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The role of ESG disclosure in enhancing profitability and market value: Insights from Saudi Arabia's corporate landscape

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ABSTRACT

This study examines the impact of environmental, social, and governance (ESG) disclosures on the value of non-financial firms listed on the Saudi Stock Exchange (Tadawul) from 2017 to 2022. It explores how ESG practices influence firm profitability and market valuation. Using earnings per share (EPS) and Tobin's Q as firm value indicators, the study analyses 100 firms. To address endogeneity concerns, it applies the generalized method of moments (GMM). The study also examines the moderating role of firm size in ESG disclosure and performance. The results indicate that increased ESG disclosure enhances firm value, with environmental and governance factors playing a key role. Firm size, return on assets (ROA), and debt-to-equity ratio significantly impact performance. Larger firms exhibit better ESG practices, leading to higher earnings per share. This study confirms the positive relationship between ESG disclosure and firm value, emphasizing environmental and governance aspects. Firm size is a crucial factor influencing ESG adoption and financial outcomes. The study recommends mandatory ESG disclosure frameworks, sector-specific regulations, and incentives to enhance corporate transparency and sustainability. These measures can strengthen firms' market competitiveness and align them with Saudi Arabia's Vision 2030.

Contribution/Originality: This study uniquely examines ESG disclosures in Saudi Arabia using GMM methodology. It introduces firm size as a moderating factor, highlighting its role in ESG efficacy. Aligning with Vision 2030, it fills a critical gap in emerging market ESG research, offering policy-driven recommendations to enhance corporate sustainability and financial performance.

1. INTRODUCTION

The emergence of environmental, social, and governance (ESG) criteria has become crucial for organizations' long-term success in an increasingly sustainability-focused global marketplace. ESG disclosures make it clear and easy to measure how a company affects the environment, helps people, and runs its businesses. This shows that companies need to start using sustainable practices more and more.

Existing research on ESG disclosures reveals significant limitations when applied to emerging markets like Saudi Arabia. Previous studies by Liu, Kim, Lee, and Yoo (2022) and Wu, Li, Du, and Li (2022) while demonstrating a positive correlation between ESG and firm value in developed economies, overlook the critical nuances of emerging

market contexts. Most of these studies use ESG frameworks that are based on the West, which don't do a good job of capturing the unique institutional, cultural, and regulatory features of markets like Saudi Arabia.

Moreover, the current literature suffers from methodological shortcomings in addressing industry-specific ESG factors. Scholars like Clarkson, Li, Richardson, and Tsang (2019) and Cicchiello, Marrazza, and Perdichizzi (2023) have treated industries as uniform entities, neglecting sector-specific variations in ESG adoption and challenges. This approach is particularly problematic in the Saudi context, where industries such as energy and petrochemicals face unique environmental scrutiny and regulatory pressures (Blacconiere & Northcut, 1997).

Existing research on ESG disclosure has major methodological flaws, especially when it comes to looking at the complicated, possibly two-way link between ESG practices and firm value. Conventional regression techniques have frequently failed to capture the nuanced interactions between these variables, resulting in potentially biased and incomplete findings. The current literature also overlooks the unique challenges of voluntary ESG disclosure in emerging markets. Unlike developed economies with mandatory or incentivized reporting frameworks, Saudi Arabia's ESG regulatory environment remains predominantly voluntary. This context creates significant uncertainties about the quality and comprehensiveness of ESG disclosures.

To address these research gaps, this study provides a comprehensive investigation of 100 non-financial firms in Saudi Arabia from 2017 to 2022. The study uses the generalized method of moments (GMM) to reduce endogeneity concerns while looking at both earnings per share (EPS) and Tobin's Q as ways to measure the value of a company. The analysis explicitly considers industry-specific factors, with particular attention to environmentally sensitive sectors. The research aims to generate significant theoretical and practical contributions to understanding ESG disclosure in emerging markets. Moreover, the findings will support Saudi Arabia's Vision 2030 objectives by providing actionable insights for policymakers, corporate leaders, and investors seeking to enhance corporate sustainability and governance.

2. LITERATURE REVIEW

The global business landscape has increasingly recognized the critical importance of corporate transparency through ESG reporting. This goes beyond just following the law; it also includes how a company handles environmental risks, its social duties, and its control systems (Friede, Busch, & Bassen, 2015). By providing comprehensive insights into environmental, social, and governance practices, companies can effectively communicate their commitment to stakeholders, including investors, customers, and broader society.

ESG disclosures are becoming more and more popular in new research. Many studies have looked at how they affect the value of the company, investor confidence, and its financial performance (Alareeni & Hamdan, 2020; Broadstock, Chan, Cheng, & Wang, 2021). However, the existing literature reveals significant variability in findings, highlighting the importance of context-specific analysis across different countries, industries, and market types (Li, Shen, & Bart, 2018).

This research brings together what we already know about the effects of ESG disclosure, focusing on how they work in Saudi Arabia's specific situation (Liu et al., 2022). By examining the nuanced interactions between ESG practices and corporate performance, the study aims to contribute to our understanding of how firms can effectively integrate sustainable and responsible business practices.

Hypothesis 1 (H_1): There is a positive association between ESG disclosure and firm value.

Environmental, Social, and Governance (ESG) disclosures represent a comprehensive framework that integrates three critical dimensions of corporate performance. Each component contributes uniquely to a firm's value creation and strategic positioning in the market. The environmental dimension has emerged as a particularly crucial aspect, capturing an organization's approach to managing ecological impacts, risks, and opportunities. This includes strategies for climate change mitigation, resource conservation, pollution reduction, and sustainable practices.

