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The Impact of Environmental, Social, and Governance on Sales Changes

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Abstract

This research investigates the relationship between Environmental, Social, and Governance (ESG) practices and corporate sales stability within non-financial firms publicly listed in Taiwan over the period 2008 to 2024. Employing panel data regression analysis, the findings demonstrate that robust ESG performance significantly correlates with lower sales volatility. This negative association indicates that proactive engagement in ESG initiatives effectively aids firms in preserving market share and bolstering customer confidence. Additionally, the presence of effective corporate governance mechanisms, such as independent board structures and appropriately aligned managerial incentives, further amplifies this positive relationship. In contrast, firms experiencing frequent ESG-related controversies tend to exhibit increased fluctuations in sales, underscoring the critical importance of comprehensive risk management strategies. The results suggest that integrating ESG principles into corporate strategic planning not only contributes to enhanced financial stability but also establishes a competitive advantage. These insights are particularly valuable for corporate executives focused on achieving sustainable growth and resilience amidst fluctuating market conditions.

Keywords: Environmental, social, and governance, Corporate governance, Panel data, Corporate sales changes.

1 | Introduction

Within the corporate governance framework, Corporate Social Responsibility (CSR) has garnered considerable scholarly attention in recent years. Jo and Na [1] examined the capacity of CSR initiatives to mitigate risks associated with high financial leverage. Their research suggests that significant market share declines experienced by highly leveraged firms often stem from adverse stakeholder reactions, notably from

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customers and competitors. Customers may avoid highly leveraged firms due to apprehensions about potential compromises in product quality or discontinuation of production. Concurrently, competitors may exploit these vulnerabilities through predatory practices such as aggressive promotions, discounting strategies, or negative advertising campaigns aimed at weakening financially unstable rivals. Highly leveraged firms, facing restricted capital access or elevated financing costs, typically lack resilience against such aggressive competitive tactics, consequently suffering substantial market share erosion. However, CSR practices serve a moderating role, assisting firms in countering negative stakeholder actions by cultivating customer loyalty and deterring aggressive competitor behaviors. Thus, CSR can effectively mitigate the detrimental effects of high financial leverage on market performance by reducing stakeholder-driven risks.

Responding to domestic and international corporate governance failures, Taiwan's Financial Supervisory Commission (FSC) has adopted the Organisation for Economic Co-operation and Development (OECD) corporate governance framework, promoting various governance-oriented regulations. In 2002, the FSC mandated that all companies seeking listing on the Taiwan Stock Exchange (TWSE) or Over-The-Counter (OTC) markets appoint independent directors to their boards. Subsequently, in 2005, a Corporate Governance Evaluation System was implemented to assess governance quality among listed entities. By 2007, comprehensive corporate governance measures had been fully institutionalized, enhancing transparency, accountability, and investor protection within Taiwan's capital markets.

In recent discourse, corporate governance and CSR have evolved towards an integrated Environmental, Social, and Governance (ESG) framework, emphasizing measurable sustainability and accountability. In the domain of ESG, the role of Artificial Intelligence (AI) has become increasingly significant. Effective utilization of AI tools can enable firms to maintain high levels of productivity while achieving practical benefits such as carbon footprint reduction [2]. Traditional CSR initiatives primarily encompassed voluntary ethical conduct and philanthropy, while corporate governance emphasized structures ensuring transparency and stakeholder alignment. ESG synthesizes these aspects by incorporating environmental impact, social responsibility, and governance mechanisms into a unified and standardized framework subject to increasing regulatory oversight and investor scrutiny [3]. Kumar et al. [3] underscore effective corporate governance, particularly independent boards and rigorous oversight, as critical foundations for credible ESG implementation and disclosure, thus enhancing transparency and legitimacy. Moreover, ESG represents an advanced form of CSR by introducing quantifiable metrics that operationalize sustainability goals, ultimately driving long-term corporate value creation [4]. Although this transition contributes positively to financial performance and risk management, it introduces challenges such as potential greenwashing and necessitates standardized assessment methodologies. Thus, embedding environmental and social factors within governance frameworks through ESG signifies a fundamental shift in corporate evaluation, aligning organizational activities with societal expectations.

