performance variable (Tobin's Q) has a mean of 2.446 and a median of 1.887. The higher mean suggests a right-skewed distribution, where a limited number of high-performing firms pull the average upward. This characteristic justifies the use of the median value to categorize firms into high- and low-performance groups for subsequent analysis. One measure of dispersion is the standard deviation, which indicates how observations deviate from the mean. For the dependent variable (the composite ESG disclosure score), the standard deviation is 3.77. This value represents the average dispersion of the individual ESG scores around the mean. The mean financial leverage of the firms is 0.528, with a median of 0.529. The close proximity of these two values indicates that the data is symmetrically distributed and clustered around the central value. This is further supported by a relatively low standard deviation of 0.171 and a range from 0.176 to 0.869, confirming that most companies maintain similar leverage levels.

Table 3. Frequency Distribution of Study Variables

Audit Opinion	Auditor Size	Amount
251	942	1
1153	462	0
1404	1404	Total

According to Table (3), the total number of observations in the study is 1,404. Regarding the auditor size variable, 942 observations (firm-years) were audited by the Audit Organization or top-tier audit firms, while the remaining 462 were audited by other firms. Concerning the audit opinion, out of the 1,404 observations examined, 1,153 received an unqualified (clean) opinion. The remaining 251 observations received other types of audit opinions. This leads to the conclusion that unqualified opinions constitute the majority of the audit reports in the sample.

Construction of ESG Index

To construct the composite ESG index, Principal Component Analysis (PCA) was applied to the three ESG dimensions (E, S, and G) using the correlation matrix. Prior to extraction, sampling adequacy was assessed using the Kaiser–Meyer–Olkin (KMO) test and Bartlett's test of sphericity. The KMO value was 0.775, exceeding the recommended threshold of 0.6, indicating adequate sampling adequacy. Bartlett's test was statistically significant ($\chi^2(3) = 578.902$, $p < 0.001$), confirming that the correlation matrix was appropriate for factor extraction.

The Kaiser criterion (eigenvalue > 1) was used to determine the number of components to retain. The results show that only the first principal component has an eigenvalue greater than one (Eigenvalue = 1.931), explaining 64.38% of the total variance. Therefore, only the first component was retained as the composite ESG index. The relatively high explained variance suggests that this component adequately captures the common variation among the environmental, social, and governance dimensions. The factor loadings of the first component are positive and relatively balanced across E (0.597), S (0.604), and G (0.528), indicating that the constructed index represents an overall ESG performance measure. No rotation was applied, as only a single composite component was extracted.

Given the absence of standardized third-party ESG ratings for Iranian firms, constructing a PCA-based index provides a data-driven and objective approach to aggregating ESG dimensions. However, this measurement approach may limit direct comparability with international ESG rating systems. Future research may compare the PCA-based index with established third-party ESG ratings where available.

Hypothesis Testing

The research regression models were estimated using Ordinary Least Squares (OLS), controlling for year-fixed effects. Industry fixed effects are not included because the main independent variables are calculated at the peer or industry level, and including industry fixed effects could absorb much of their variation, reducing explanatory power. Diagnostic tests were conducted to assess the model assumptions. The White test was used for heteroskedasticity and the Breusch-Godfrey test for first-order autocorrelation. The p -values for both tests were below 0.05, indicating the presence of both heteroskedasticity and autocorrelation. To mitigate the effects of these issues on the regression estimates, the Newey-West standard error correction was applied. Furthermore, the Variance Inflation Factor (VIF) statistic was used to examine multicollinearity among the explanatory variables. The VIF for all explanatory variables in the models was below 10, indicating that multicollinearity is not a concern.

Testing Hypotheses 1

A summary of the results from estimating regression model (1) for the first hypothesis is presented in Table (4).