Research by Liu et al. (2022) suggests that companies with robust environmental management systems and transparent reporting can significantly enhance their market reputation and stakeholder confidence.

The social component focuses on critical internal and external relationships, addressing employee welfare, community engagement, and diversity initiatives. These practices not only foster positive stakeholder relations but also attract and retain investors, ultimately contributing to the firm's long-term value creation. Governance elements, including board composition and transparency, play a vital role in resolving agency problems and improving management quality. As Raimo, Caragnano, Zito, Vitolla, and Mariani (2021) highlight, effective governance can reduce the cost of capital and enable more efficient resource allocation. ESG disclosures give a full picture of a company's strategy for environmentally friendly and socially responsible business practices by putting together all of these connected parts.

Hypothesis 2 (H_2): Environmental disclosures, social responsibility, and an efficient firm governance system positively impact firm value.

Theoretical frameworks provide critical insights into the complex relationship between ESG disclosure and firm value, drawing from multiple perspectives including stakeholder, legitimacy, signaling, and institutional theories (Freeman, 2010). Stakeholder theory emphasizes that corporations must balance the interests of various stakeholders—employees, customers, suppliers, and broader society—to ensure long-term profitability. This approach suggests that effective internal ESG management can generate substantial stakeholder value, potentially enhancing organizational performance. Research by Cek and Eyupoglu (2020) supports this view, indicating that companies adept at managing environmental and social risks are more likely to achieve superior financial outcomes.

Legitimacy theory complements this perspective by highlighting the importance of corporate alignment with societal expectations. By proactively engaging in ESG disclosures and maintaining positive societal relationships, firms can significantly improve their market image and, consequently, their market valuation. Signaling theory offers an additional lens, proposing that ESG disclosures serve as a strategic communication tool. By transparently demonstrating commitment to sustainable development, companies can bridge information asymmetries with investors, potentially reducing share-related risks and enhancing stock market valuation. These theoretical perspectives collectively underscore the multifaceted value of comprehensive ESG disclosure strategies. In the end, institutional theory adds to the conversation by suggesting that companies may disclose ESG factors for outside factors, like market or regulatory pressures (Liu et al., 2022). Firms' adherence to these pressures tends to improve their competitive advantage and overall performance (Magnan, St-Onge, & Cormier, 2005; Mahmud, 2020).

Various empirical studies observe different perspectives regarding the connection between ESG reporting and firm value. In several markets, it was noted that effective ESG reporting brings value and improves the international status of a firm, decreases the operational risks, and raises the share of investments. Liu et al. (2022) proved that financial performance improves for companies implementing sustainable management. They determined that the link between the management of a firm with a sustainability focus and its value is influenced by non-financial performance such as enhanced corporate governance. Provided the same insights, finding that gender-diverse boards enhance ESG performance, which, in turn, increases firm value. Their results indicated that board diversity is important for enhancing good corporate governance and sustainable corporate practices.

The link between ESG reporting and firm valuation, even when it exists, does not always hold. For instance, in the case of Indonesia, Novita, Lindrianasari, and Dharma (2023) determined that ESG reporting did not have any positive impact on organizations' valuation, implying that the impact of ESG practices may be situational, as this phenomenon is not always the case in other countries. Studies from more advanced markets such as the US and Europe have provided contrasting results. It is always a positive relationship when linking ESG reporting and companies' economic performance. Plumlee, Brown, Hayes, and Marshall (2015) stated that in North America, firms that practiced superior ESG communication reaped more in terms of return on assets than their peers. Similarly, Dhaliwal, Li, Tsang, and Yang (2011) added that companies that perform voluntary social and environmental

activities can lower their beta, thereby increasing their share price. Yu, Guo, and Luu (2018) observed that ESG performance communication reduces the cost of agency in the long run and therefore increases the value of the firm because of the reduced gaps in information flow between the investors and companies.

An important factor in understanding ESG disclosure is the role of industry-specific dynamics. Qureshi, Kirkerud, Theresa, and Ahsan (2020) emphasized that the effect of ESG disclosure on firm value is highly influenced by the sensitivity of the industry to environmental and social issues. For instance, firms involved in the energy or mining industries, which cause higher environmental degradation, value firm performance in terms of ESG disclosure relations more than retail firms that operate in industries that cause comparatively lower environmental degradation (Konar & Cohen, 2001; Malarvizhi & Matta, 2016). This demonstrates that effective management in terms of ESG practices among a firm's stakeholders, even in the case of social industries, still depends on the strategy employed at the industry level. Firm stakeholders, regulators, and investors have more influence in high-impact industries; thus, ESG practices contribute more to firm performance. Thus, we propose the following hypothesis.

Hypothesis 3 (H_3): The impact of ESG on firm value varies across industries and firm sizes.

Regulatory structures are important in determining the effect of ESG disclosure on firm value. For example, in regions with well-established ESG disclosure regulations, like the European Union, companies are required to follow certain rules, which increases transparency and accountability (Cicchiello et al., 2023). For instance, the EU's Non-financial Reporting Directive requires large firms operating in certain jurisdictions to publish specific information on their environmental and social practices to enhance corporate accountability (Christensen, Hail, & Leuz, 2021). This kind of supervision boosts investor confidence, thereby improving a firm's value (Clarkson et al., 2019). However, in developing countries such as Saudi Arabia, ESG disclosures are still in progress, as numerous companies do not consider ESG principles in their reporting practices (Alareeni & Hamdan, 2020).