Due to distinct operational characteristics, asset structures (e.g., extensive real estate holdings), and specialized financial products, firms in the financial sector face more stringent governmental regulations compared to non-financial companies. Consequently, ESG practice outcomes often significantly differ between financial and non-financial industries. Reflecting these inherent structural differences, this study focuses exclusively on non-financial companies listed on the TWSE and OTC markets, explicitly excluding entities within banking, insurance, and securities sectors. This research explores whether ESG practices among Taiwanese non-financial firms enhance investor confidence and contribute to earnings stability. This study investigates the impact of ESG practices on corporate sales dynamics, employing corporate governance evaluation scores and transparency levels as proxies for ESG performance. Specifically, the research examines how ESG initiatives influence stakeholder behavior and whether their implementation affects corporate sales stability. Additionally, it investigates potential spillover effects of negative ESG-related news within industries on peer companies' sales outcomes. For this analysis, the study aggregates adverse corporate events involving Taiwanese listed companies from 2008 onwards, calculating annual proportions relative to total industry-specific ESG incidents. This ratio is examined to ascertain its correlation with corporate sales volatility,

providing insights into the influence of ESG engagement on stakeholders and the potential reputational consequences of ESG-related controversies.

Empirical findings indicate a statistically significant relationship between ESG engagement and market competitiveness. Despite the costs associated with implementing ESG measures, the research highlights that robust ESG performance fosters sustained profitability and enhances a firm's competitive position. Firms with stronger ESG credentials are better equipped to maintain market share and consumer confidence within their respective industries and target markets. Moreover, the study identifies that actions taken to protect managerial interests, such as purchasing directors' and officers' liability insurance, allow management to focus more effectively on operational excellence. The resulting enhanced managerial focus positively correlates with improved profitability, reinforcing the financial benefits associated with sound governance practices.

2 | Hypothesis Development

ESG significantly and critically influences corporate performance. The "halo effect" associated with ESG initiatives provides firms with quasi-insurance by mitigating customer distrust and negative perceptions. This effect also reduces the vulnerability of firms to competitor exploitation during financial distress. Studies by [5], [6] support the notion that ESG practices enhance stakeholder trust and relationships. Within corporate governance research, Chen et al. [7] demonstrate that high-quality governance mechanisms effectively lower firm-specific risks, thereby reducing the occurrence of negatively skewed stock returns. Such governance stability contributes substantially to corporate resilience and investor confidence.

In terms of CSR, Jo and Na [1] investigated its potential to mitigate risks among highly leveraged firms. Their findings indicate that robust CSR engagement signals reduced risk to stakeholders and attracts a broader investment base [8–10]. Firms exhibiting strong CSR practices typically experience improved capital accessibility and lower financing costs [11], [12] thus mitigating the negative effects of aggressive competitive behaviors. Profitability remains the primary objective of corporate operations. Throughout business processes, firms strive to maintain profit margins through sustained market share or product differentiation and seek additional earnings through reinvestment strategies. Effective marketing and diverse distribution channels enable firms to respond adeptly to market demand. Structured organizational frameworks, skilled management teams, and strong administrative systems further empower companies to sustain growth and effectively manage unforeseen challenges. Ongoing product innovation is vital in preventing competitors from surpassing a firm's offerings in quality or capturing market share through aggressive pricing strategies. Moreover, efficient financial management, including capital allocation and leveraging financial resources, plays an essential role in controlling operational expenses and capital expenditures.

Due to inherent differences in firm characteristics and product types, each organization develops a distinct sales strategy and cost structure. However, market demand typically remains stable in the absence of external disruptions such as financial crises, natural disasters, or pandemics. This relative market stability provides a robust foundation for examining the measurable impacts of ESG performance on sales fluctuations. While numerous complex factors influence corporate revenue variations, minimal year-over-year sales volatility often reflects stable market share and consistent profitability. Therefore, it is pertinent to investigate whether implementing corporate governance frameworks and CSR initiatives directly affects core sales performance. Prior research indicates that effective governance structures significantly enhance firm performance, elevate shareholder value, and reduce operational expenses [13], [14]. Chen et al. [15] further identified governance strength as a key factor in lowering firm-specific risk. Drawing on this literature, the current study adopts corporate revenue variability as the dependent variable to explore the influence of ESG-related factors on sales dynamics.