Table 4. Regression Results for Testing the First Hypothesis

ESG _{it} = $\alpha + \beta_1 \text{ESG_Industry}_{i,t-1} + \beta_2 \text{Size}_{i,t} + \beta_3 \text{CR}_{i,t} + \beta_4 \text{LEV}_{i,t} + \beta_5 \text{Tobin's Q}_{i,t} + \beta_6 \text{Grow}_{i,t} + \beta_7 \text{Auditor_Size}_{i,t} + \beta_8 \text{Opin}_{i,t} + \varepsilon_i$				
Variable	Coefficient	Std. Error	T-Statistic	P-Value
α	-1.8949	1.2526	-1.5128	0.1306
ESG_Industry	0.1683	0.0689	2.4399	0.0148
SIZE	0.5402	0.0657	8.2129	0.0000
CR	-0.0714	0.5054	-0.1412	0.8877
LEVERAGE	0.1823	0.5832	0.3126	0.7546
Tobin's Q	-0.1225	0.0672	-1.8225	0.0686
GROW	0.0347	0.0900	-0.3862	0.6993
Auditor_Size	-0.0988	0.2152	-0.4593	0.6461
OPIN	0.6968	0.2579	2.7009	0.0070
Year-fixed effects		yes		
Adjusted R ²		0.1446		
F-Statistic (Prob)		12.1472(0.0000)		

The F-statistic of 12.1472 (p -value = 0.0000) indicates that the overall regression model is highly significant. The adjusted R-squared value is 0.1446, suggesting that the independent and control variables explain approximately 14.5% of the variation in the dependent variable. The industry-level ESG disclosure variable is statistically significant at the 10% level (p -value = 0.0148), with a coefficient of 0.1683. This result indicates a positive and significant effect of peer firms' ESG disclosure on a focal firm's own ESG disclosure. In practical terms, the coefficient of 0.1683 indicates that an increase of one unit in the industry-level ESG disclosure is associated with an approximately 0.17-unit increase in a focal firm's ESG disclosure, highlighting a meaningful economic impact of peer-driven imitation within the industry. In other words, the analysis confirms the presence of a positive within-industry peer effect in ESG disclosure practices. Therefore, the first hypothesis is supported at the 90% confidence level. This finding implies that stronger ESG disclosure practices at the industry level encourage and enhance ESG disclosure at the individual firm level.

Among firm-level characteristics, performance-related variables show notable effects on ESG disclosure. Specifically, the coefficient of Tobin's Q is negative and significant, indicating that higher-performing firms tend to disclose less ESG information. This pattern may be explained through the lens of Legitimacy Theory and stakeholder pressure: Firms with stronger financial performance often enjoy higher credibility and face lower external pressures to signal their ESG activities. In contrast, weaker firms may engage in more extensive ESG disclosure to enhance legitimacy, reassure stakeholders, and maintain reputational standing. This negative association aligns with findings reported by Hu et al. (2023), reinforcing the interpretation that it reflects differences in strategic disclosure motivations across performance levels rather than neglect of ESG practices.

Testing Hypotheses 2 and 3

Table (5) presents the estimation results of regression model (2) for Hypotheses 2 and 3.

Table 5. Empirical Results for the Second and Third Hypotheses

ESG _{i,t} = $\alpha + \beta_1 H_ESG_Industry_{j,t-1} + \beta_2 L_ESG_Industry_{j,t-1} + \beta_3 Size_{i,t} + \beta_4 CR_{i,t} + \beta_5 LEV_{i,t} + \beta_6 Grow_{i,t} + \beta_7 Auditor_Size_{i,t} + \beta_8 Opini_{i,t} + \varepsilon_{i,t}$				
Variable	Coefficient	Std. Error	T-Statistic	Variable
α	0.1877	1.5962	0.1176	0.9064
H ESG_Industry	-0.1316	0.0763	-1.7239	0.0853
L ESG_Industry	-0.0586	0/0764	-0.0767	0.4431
SIZE	0.5004	0.0917	5.4538	0.0000
CR	0.4083	0.7559	0.5402	0.5893
LEVRAGE	0.5876	0.9524	0.6169	0.5375
GROW	-0.3722	0.1662	-2.2387	0.0256
Auditor_Size	0.6566	0.3979	1.6500	0.0995
OPIN	-0.0143	0.3256	-0.0440	0.9649
Year-fixed effects			yes	
Adjusted R ²			0.1460	
F-Statistic (Prob)			6.2100(0.0000)	