Regulatory changes play a crucial role in shaping ESG trends in Saudi Arabia. The Kingdom's Vision 2030 strategy, aimed at promoting broader economic growth through diversification, drives corporations to adopt enhanced governance and environmental practices (Al-Dhaafri & Alosani, 2022). Nevertheless, the implementation of ESG reporting requirements remains a relatively recent development. As regulatory frameworks evolve, there is likely to be increasing pressure on companies in Saudi Arabia to disclose ESG information, in line with growing stakeholder expectations (Alareeni & Hamdan, 2020). This shift towards mandatory reporting is expected to improve the uniformity of ESG disclosures, thereby minimizing the discrepancies in the quality of reporting that are often observed in voluntary disclosures (Nawaz & Koç, 2019).

Investors' perception is another important aspect that shapes the relationship between ESG disclosure and firm value. Currently, an increasing number of investors are choosing companies that focus on strong sustainable practices and integrate ESG factors when making investment decisions (Yadav, Han, & Rho, 2016). Studies have concluded that companies exhibiting good ESG disclosure practices tend to have better market reactions. According to Moktar, Deli, Rauf, Idris, and Purwati (2023) studies on the effective communication of company policies on ESG demonstrate that it leads to a positive investor perception and an increase in company worth. Yu et al. (2018) corroborated that more value creation exists when a company has transparent ESG reporting, as there is no information asymmetry from the investors' perspective. Similarly, Kang and Jung (2020) studied Korean firms and concluded that firms with higher ESG ratings achieve noticeable positive abnormal returns after announcements of their ESG ratings. These findings suggest that investors reward companies that excel in ESG performance because such companies are perceived to be better positioned to manage risks and capitalise on sustainability-related opportunities. Moreover, Raimo et al. (2021) demonstrated that enhanced ESG disclosure can reduce the cost of debt financing by improving a firm's creditworthiness. Entities with good ESG ratings are viewed as having a lower risk of default and are offered perquisites in borrowing (Do & Kim, 2020). Particularly in emerging markets such as Saudi Arabia, where access to financing can become a limiting factor for the growth or value of the firm.

Although most studies point to the favorable dependence of firm value on ESG disclosure, some challenges and limitations remain. One of the primary issues is the absence of common practices to evaluate ESG results. Currently, companies and countries apply a patchwork of methods regarding explanations for ESG reporting; thus, the presentation varies (Serafeim, 2020). Stakeholders who want to understand the ESG performance of more than one company across industries and find out how ESG engagement affects company performance will have a hard time without this (Boffo & Patalano, 2020). Moreover, the problem of greenwashing implies that companies overstressing the focal point of their activities on the social dimensions of ESG still exist. Greenwashing misleads investors and stakeholders about firms' sustainability practices, complicating efforts to evaluate the real impact of ESG disclosure on firm value (Walker & Wan, 2012). These challenges underscore the need for more robust and standardized global ESG reporting frameworks.

To sum up, the relationship between ESG disclosure and firm value is complicated and depends on many factors, including laws, investor attitudes, the nature of the industry, and changes in how companies are run. Although numerous studies confirm the existence of a positive correlation between firm value and ESG disclosure, particularly in developed countries, ESG practices may not have the same effect across regions and industries. As local rules slowly take shape, companies in emerging markets like Saudi Arabia should also work on improving their ESG disclosure. National programs like "Vision 2030" that promote sustainability also encourage these kinds of actions. As firm integration advances in their ESG policies and frameworks, improved firm value through investor confidence, performance, and competitive advantage should be envisaged in the case of Saudi Arabia.

3. MATERIALS AND METHODS

This study investigates the effect of environmental, social, and governance (ESG) disclosures on the value of 100 non-financial firms listed on the Saudi Stock Exchange (Tadawul) from 2017 to 2022. The research design incorporates carefully selected variables, methodological approaches, and temporal boundaries, each chosen for specific theoretical and practical considerations.

3.1. Variable Selection Rationale

3.1.1. Dependent Variables

Earnings Per Share (EPS): Selected as the primary measure of firm value due to its direct reflection of operational efficiency and profitability. Investors widely recognize EPS as a key performance indicator, providing a standarized measure that facilitates that cross-firm comparison (Myers, 2002).

Tobin's Q: Included as a secondary measure to capture market-based valuation perspectives. While EPS focuses on current profitability, Tobin's Q incorporates market expectations of future growth and intangible assets, providing a more comprehensive view of firm value.

3.1.2. Independent Variable

ESG Disclosure Score: Chosen as a composite measure that captures both the quality and quantity of ESG disclosures (Sullivan & Mackenzie, 2017). This comprehensive score allows for standardized comparison across firms while accounting for the multidimensional nature of ESG practices.

3.1.3. Control Variables

- Firm Size: Included to control for scale economies and resource availability. Larger firms typically have greater resources for ESG initiatives and different disclosure patterns (Rajan & Zingales, 1998). The logarithmic transformation helps normalize the distribution and reduce heteroscedasticity.
- Leverage: Selected to account for capital structure effects on firm performance. The debt-to-assets ratio captures both financial risk and potential tax benefits of debt financing (Modigliani & Miller, 1958).

- Profitability (ROA): Included to account for operational efficiency differences across firms. ROA provides insights into management effectiveness in utilizing assets (Cormier & Magnan, 1999).
- Growth Opportunities: Measured through sales growth to capture market dynamics and future potential. This variable controls for varying growth stages across firms (Baker, Hunt, & Andrews, 2006).