2.1 | Ownership Structure and Corporate Control

Ownership structure constitutes a fundamental aspect of corporate property rights, significantly influencing a firm's operations, investment choices, and governance control mechanisms. Within this framework, major

shareholders assume a central role. Extensive research has underscored the influential capacity of large shareholders to monitor and shape corporate governance practices. Shleifer and Vishny [16] highlight that increased concentration of ownership among significant shareholders enhances their ability to supervise corporate management and restrict managerial discretion. However, an excessively concentrated ownership structure, particularly when dominated by a limited number of controlling or insider shareholders, can lead to the expropriation of minority shareholders' interests [17]. In such scenarios, independent external directors—who do not engage in routine managerial activities and whose interests generally align with those of minority shareholders—may significantly enhance corporate oversight effectiveness [18]. Chen et al. [7] further demonstrate that heightened ownership concentration among institutional investors and external block-holders correlates with increased skewness in firm condition indicators, leading to more favorable stock return distributions.

The board of directors represents a crucial element within corporate governance structures, exercising ultimate authority in formulating strategic directions and profitability-driven policies. Additionally, the board ensures equitable treatment for investors. Typically, board directors are classified into internal and external categories. Internal directors, who hold executive positions within the organization, may face conflicts between their interests and those of other stakeholders. Conversely, external directors, detached from daily operational management, are presumed to more effectively represent shareholder interests and perform critical monitoring functions. Institutional investors also play a valuable role by offering management enhanced insights and strategic guidance, leveraging their informational advantages and broader investment perspectives. Such contributions can significantly diminish the likelihood of managerial misjudgements during policy execution. Based on these corporate governance considerations, this study advances the following hypotheses:

Hypothesis 1. Higher shareholding ratios by external block-holders are associated with reduced variation in corporate sales.

Hypothesis 2. Higher shareholding ratios by institutional investors are associated with reduced variation in corporate sales.

2.2 | Board Independence and Corporate Governance Reform

The board of directors is the highest governing body within a corporation, composed of multiple board members collectively responsible for major strategic decisions and oversight. In smaller firms, however, there is often a high degree of overlap between board members and shareholders, which can hinder the separation of powers and compromise the board's ability to check managerial behavior effectively. When board members concurrently hold executive positions, their monitoring role becomes further weakened, undermining stakeholder confidence in corporate operations. Bai et al. [19] found that when boards are dominated by management, their oversight effectiveness is significantly limited. To strengthen corporate governance, Taiwan introduced the independent director mechanism in 2002. In 2006, the independent director mechanism was formalized into law, and by 2017, all publicly listed companies were required to appoint independent directors. Independent directors serve on the board without holding any managerial or operational role. These individuals must possess both professional competence and independence. Moreover, they are mandated to serve as members of the audit committee, where they are expected to oversee corporate performance and financial integrity. The aim is to prevent fraudulent financial reporting, misappropriation of assets, and the dissemination of misleading profit information that may compromise shareholder understanding and market transparency.

Since 2002, Taiwan's FSC has actively mandated the appointment of independent directors for all listed companies. In 2006, this requirement was formally codified in the Securities and Exchange Act, which stipulated that the number of independent directors must not be fewer than two per company. The primary value of independent directors lies in their independence and expertise. As they do not maintain business relationships with the firm, they are better positioned to monitor and balance governance structures,

particularly within family-controlled firms, a standard ownership model in Taiwan. In addition to their supervisory role, highly professional independent directors can contribute valuable strategic insights based on their expertise, which may enhance the firm's overall profitability. Based on this institutional context, the following hypothesis is proposed:

Hypothesis 3. The higher the proportion of Independent Directors and Supervisors (INDR) on the board, the smaller the variation in corporate sales.

2.3 | Executive Incentive Mechanisms

According to agency theory from Jensen and Meckling [20], when managers are also owners of the firm, they are naturally motivated to act in the company's best interest. However, when firms raise external capital, managers, who often possess information advantages, may act in their self-interest, potentially at the expense of various stakeholders. This misalignment of incentives underscores the importance of external monitoring mechanisms, such as oversight by outside shareholders and independent directors. In addition to governance-based monitoring, numerous studies have emphasized the role of well-structured executive compensation systems in aligning managerial and shareholder interests. A well-designed and competitive pay structure can motivate senior executives to contribute more effectively to the firm. Patton [21] found a positive correlation between executive incentive schemes and firm profitability and growth. Furthermore, greater transparency in executive compensation strengthens the relationship between managerial pay and firm performance [22–24]. Equity-based compensation, wherein managers hold ownership stakes in the firm, reinforces this alignment. Under the convergence of interest hypothesis, higher managerial shareholding creates more substantial incentives to improve firm performance, as declines in share price would directly reduce the manager's wealth.