To test the second and third hypotheses, regression model (2) was estimated using the sub-sample of high-performing firms. According to the second hypothesis, a reciprocal within-industry peer effect on ESG disclosure was expected among high-performing firms. It was, therefore, anticipated that the coefficient for the variable ESG_Industry_H would be positive and significant. As shown in Table (5), the coefficient for this variable is statistically significant at the 10% level (p -value = 0.0853). However, contrary to the hypothesis, the coefficient is negative (-0.1316). The negative coefficient of -0.1316 indicates that a one-unit increase in the ESG disclosure of other high-performing firms is associated with an approximate 0.13-unit decrease in a focal high-performing firm's ESG disclosure, reflecting a meaningful economic impact of strategic differentiation among leading firms. Therefore, the second hypothesis is rejected at the 90% confidence level. Due to the negative sign of the coefficient, it can be concluded that among high-performing firms, there is no evidence of a positive reciprocal within-industry peer effect on ESG disclosure with other high-performing firms.

In accordance with the third hypothesis, it was proposed that among high-performing firms, there is no mimetic within-industry peer effect on ESG disclosure from low-performing firms. Consistent with the study's expectations, the results in Table (5) show that the coefficient for the ESG disclosure of low-performing firms is not statistically significant (p -value = 0.4431). For the third hypothesis, the non-significant coefficient implies that the ESG disclosure of low-performing firms has no economically meaningful effect on high-performing firms' ESG disclosure. As this p -value is greater than the 10% significance level, it indicates that the ESG disclosure of low-performing firms has no significant effect on the ESG disclosure of high-performing firms within the same industry. Therefore, the null hypothesis for Hypothesis 3 is not rejected. In other words, the findings provide no evidence of a mimetic peer effect where high-performing firms emulate the ESG disclosure practices of low-performing firms.

Testing Hypotheses 4 and 5

The fourth hypothesis posits that among low-performing firms, there is a mimetic within-industry peer effect on ESG disclosure from high-performing firms. The fifth hypothesis, in turn, proposes a reciprocal within-industry peer effect on ESG disclosure among low-performing firms. A summary of the results from estimating regression model (2) to test these two hypotheses is presented in Table (6).

Table 6. Empirical Results for the Fourth and Fifth Hypotheses

ESG _{i,t} = $\alpha + \beta_1 H_ESG_Industry_{j,t-1} + \beta_2 L_ESG_Industry_{j,t-1} + \beta_3 Size_{i,t} + \beta_4 CR_{i,t} + \beta_5 LEV_{i,t} + \beta_6 Grow_{i,t} + \beta_7 Auditor_Size_{i,t} + \beta_8 Opini_{i,t} + \varepsilon_{i,t}$				
Variable	Coefficient	Std. Error	T-Statistic	P-Value
α	-1.7800	1.6603	-1.0720	0.2841
H ESG_Industry	0.1722	0.0928	1.8549	0.0640
L ESG_Industry	0.1462	0.0791	1.8484	0.0650
SIZE	0.6088	0.0904	6.7327	0.0000
CR	-0.6409	0.6915	-0.9267	0.3544
LEVRAGE	-0.2688	0.7026	-0.3826	0.7021
GROW	0.1571	0.1209	1.2989	0.1944
Auditor_Size	-0.1875	0.3074	-0.6100	0.5420
OPIN	0.4629	0.3539	1.3078	0.1914
Year-fixed effects			yes	
Adjusted R ²			0.1495	
F-Statistic (Prob)			7.2921(0.0000)	