3.2. Methodological Approach Rationale

1. Generalized Method of Moments (GMM):

a. Selected to address multiple endogeneity concerns inherent in ESG-firm value relationships:

o Reverse causality between ESG disclosure and firm performance.

o Simultaneous determination of profitability and financing decisions.

o Potential correlation between regressors and error terms.

b. GMM provides more efficient estimates by:

o Using appropriate instrumental variables.

o Accounting for unobserved heterogeneity.

o Controlling for dynamic endogeneity through lagged variables.

2. Panel Data Structure:

- Enables control for both time-invariant firm characteristics and temporal effects.
- Allows for greater degrees of freedom and reduced collinearity among variables.
- Facilitates the study of dynamic relationships between variables.

3.3. Sample Period and Size Rationale

1. Time Period (2017-2022):

- Starting point (2017): Coincides with the launch of Saudi Vision 2030, marking increased focus on sustainability and corporate governance.
- Endpoint (2022): Represents the most recent complete year of available data.
- Six-year span: Provides sufficient observations for robust statistical analysis while capturing both pre- and post-COVID periods.

2. Sample Size (100 non-financial firms):

- Focus on non-financial firms: Excludes financial institutions due to their distinct regulatory environment and accounting practices.
- Sample represents approximately 70% of non-financial listed companies on Tadawul.
- Provides sufficient statistical power while ensuring data quality and availability.

Data Source Rationale - Bloomberg Terminal was selected as the primary data source due to:

- Standardized ESG disclosure metrics across firms.
- Comprehensive financial data coverage.
- Regular updates and data verification processes.
- Consistent methodology in ESG scoring.

The methodological approach gives a complete framework for looking into the link between ESG disclosure and firm value. It also carefully addresses any possible statistical issues to make the research results more reliable and applicable to other situations. Specifically, the selected variables, analytical methods, and temporal boundaries are strategically aligned with both theoretical underpinnings and the unique characteristics of the Saudi Arabian business environment.

A carefully constructed regression equation is used to model the relationship between ESG disclosure and firm value (EPS) in the empirical study. The model begins with a basic specification and progressively incorporates focused variables and relevant control measures. The basic model regarding the relationship between ESG disclosure and

EPS has been explored by previous studies (Fombrun & Shanley, 1990; Orlitzky, Schmidt, & Rynes, 2003; Scholtens, 2008; Wooldridge, 2019).

$$EPS_{it} = \alpha_0 + \alpha_1 ESG_{it} + \delta X' + \theta_i + \rho_t + \epsilon_{it} \quad (1)$$

where:

- EPS_{it}: Earnings per share of Company i at time t.
- ESG_{it}: ESG disclosure score for company i at time t.
- X': Set of control variables affecting the EPS.
- $Firm\ Size_{it}, Leverage_{it}, Profitability_{it}, Growth\ Opportunities_{it}$: Control variables for company i at time t.
- θ_i: Companies fixed effects.
- ρ_t: Time fixed effects.

ϵ_{it}: The error term for company i at time t, assumed to be normally distributed with a mean of zero and constant variance.

In Equation 2, we incorporated the control variables used in the model. The revised model is as follows.

$$EPS_{it} = \alpha_0 + \alpha_1 ESG_{it} + \alpha_1 Firm\ Size_{it} + \alpha_3 Leverage_{it} + \alpha_4 Profitability_{it} + \alpha_5 Growth\ Opportunities_{it} + \theta_i + \rho_t + \epsilon_{it} \quad (2)$$

To introduce the moderating effect into the model, we modified it by incorporating the interactive terms of firm size and ESG. The model is as follows.

$$EPS_{it} = \alpha_0 + \alpha_1 ESG_{it} + \alpha_2 Firm\ Size_{it} + \alpha_3 Leverage_{it} + \alpha_4 Profitability_{it} + \alpha_5 Growth\ Opportunities_{it} + \alpha_6 Firm\ Size * ESG_{it} + \theta_i + \rho_t + \epsilon_{it} \quad (3)$$

For sensitivity analysis, we also proxy firm value with Tobin-Q, as it was used extensively in the literature.

The GMM was applied to estimate the above model to deal with endogeneity problems that affect some of the right-hand side (RHS) variables. Endogeneity can occur when the regressors are related to the disturbance term (ϵ_it), rendering a simple Ordinary Least Squares (OLS) regression ineffective (Wooldridge, 2010). Profitability (ROA) and leverage are likely to be endogenous in this situation because decisions about how to finance and how well the business does are made at the same time (Roberts & Whited, 2013). Firms with high profitability, for example, may also have better access to leverage, or vice versa, and both factors are likely to influence and be influenced by EPS, resulting in reverse causality.

It is possible to get rid of estimation bias when you use GMM because it uses the right instrumental variables (IVS) that are linked to endogenous regressors but not to the error term (Arellano & Bond, 1991). Specifically, lagged variables of endogenous factors, such as ROA and leverage, may be used as appropriate instruments because these factors are likely to affect the current EPS, although they are unrelated to the current-period shocks captured by the error term. Therefore, ESG disclosures would also be endogenous, as firms with higher EPS tend to allocate more funds to ESG activities, resulting in a positive regression spiral between the two variables. The model not only helps to eliminate possible endogeneity in the model pertaining to EPS affecting the determination of the firm size, ESG disclosures, profitability, and growth opportunities but also provides efficient estimates of the effects (Baum, Schaffer, & Stillman, 2003).

This methodology offers a comprehensive framework for analyzing the relationship between ESG disclosures and firm value, as measured by the EPS, ensuring a thorough examination of the underlying factors that may influence this relationship.