Agency relationships in corporate operations are often accompanied by moral hazard, cost allocation, and profit distribution issues. The perceived contribution of managers to corporate performance and differing views on profit-sharing mechanisms frequently result in discrepancies between managerial and shareholder expectations regarding compensation. Under such circumstances, managers may respond with passive behavior or, in more severe cases, exploit their positions to extract private benefits not contractually agreed upon with the firm. To reconcile these conflicting interests and to establish a common profit-maximization objective, managerial shareholding has been widely recognized as a simple yet effective mechanism. In addition to fixed salaries and performance-based bonuses, granting equity stakes to managers aligns their interests with those of shareholders. Under the premise of maximizing personal wealth, managerial ownership encourages executives to enhance firm value and act in line with shareholder objectives. Based on this rationale, the study proposes the following hypothesis:

Hypothesis 4. The higher the Managerial Ownership Ratio (MOR), the smaller the variation in corporate sales.

2.4 | Environmental, Social, and Governance-Related Negative Events and Their Impact on Sales Changes

A study by Bae et al. [25] demonstrated that CSR can help mitigate market share loss. As more firms begin to recognize the strategic value of ESG and allocate resources toward related initiatives, it becomes increasingly complex to isolate the causal effects of ESG performance on competitive outcomes. For instance, large firms may be able to invest more heavily in ESG to gain a competitive edge or defend market share against rivals. However, this advantage does not necessarily imply that ESG is the cause of enhanced competitiveness. To investigate the relationship between CSR failures and firm performance, this study examines data from 2008 to 2020, focusing on non-financial firms in Taiwan. Specifically, it records the number of CSR-related adverse news events for each firm annually and aggregates the total number of such events by industry. The firm-level event count is then divided by the industry-level total to calculate a relative ratio. This ratio is used to assess whether firms experiencing more CSR-related controversies within the same industry exhibit greater variations in sales. Based on this framework, the following hypothesis is proposed:

Hypothesis 5. The greater the number of CSR-related adverse events a firm experiences, the larger the variation in its corporate sales.

3 | Methodology

This study investigates publicly listed companies on the TWSE and the Taipei Exchange (TPEx), excluding firms in the financial, insurance, and securities sectors due to the unique nature of their business models and regulatory frameworks. Industry classification follows the categorization provided by the Taiwan Economic Journal (TEJ) database. Firms with missing or incomplete data were also excluded from the sample. After screening, the final dataset includes 1,655 firms across 27 industries, yielding 28,951 firm-year observations. The data utilized in this study are primarily obtained from the TEJ database, which encompasses various dimensions such as firm financials, corporate governance, and board structures. Specific data points include changes in board and supervisor composition, financial statements by the International Financial Reporting Standards (IFRS)—including balance sheets, income statements, and cash flow statements—and details on shareholding structures and governance variables related to board and supervisor composition.

3.1 | Variable Definitions and Measurement

This section outlines the proxy variables and measurement methods used to capture four key constructs in the study: ownership structure, board composition, executive incentive mechanisms, and adverse ESG-related events. Each construct is operationalized using measurable indicators based on prior literature and available data. In addition, this section introduces the control variables included in the empirical model to account for firm-specific characteristics and potential confounding effects.

3.2 | Corporate Sales Variation

Corporate Sales Variation (SALESRATE) is calculated to observe firm-level sales performance relative to industry peers within the non-financial sector. A firm's net operating revenue for the fiscal year represents the annual sales data. The rate of SALESRATE is computed as the difference between the current year's operating revenue and that of the previous year, divided by the current year's operating revenue.

3.3 | External Block-Holder Ownership Ratio

External Block-holder Ownership Ratio (BOR) represents the proportion of company shares held by external shareholders among the top ten. It excludes those who concurrently serve as directors, supervisors, or managers. The calculation aggregates the total shareholding of non-managerial top ten shareholders and shareholders owning more than 5% of total shares, divided by the firm's total outstanding shares.

3.3.1 | Institutional ownership ratio

Institutional Ownership Ratio (IOR) reflects the shareholding of institutional investors and is used to assess the monitoring function of the board. Institutional ownership includes the shareholdings of foreign financial institutions, legal entities, trusts, and investment firms. The ratio is computed by dividing the total shares held by these institutions by the total shares outstanding of the sample firm.

3.3.2 | Ratio of independent directors and supervisors

The ratio of INDR measures board independence. It is calculated as the number of INDR divided by the total number of board members for a given year.

3.3.3 | Managerial ownership ratio

MOR is used as a proxy for executive incentive mechanisms. It includes shareholdings held by managers, directors, and supervisors who have business relationships with the firm. The total is divided by the firm's total outstanding shares.