To test Hypotheses 4 and 5, regression model (2) was estimated using the sub-sample of low-performing firms. The model is highly significant, with an F-statistic of 7.2921 (p -value = 0.0000). The adjusted R-squared value is 0.1495, indicating that the independent and control variables explain approximately 15% of the variation in the dependent variable. In support of the fourth hypothesis, which predicted a mimetic peer effect from high-performing to low-performing firms, the results show that the variable for high-performing firms' ESG disclosure (ESG_Industry_H) is statistically significant at the 10% level (p -value = 0.0640). Its positive coefficient indicates that ESG

disclosure by high-performing firms has a positive and significant influence on the ESG disclosure of low-performing firms within the same industry. The positive coefficient of 0.1460 implies that a one-unit increase in the ESG disclosure of high-performing firms is associated with an approximately 0.15-unit increase in the ESG disclosure of low-performing firms. This finding confirms the presence of a mimetic within-industry peer effect. It suggests that low-performing firms not only rely on their own information but also emulate the ESG disclosure practices of high-performing firms in their industry. Therefore, Hypothesis 4 is supported at the 90% confidence level.

The fifth hypothesis proposed that a reciprocal within-industry peer effect exists for ESG disclosure among low-performing firms. The results support this proposition: the variable for peer low-performing firms' ESG disclosure (ESG_Industry_L) is statistically significant at the 10% level (p -value = 0.0650), with a positive coefficient of 0.1462. This coefficient suggests that when one low-performing firm increases its ESG disclosure by one unit, other low-performing firms in the industry tend to increase their ESG disclosure by approximately 0.15 units. This demonstrates a meaningful reciprocal peer effect, reflecting mutual convergence among weaker firms. This finding indicates that ESG disclosure by one low-performing firm has a positive and significant influence on the ESG disclosure of other low-performing firms within the same industry. In other words, the analysis confirms a reciprocal within-industry peer effect in ESG disclosure practices among low-performing firms. Therefore, Hypothesis 5 is supported at the 90% confidence level.

Conclusion and Recommendations

This study investigated the within-industry peer effect on ESG disclosure, with particular emphasis on the role of firm performance in shaping imitation and reciprocal behaviors. Rather than redefining ESG or peer effects, the analysis directly focused on how firms respond to the disclosure practices of performance-based peer groups within their industry.

The findings of the first hypothesis confirm the existence of a positive within-industry peer effect in ESG disclosure. Firms tend to align their ESG reporting practices with the prevailing disclosure level of their industry. This result indicates that ESG disclosure decisions are not made in isolation but are embedded within an informational and competitive environment where firms observe and respond to their peers. The presence of this positive peer effect suggests that ESG disclosure diffuses through industries via observational learning and benchmarking mechanisms. The results also reveal a negative association between Tobin's Q and ESG disclosure. This finding suggests that firms with stronger financial performance tend to disclose relatively less ESG information. Rather than indicating a lack of ESG engagement, this pattern reflects differences in strategic disclosure incentives. High-performing firms may rely more heavily on their established financial credibility and therefore face less legitimacy pressure to signal ESG commitment extensively. In contrast, lower-performing firms may use ESG disclosure more actively as a reputational and legitimizing instrument to reassure stakeholders and strengthen external perceptions.

The results related to high-performing firms provide important insights into heterogeneous peer dynamics. The findings of the second hypothesis show that the reciprocal peer effect among high-performing firms is negative and significant. This indicates that when other high-performing firms increase their ESG disclosure, focal high-performing firms tend to differentiate rather than converge. Instead of engaging in mutual imitation, strong performers appear to pursue strategic differentiation. This behavior can be interpreted as evidence that leading firms attempt to preserve distinct positioning, avoid direct comparability, and protect reputational capital. In competitive environments, differentiation can serve as a strategic tool to signal uniqueness, innovation, or superior internal capabilities. Therefore, the rejection of the second hypothesis is not an absence of peer influence, but rather evidence of a negative reciprocal peer effect reflecting strategic divergence among strong firms.

The findings of the third hypothesis further reinforce this asymmetry. High-performing firms do not exhibit mimetic behavior toward low-performing firms. The absence of such imitation suggests that leading firms do not perceive informational value or strategic advantage in adopting the disclosure practices of weaker counterparts. High-performing firms are more likely to act as industry reference points rather than followers, reinforcing their role as disclosure leaders.