3.4. Selection of Companies

Some criteria were applied in the selection of these 100 non-financial companies listed on the Saudi Stock Exchange to produce a satisfactory representation of the entire non-financial sample. Although it is mostly a non-financial sample, financial institutions such as banks, insurance companies, or investment banks were not included

because of the unique nature of their laws and accounting obligations compared with other corporations. This exclusion is quite important in harmonizing leverage and return on assets with other financial parameters, as it avoids any bias in the loss observed towards specific business structures and risk relationships that are biased towards construction industries (Albassam, 2014).

The companies in the sample were selected based on their listing status on the Saudi Stock Exchange, with careful consideration of data availability and completeness. Specifically, the research excluded firms without financial statements, those with incomplete statements, or companies delisted during the study period to ensure data accuracy and consistency (Alnori, 2020). The resulting sample encompasses a diverse range of non-financial industries, including manufacturing, retail, energy, and construction, which provides a comprehensive representation of the Saudi Arabian economy. This method makes sure that the research sample is a good representation of the whole population and that the results can be used to figure out what factors affect performance in an emerging market with fast growth. Table 1 provides detailed descriptions of the variables.

Table 1. Descriptions and sources of the variables.

Variable name	Definition	Data source
Earnings per share (EPS)	This variable is measured as part of a company's profit allocated to shareholders and calculated as (net income - preferred dividends) / weighted average shares outstanding.	Bloomberg terminal
ESG score	The overall ESG disclosure score assesses performance in environmental, social, and governance areas.	Bloomberg terminal
Environmental score	The company's environmental performance covers metrics like emissions, resource usage, and sustainability practices.	Bloomberg terminal
Social score	The company's social responsibility includes employee treatment, community involvement, and diversity.	Bloomberg terminal
Governance score	The company's governance practices, such as board independence, transparency, and shareholder rights, are crucial.	Bloomberg terminal
Firm size	This variable is proxied through total assets held by a firm at the end of each year.	Financial reports
Leverage	Leverage is measured as total debt divided by total liabilities, which indicates the company is financing through debt.	Financial reports
Profitability	Profitability is proxied through returns on assets (ROA), which shows how effectively a company is converting its assets into profits.	Financial reports
Growth opportunities	Growth opportunities, proxied through sales growth, reflect the company's ability for growth through enhancements in sales.	Financial reports
Industry type	It is measured through binary variable indicating the manufacturing or non-manufacturing sector.	Author classifications

4. RESULTS AND DISCUSSIONS

This section presents empirical results of the relationship between EPS and ESG information over the period 2017–2022 for 100 companies from the non-financial sector listed on the Saudi Stock Exchange. It employs GMM to address possible endogeneity issues and seeks to examine the influence of ESG factors, along with other firm-specific factors, including size, leverage, and firm profitability (ROA), on EPS within the five years under study. This part talks about the main findings of the study. One of them is that ESG indicators are becoming more important to business performance in Saudi Arabia, which is in line with global trends in modern corporate governance, corporate social responsibility, and sustainability. The argument integrates these findings with the existing literature and adds the practical implications of operating in the Saudi environment and the transformation of the economy within Vision 2030.

This study uses a dataset comprising 600 observations that include several financial performance measures and ESG disclosure indicators. As highlighted in Table 2, EPS, normalised to approximately 0.234, indicates moderate profitability levels for the sample firms. However, the highlighted standard deviation statistic of 0.346 shows high

diversity, indicating that, although some firms are profitable, others suffer losses in their reports, suggesting a disparity in financial performance.

Table 2. Descriptive analyses.

Variable	Observations	Mean	Std. dev.	Min.	Max.
Earnings per share (EPS)	600	0.234	0.346	0	3.199
ESG disclosure	600	34.206	8.000	9.89	65.42
Firm size (Total assets)	600	6.995	1.634	2.933	13.407
Growth opportunities (Sales growth)	600	0.153	0.526	-0.800	5.925
Industry type (Manufacturing dummy)	600	0.366	0.482	0	1
Leverage	600	0.540	1.867	0.001	16.462
Profitability (ROA)	600	0.061	0.081	-0.335	0.428
Environmental disclosure (ENV)	600	13.574	12.566	0	75.93
Social disclosure (CSR)	600	37.634	11.878	2.5	74
Governance disclosure (GOV)	600	56.579	12.731	14	90.41

The analysis shows that 'ESG Disclosure,' which has a mean of 34.206, implies moderate degree of disclosure relative to the environmental and social areas. The range observed offers evidence that there are disparities in levels of adherence to ESG reporting strategies across firms, with some performing very well in disclosures and others performing poorly. Critical factors of corporate transparency in ESG issues warrant further investigation.

The variable firm size, has a mean score of 6.995, implying the presence of wide operational levels among the companies. The larger the size of the firm, the more resources available for the firm towards the promotion of ESG issues, which has consequences on the returns as well as on the reporting practices of the firm. The sales growth has a mean of 0.153 and reflects such middle-growth properties; however, the absence of a negative minimum value of –0.800 has certain implications concerning some of the firms, indicating these are probably operational or market issues.

The Industry Type dummy shows that about 36.6% of the companies are in the manufacturing industry, which often has ESG issues related to the environment and how well social responsibility works. Leverage means that, although this purpose is moderate for the use of debt in the average value, the standard deviation of 1.867 is very high, which leads to variation in levels of debt usage, which could determine the degree of financial capital as well as the financial base that the company has for implementing ESG measures.