3.3.4 | Environmental, social, and governance-related negative event ratio

Environmental, Social, and Governance-Related Negative Event Ratio (ESGRATIO) examines whether a firm's involvement in ESG-related controversies affects its relative standing within the same industry. The variable is calculated as the total number of ESG-related adverse news events associated with a sample firm in a given year (regardless of severity), divided by the total number of events occurring within the same industry. Industry classifications follow the categorization provided by the TEJ.

3.4 | Control Variables

To examine whether ESG-related factors contribute to fluctuations in corporate profitability among Taiwanese firms, this study incorporates several control variables, drawing from Chen et al. [15], who investigated the impact of corporate governance mechanisms on firm-specific risk. The following variables are included to account for firm-level characteristics and potential confounders: Firm size (LNSIZEi,τ), market-to-book ratio (MTBi,τ), firm age (AGEi,τ), auditor turnover in the past three years (CPAi,τ), leverage ratio (LEVi,τ), stock turnover ratio (TVi,τ), capital expenditure ratio (CEi,τ), and Return On Assets (ROAi,τ). Descriptions for each are as follows:

I. Firm size (LNSIZEi,τ): the natural logarithm of the market value of firm i in year τ.

II. Market-to-book ratio (MTBi,τ): the ratio of market capitalization to book value of equity for firm i in year τ.

III. Firm age (AGEi,τ): the years since firm i was established, calculated as year τ, starting from 2008.

IV. Auditor turnover (CPAi,τ): the number of times firm i changed its certified public accountant within the three years prior to year τ.

V. Leverage ratio (LEVi,τ): the total liabilities divided by the total assets of firm i in year τ.

VI. Stock turnover ratio (TVi,τ): the trading volume of firm i's stock divided by its total number of outstanding shares in year τ.

VII. Capital expenditure ratio (CEi,τ): the value of firm i's fixed assets divided by total assets in year τ.

VIII. Return on assets (ROAi,τ): net operating income divided by total assets for firm i in year τ.

3.5 | Empirical Model and Statistical Methodology

This study utilizes the Hausman test to assess potential endogeneity among explanatory variables, thereby informing the selection of an appropriate model specification for panel data analysis. The empirical framework is constructed using panel data derived from firm-level financial disclosures contained in the annual reports of all listed and OTC companies in Taiwan, as provided by the TEJ. The dataset spans the period from 2008 to 2020 and incorporates variables including total assets, board composition, and ownership structure. Employing panel data enhances the accuracy of estimations by mitigating multicollinearity among explanatory variables. Additionally, panel data analysis increases degrees of freedom and estimation efficiency, facilitating the investigation of dynamic behaviours across time and across individual firms. The panel data regression model utilized in this research is formally expressed as follows:

$$\mathrm{SALESRAT}_{i,\tau}=\beta_0+\beta_1\mathrm{BOR}_{i,\tau}+\beta_2\mathrm{IOR}_{i,\tau}+\beta_3\mathrm{INDR}_{i,\tau}+\beta_4\mathrm{MOR}_{i,\tau}+\beta_5\mathrm{ESGRATIO}_{i,\tau}+\sum_1^k\gamma_k\,\mathrm{Control}_{k,(i,\tau)}+\varepsilon_{i,\tau}, \quad (1)$$

Where $\mathrm{SALESRAT}_{i,\tau}$ is the variation in corporate sales for firm i in year τ; BOR, IOR, INDR, MOR, and ESGRATIO are the key independent variables defined earlier. $\mathrm{Control}_{k,(i,\tau)}$ denotes the set of K control variables; $\varepsilon_{i,\tau}$ is the idiosyncratic error term.

3.6 | Empirical Results

3.6.1 | Preliminary analysis

This study investigates whether ESG performance influences the variation in corporate sales among listed and OTC companies in Taiwan from 2008 to 2024, excluding firms in the financial, insurance, and securities sectors. Industry classification follows the categorization provided by the TEJ. Firms with missing or incomplete data were also excluded, resulting in a final sample of 1,655 firms across 27 industries, yielding 28,951 firm-year observations. *Table 1* presents the descriptive statistics for the key variables used in this study. The analysis, conducted at the industry level for robustness, reveals that the average annual SALESRATE across sample firms is 1.428, with a standard deviation of 81.543, indicating substantial variability in firm performance. The mean value of ESGRATIO is 0.021, with a standard deviation of 0.081, suggesting that most firms have taken preventive ESG measures to avoid reputational risks. The average external BOR is 0.231, and the IOR is 0.106. Compared to prior research by Chen et al. [15], which found an average BOR of 0.172 for the 2002–2006 period, the current figures reflect a significant increase in external oversight, while institutional ownership remains stable at around 10%. The proportion of INDR averages 0.258, doubling the 0.12 reported from 2002–2006. The increase in the proportion of independent directors reflects the successful implementation of regulatory mandates on board independence. Conversely, the MOR has decreased markedly to 0.045, down from 0.245 in earlier years. This decline may reflect a governance shift away from manager-dominated ownership structures toward more professionally managed firms.