In contrast, the behavior of low-performing firms follows a different logic. The findings of the fourth hypothesis confirm a mimetic peer effect from high-performing to low-performing firms. Weak-performing firms actively emulate the ESG disclosure practices of strong performers within the same industry. This pattern reflects convergence behavior driven by benchmarking, legitimacy-seeking, and reputational improvement motives. For weaker firms, imitation of leading firms provides a relatively low-cost mechanism to align with perceived best practices and reduce informational uncertainty.

The fifth hypothesis further shows that low-performing firms also exhibit a positive reciprocal peer effect among themselves. Unlike strong firms, weaker firms tend to converge mutually in their ESG disclosure practices. This reciprocal imitation may stem from similar resource constraints, comparable strategic pressures, and shared organizational environments. Convergence among weak performers can reduce perceived risk, create collective legitimacy, and establish achievable industry norms within their performance segment.

With the exception of the second hypothesis, the findings are consistent with prior research on peer effects in corporate decision-making, including [Hu et al. \(2022\)](#), [Du and Shen \(2018\)](#), [Chen and Ma \(2017\)](#) and [Leary and Roberts \(2014\)](#). In line with this stream of literature, the present study confirms the existence of positive within-industry peer influence, mimetic behavior toward high-performing firms, and reciprocal convergence among low-performing firms. Taken together, the results reveal a clear performance-based asymmetry in ESG peer dynamics. Weak-performing firms display convergence-oriented behavior—both upward toward strong firms and horizontally toward other weak firms—while high-performing firms display differentiation-oriented behavior. This distinction clarifies why reciprocal peer effects are positive among weak firms but negative among strong firms. Performance level shapes whether firms interpret peer disclosure as a benchmark to follow or as a competitive signal to strategically counter.

These findings contribute to the literature by demonstrating that peer effects in ESG disclosure are not uniform across firms. Instead, the direction and nature of peer influence depend on relative performance positioning. The results refine existing discussions of peer effects by showing that reciprocal dynamics can be positive or negative depending on strategic incentives.

From a practical perspective, the findings carry several implications. Since weak-performing firms imitate the ESG disclosure practices of strong firms, regulatory bodies and standard-setting institutions should pay particular attention to the reporting frameworks adopted by leading firms. Greater standardization and clarity in the disclosures of industry leaders can enhance overall industry transparency, as these firms effectively function as disclosure benchmarks. For managers of high-performing firms, the results suggest that differentiation strategies in ESG reporting should be implemented carefully to ensure that strategic uniqueness does not undermine transparency or comparability. For managers of low-performing firms, imitation of high-performing peers can serve as a structured pathway to enhance disclosure quality and credibility. For investors and stakeholders, understanding that ESG disclosure behavior differs systematically across performance groups may improve interpretation of disclosure signals. Higher disclosure by weaker firms may reflect strategic legitimacy efforts, while more selective disclosure by stronger firms may reflect differentiation strategies rather than disengagement.

Future research may extend this framework by examining how ownership structure, board characteristics, regulatory pressure, or industry sensitivity moderate performance-based peer asymmetries. Further investigation into the economic consequences of differentiation versus convergence strategies in ESG disclosure—such as investor reactions, cost of capital, and brand value—would deepen understanding of the strategic implications of peer-driven disclosure behavior. Comparative analysis across different ownership types may also clarify how organizational incentives interact with peer dynamics. Additionally, future studies could examine performance-based peer dynamics using alternative firm-performance classifications, including multi-group (e.g., three-tier) categorizations rather than binary splits.

Limitations

The limitations of this study include its focus exclusively on firms listed on the Tehran Stock Exchange, which has unique regulatory, institutional, and cultural characteristics. As a result, the generalizability of the findings to other countries or markets may be limited. Additionally, the analysis relies on a custom ESG index developed specifically for this context, which may restrict direct comparability with studies using standardized third-party ESG ratings or alternative disclosure measures. Future research could validate the observed peer effects by examining firms across different institutional and regulatory environments, employing standardized ESG ratings or text-based ESG measures to enhance cross-study comparability.

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