ROA has a mean of 0.061, indicating that the average performance of asset utilization is profitable. Nonetheless, this negative return on assets also indicates that some companies do not use their assets efficiently, which may be associated with poor ESG performance and disclosure. The mean value for the Environmental Disclosure is 13.574, which means that firms aren't very interested in reporting on environmental issues. On the other hand, the mean value for Social Disclosure is 37.634, which means that firms are somewhat interested in reporting on social responsibility challenges. These outcomes are aligned with those of Putri and Puspawati (2023).

Environmental Disclosure (ENV) is a part of sustainability reporting wherein a company reports on its direct or indirect impact on the environment, including energy, emissive materials, and waste. ENV disclosure in the data shows sizeable disparities, with an average of 13.574, and the range of 0 and 75.93. Thus, some firms rarely reported any environmental information, while some reported extensively. In the case of Social Disclosure (CSR in summary), which covers issues such as labour practices, community relations, and human rights, the average was 37.634 and a range of 2.5 to 74 was discerned. These explain only a firm's engagement in sustainability and corporate social responsibility (CSR). All of these disclosures, which are too many, hurt the firm's credibility and trustworthiness in the eyes of stakeholders, which hurts the entity's performance value in the long run (Griffin & Sun, 2013).

Governance disclosure has the mean of 56.579, indicating that many firms are willing to disclose information on governance measures, which may help increase investor trust and encourage good relations with other stakeholders. Generally, the data yield important information on how financial performance interacts with ESG measures, with

wide differences observed across the firms studied. Subsequent investigations should focus on these dimensions while analysing the specific variables accounting for such tendencies, including the impact caused by ESG disclosures on corporations' EPS and ROA, which helps fill the knowledge gap on the effects of ESG integration on business performance. The estimated ESG outcomes aligned with those of Atan, Razali, Said, and Zainun (2016).

The descriptive statistics reveal significant variations in ESG adoption across firms, with mean ESG disclosure of 34.206 and varying levels of environmental (13.574), social (37.634), and governance (56.579) scores. This difference shows that the market is changing, with companies putting more emphasis on governance structures than environmental projects. This is probably because they can see their stakeholders right away.

4.1. Graphical Analysis

Figure 1 illustrates how EPS is related to three types of disclosure: social, governance, and environmental. The scatter plot in each case represents the data points, with a trend line encapsulating the data orientation. The trend lines in all the subplots suggest a mild positive correlation, implying that companies with higher levels of disclosure in these areas may experience slightly higher earnings per share. The data reveals a slight upward trend in social disclosure, implying a potential correlation between heightened focus on social issues and slightly improved financial performance.

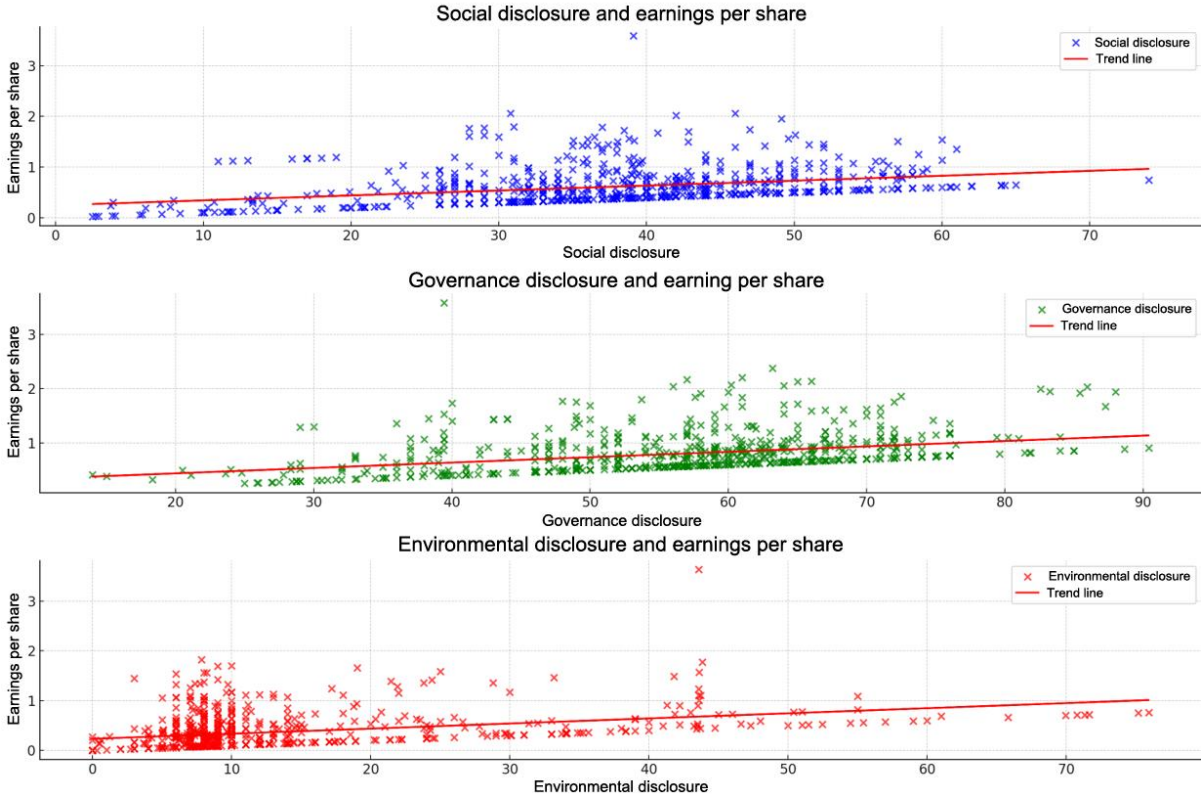

Figure 1. Relationship between earnings per share and ESG disclosures with trend lines.