Table 1. Descriptive statistics of key variables for all sample firms (2008–2024).

	Mean	Std. Dev.	Q1	Median	Q3	N
$SALESRAT_{i,\tau}$	1.428	81.543	-0.112	0.008	0.127	28,951
$ESGRATIO_{i,\tau}$	0.021	0.081	0.000	0.000	0.000	28,951
$BOR_{i,\tau}$	0.231	0.123	0.138	0.198	0.277	28,951
$IOR_{i,\tau}$	0.106	0.173	0.007	0.040	0.129	28,951
$INDR_{i,\tau}$	0.258	0.163	0.168	0.288	0.398	28,951
$MOR_{i,\tau}$	0.045	0.059	0.003	0.021	0.059	28,951

Note: Q1 denotes the first quartile; Q3 denotes the third quartile. $SALESRAT_{i,\tau}$: The SALESRATE for firm i between year τ. $ESGRATIO_{i,\tau}$: The ESG-related negative event ratio for firm i between year τ. $BOR_{i,\tau}$: The external BOR of firm i in year τ. $IOR_{i,\tau}$: The IOR of firm i in year τ. $INDR_{i,\tau}$: The proportion of INDR to total board members in firm i in year τ. $MOR_{i,\tau}$: The MOR of firm i in year τ.

3.7 | Correlation Analysis of Research Variables

This study applies Pearson's correlation coefficient to examine the relationships among key variables (see *Table 2*). The correlation matrix focuses on the association between SALESRATE and various independent and control variables. Statistical significance is assessed at the 5% ($p < 0.05$). Unexpectedly, a positive and significant correlation is observed between external block-holder ownership and SALESRATE, indicating that greater external ownership is associated with larger fluctuations in firm revenue, contrary to the expectations in this study's hypotheses.

In addition, the number of auditor changes within the past three years is positively and significantly correlated with SALESRATE. This positive association implies that frequent auditor turnover may reflect instability or reduced financial credibility, leading to greater sales fluctuations. Lastly, the capital expenditure ratio exhibits a negative and significant correlation with SALESRATE, suggesting that firms with lower capital investment experience more volatile sales, potentially due to limited innovation or production capacity.

Table 2. Pearson correlation matrix of key research variables.

	SALESRATE	ESGRATIO	BOR	MOR	IOR	INDR	CPA	LNSIZE	MTB	AGE	LEV	TV	CE	ROA
SALESRATE	1	-0.003	0.028	0.004	-0.007	-0.001	0.023	-0.007	0.001	0.011	0.009	-0.007	-0.021	0.001
ESGRATIO		1	-0.001	-0.049	0.044	-0.045	0.014	0.170	-0.004	0.111	0.071	-0.044	0.111	-0.017
BOR			1	-0.034	0.151	0.072	0.018	-0.031	0.059	0.011	0.082	-0.271	0.029	-0.027
MOR				1	-0.103	0.059	-0.044	-0.154	-0.004	-0.124	-0.060	-0.022	-0.111	0.034
IOR					1	0.129	-0.068	0.434	0.079	-0.088	0.044	-0.018	-0.007	0.211
INDR						1	-0.038	-0.021	0.061	-0.312	-0.049	0.066	-0.149	0.047
CPA							1	-0.111	0.049	0.025	0.019	-0.012	0.017	-0.113
LNSIZE								1	0.089	0.144	0.055	0.153	0.113	0.416
MTB									1	-0.070	0.053	0.059	-0.049	0.014
AGE										1	0.113	-0.082	0.199	-0.140
LEV											1	-0.048	0.031	-0.151
TV												1	-0.099	0.196
CE													1	-0.047

3.8 | Regression Results

This study utilizes panel data from all listed and OTC companies in Taiwan from 2008 to 2024. The final dataset excludes financial, insurance, and securities firms due to their distinct regulatory and operational frameworks. The exclusion of financial, insurance, and securities firms results in a non-financial dataset unsuitable for examining the effects of ESG-related factors on SALESRATE. Based on firm-year observations across 27 industries, the dataset includes 1,655 unique firms and 28,951 practical observations.