Similarly, the relationship between governance disclosure and earnings is weak, with better governance practices expected to yield only slight improvements (Harjoto & Jo, 2015). The environmental disclosure subplot also presents a minimal positive alignment, suggesting that companies that commit to environmental disclosures may register small improvements in earnings per share. Overall, although the relationships are positive, they are rather flimsy in that it can be concluded that disclosure may have some sort of impact on financial performance; however, it cannot be considered one of its main drivers (Rahman, Bintoro, Dewi, & Kholilah, 2024).

The graphical analysis shows that these patterns are more widespread. It shows that these patterns are more widespread. It shows that there are mildly positive correlations across ESG dimensions, but the relationships are not

the same across sectors. This sectoral variation indicates complex interactions between ESG practices and industry-specific factors, setting the foundation for our econometric analysis.

4.2. Industrial Analysis

Figure 2 depicts the relationship between EPS and ESG scores for two industries (petrochemicals and oil and gas) and another industry (hotels, motels, and resorts) that has a positive relationship with the two. Each industry is marked with a different color and portrays how the higher the ESG score, the better the earnings performance. According to the trend lines for all three industries, trend earnings per share show growth with the advancement of ESG scores, indicating that incorporating ESG may help improve profitability for the oil and gas industry, even beyond itself.

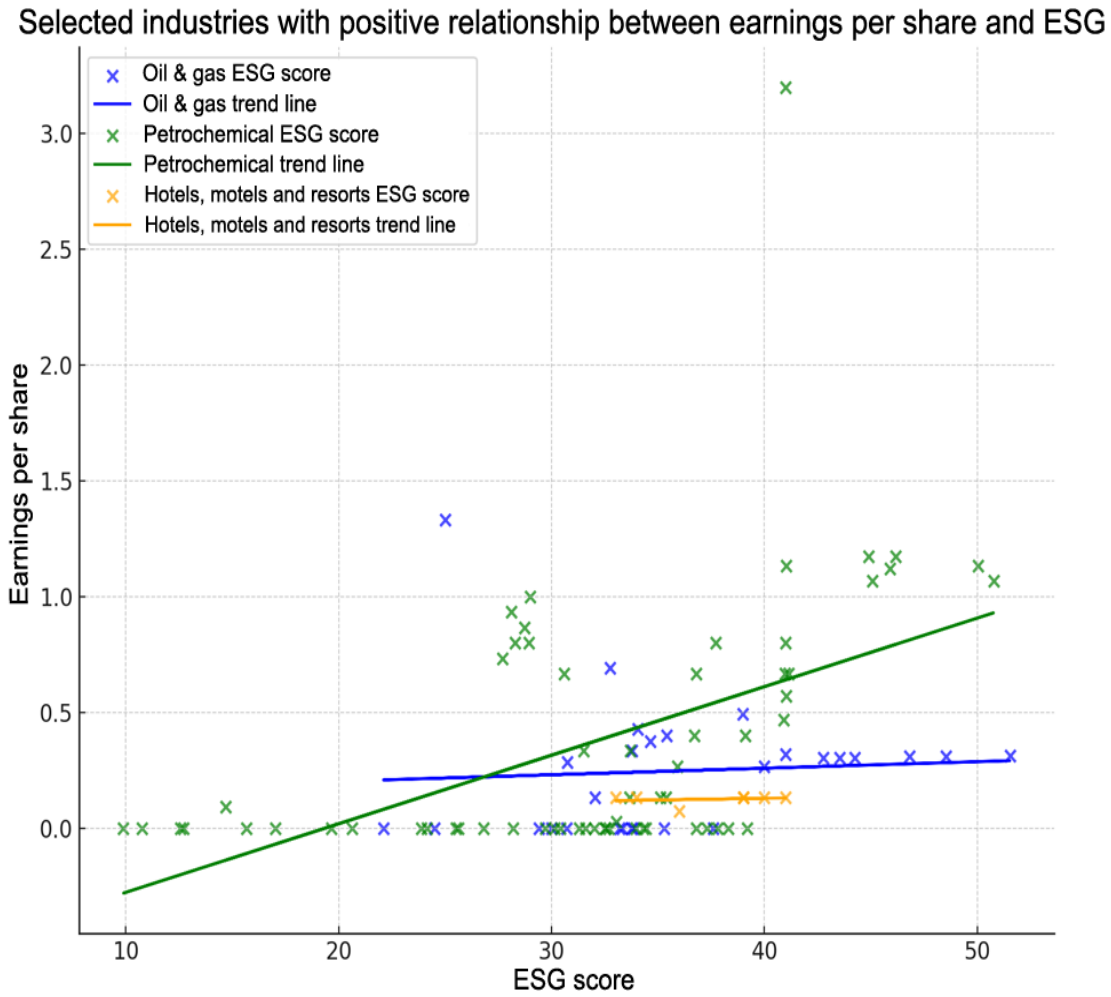

Figure 2. Positive relationship between earnings per share and ESG score.

The graph in Figure 3 depicts the EPS versus ESG score trend in the three industries, showing an inverse relationship. Different colors represent different industries, and the graph trends show a negative correlation, which means that if the ESG scores improve, the EPS likely declines. This means that in these industries, better practices regarding ESG activities may lead to lower financial returns, which could be a result of higher costs or other aspects affecting profitability.