The following section presents the descriptive statistics, correlation matrix, and results from panel regression models, focusing on the influence of ownership structure, board composition, executive incentives, and ESG-related controversies on the variation in corporate sales. The analysis uses fixed and random-effects models, with the Hausman test employed to determine the most appropriate specification.

Table 3. Regression results on the impact of ESG on SALESRATE.

Explanatory Variable (Expected Sign)	Dependent Variable: $SALESRAT_{i,j}$ (P Value)
Intercept	-1.3154 (0.6451)
$BOR_{i,\tau}(-)$	16.2156 (0.0010)***
$IOR_{i,\tau}(-)$	-3.2542 (0.5154)
$INDR_{i,\tau}(-)$	1.8091 (0.6412)
$MOR_{i,\tau}(-)$	7.8881 (0.2541)
$ESGRATIO_{i,\tau}(+)$	0.5891 (0.0010)***
$LNSIZE_{i,\tau}(-)$	-0.8001 (0.1431)
$MTB_{i,\tau}(-)$	-0.8771E-01 (0.6561)
$AGE_{i,\tau}(-)$	1.8182 (0.0201)**
$CPA_{i,\tau}(+)$	4.5671 (0.0013)***
$LEV_{i,\tau}(+)$	7.3512 (0.0265)**
$TV_{i,\tau}(+)$	-0.2121 (0.5541)
$CE_{i,\tau}(-)$	-11.1241 (0.0002)***
$ROA_{i,\tau}(-)$	23.2621 (0.0013)***
Ad-R^2	0.0212
Hausman test	4.12 (0.8931)
Numbers of data	28,951

Note: $SALESRAT_{i,\tau}$: The SALESRATE for firm i between year τ. $ESGRATIO_{i,\tau}$: The ESG-related negative event ratio for firm i between year τ. $BOR_{i,\tau}$: The external BOR of firm i in year τ. $IOR_{i,\tau}$: The IOR of firm i in year τ. $INDR_{i,\tau}$: The proportion of INDR to total board members in firm i in year τ. $MOR_{i,\tau}$: The MOR of firm i in year τ. The selection of the regression model is based on the results of the Hausman test. The values in parentheses represent p-values. Significance levels are denoted as follows: *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

This study initially hypothesized that external block-holders, having no direct or indirect business dealings with the firm, would share similar objectives with general investors and therefore possess a practical monitoring function. Based on this assumption, a higher external ownership ratio was expected to be associated with fewer fluctuations in corporate sales. However, the regression model shows that the external

BOR has a coefficient of 17.2155 and a significant positive correlation at the 1% level, which contradicts the original hypothesis. Analysis of possible reasons:

I. External shareholders may maintain direct or indirect business relationships with the company or engage in non-contractual agreements, compromising their monitoring function and accountability.

II. The model may have omitted other critical factors that influence the monitoring effectiveness of external block-holders, resulting in an inability to demonstrate their actual impact on SALESRATE empirically. Due to the limitations in explanatory power of the coefficient of variation in this study, the observed result does not align with the original hypothesis.

This study selected the period from 2008 to 2024 to analyze the number of ESG-related adverse news events occurring annually among non-financial firms. Each year, the number of ESG-related adverse events per firm was recorded and divided by the total number of such events within the same industry, based on industry classifications from the TEJ. This ratio was used to assess the relative exposure of each firm to ESG incidents.

The study hypothesizes that a higher frequency of ESG-related adverse events is associated with greater variation in corporate sales. The regression results confirm this hypothesis, showing a coefficient of 0.6377 for the ESG negative event ratio, which is statistically significant at the 1% level. This finding is consistent with the expected direction of the relationship proposed by the study.

3.9 | Robustness Check from a Dynamic Panel Data Analysis

Flannery and Hankins [26] emphasize the growing significance of dynamic panel models in corporate finance research, particularly in addressing issues related to lagged dependent variables among the regressors. To mitigate potential estimation bias arising from such dynamics, we adopt the Generalized Method of Moments (GMM) approach proposed by Arellano and Bond [27] as a robustness check for our regression analysis. Furthermore, we employ the Sargan test to assess the validity and appropriateness of the instrumental variables used in the model.

The results of the dynamic panel data analysis are similar to those presented in *Table 3*. The results are shown in *Table 4*. The results of the dynamic panel data analysis are similar to those of the panel data analysis. The results of this study are robust.

Table 4. Dynamic panel regression results on the impact of ESG on SALESRATE.

Explanatory Variable (Expected Sign)	Dependent Variable: $SALESRAT_{i,j}$ (P Value)
Intercept	2.5608
	(0.4512)
$BOR_{i,\tau}(-)$	8.5428
	(0.0000)***
$IOR_{i,\tau}(-)$	-4.1534
	(0.6675)
$INDR_{i,\tau}(-)$	-2.3451
	(0.1241)
$MOR_{i,\tau}(-)$	5.6043
	(0.3033)
$ESGRATIO_{i,\tau}(+)$	1.6755
	(0.0010)***
$LNSIZE_{i,\tau}(-)$	-0.4132
	(0.1551)
$MTB_{i,\tau}(-)$	-0.4513E-01
	(0.3512)
$MTB_{i,\tau}(-)$	-0.4513E-01
	(0.3512)
$AGE_{i,\tau}(-)$	-2.7888
	(0.0512)*

Table 4. Continued.

Explanatory Variable (Expected Sign)	Dependent Variable: $SALESRAT_{i,j}$ (P Value)
$CPA_{i,\tau}(+)$	3.1241 (0.0001)***
$LEV_{i,\tau}(+)$	7.5451 (0.0211)**
$TV_{i,\tau}(+)$	-0.4612 (0.8765)
$CE_{i,\tau}(-)$	-10.3421 (0.0004)***
$ROA_{i,\tau}(-)$	23.2121 (0.0010)***
Ad-R2	0.0221
Sargan Test	20.5149 (0.4877)
Numbers of data	28,951

Note: $SALESRAT_{i,\tau}$: The SALESRATE for firm i between year τ. $ESGRATIO_{i,\tau}$: The ESG-related negative event ratio for firm i between year τ. $BOR_{i,\tau}$: The external BOR of firm i in year τ. $IOR_{i,\tau}$: The IOR of firm i in year τ. $INDR_{i,\tau}$: The proportion of INDR to total board members in firm i in year τ. $MOR_{i,\tau}$: The MOR of firm i in year τ. The selection of the regression model is based on the results of the Hausman test. The values in parentheses represent p-values. Significance levels are denoted as follows: *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

4 | Conclusion

In conclusion, the empirical findings emphasize the strategic importance of ESG integration in sustaining corporate sales performance. Firms proactively engaging in ESG practices demonstrate enhanced sales stability and more resilient profitability, despite associated implementation expenses. Notably, robust ESG performance correlates with reduced year-over-year sales volatility, reinforcing a firm's ability to maintain market share and consumer trust. This reduction in sales volatility provides a distinct competitive advantage, positioning ESG-oriented companies to better withstand industry competition and maintain their market presence. Significantly, the research underscores the critical role of corporate governance structures and risk management practices in achieving these positive outcomes. Effective governance mechanisms foster an environment of accountability, thereby stabilizing sales performance. For instance, protective measures for managers and directors, such as directors' and officers' liability insurance, enable management teams to prioritize operational efficiency, resulting in enhanced profitability and more consistent revenue streams. Conversely, frequent ESG or CSR-related controversies have been shown to amplify sales volatility, as firms experiencing recurrent ESG incidents exhibit notably greater revenue fluctuations. This negative impact highlights the necessity of diligent CSR risk management in safeguarding market positions.

Collectively, these results illustrate that comprehensive ESG engagement, including solid governance structures, proactive social responsibility initiatives, and protective management measures, serves as a stabilizing influence on corporate sales. By embedding ESG principles into their strategic core, firms not only achieve greater financial stability but also enhance their competitive market standing, thereby securing long-term industry sustainability. The key takeaway for corporate leaders and stakeholders is evident: ESG investments and governance improvements extend beyond ethical compliance, representing tangible drivers of stable growth and competitive resilience.

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Authors' Contributions

All aspects of the research and manuscript preparation were carried out by the author. The author has read and approved the final version of the manuscript.

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Data Availability

All data supporting the reported findings in this research paper are provided within the manuscript.

Conflict of Interest

The author declares that they do not have any conflict of interest.

Consent for Publication

The author confirms consent for the publication of this work

Ethics Approval and Consent to Participate

This article does not contain any studies with human participants performed by the author.

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