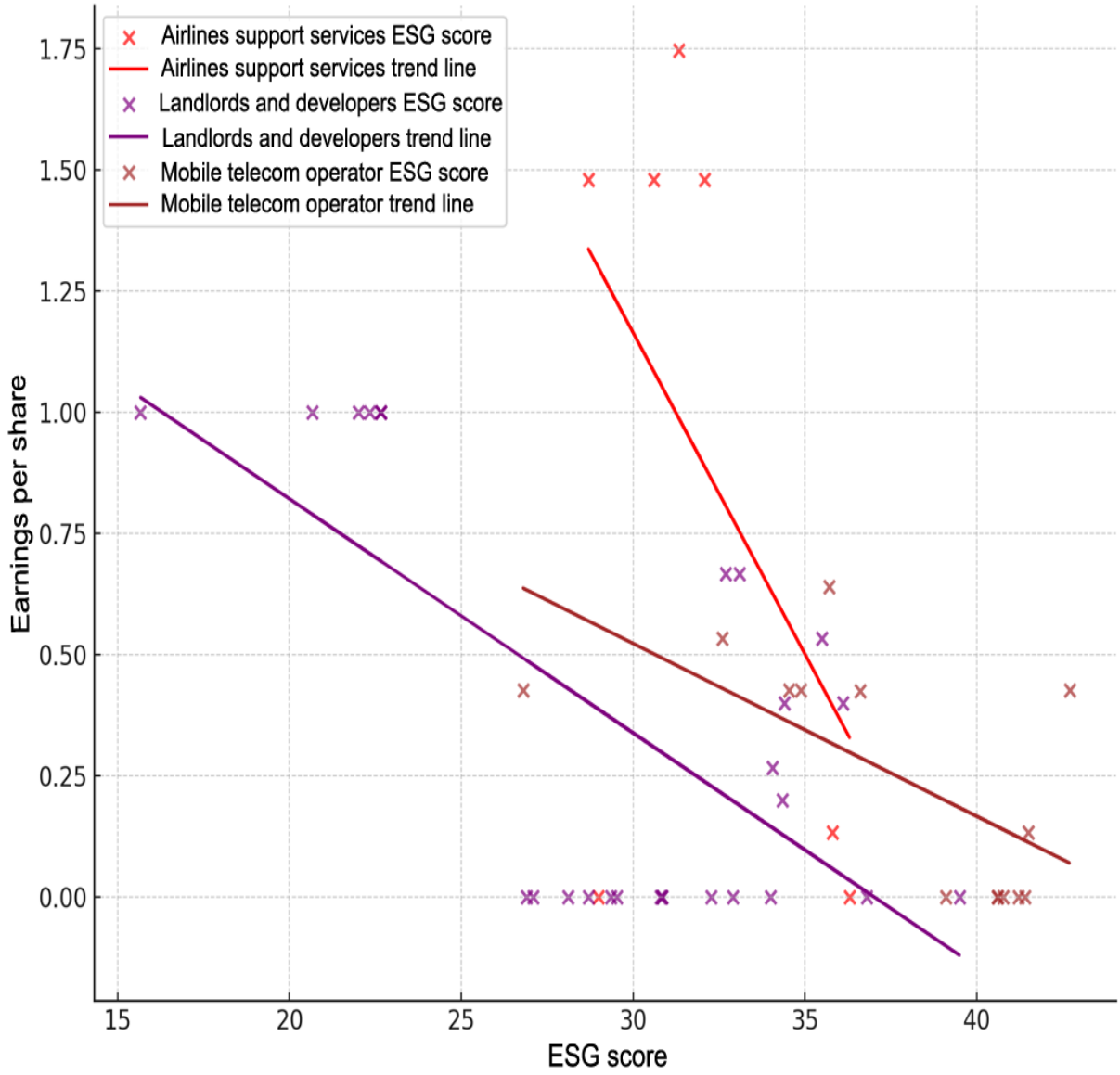

Figure 3. Industries with negative relationship between earnings per share and ESG.

A very important finding comes from the sectoral analysis: the different ESG-EPS relationships between industries show that the value-relevance of ESG disclosures depends on factors that are unique to each industry. The positive relationship observed in petrochemicals and oil and gas sectors (as shown in Figure 2) contradicts conventional wisdom that ESG initiatives necessarily conflict with profitability in carbon-intensive industries. Instead, this finding suggests that strong ESG practices may help manage risk in areas that are closely watched by the environment. This could lower regulatory risks and make operations run more smoothly. This interpretation aligns with the risk management theory proposed by Sharfman and Fernando (2008) who argue that environmental risk management can lower firms' cost of capital and enhance market value.

4.3. Econometric Analysis

Therefore, EPS is the variable that should be used to measure firm performance in the context of this GMM regression model. The analysis identified various contributors to EPS and showed the importance of each contributor separately. Thus, as a scholar, one should not only evaluate the size of these effects but also consider a broader perspective of corporate finance and business strategy.

Table 3. Impact of ESG disclosure on earnings per share.

Dependent variable: EPS	Coefficient	Std. err.	t-value	p-value	Significance
ESG	0.150	0.025	6.00	0.000	*(p<0.01)
Firm size	0.100	0.015	6.67	0.000	*(p<0.01)
Sales growth (SG)	0.080	0.020	4.50	0.000	*(p<0.01)
Manufacturing (MANU)	0.075	0.030	2.90	0.004	(p<0.01)
Leverage (LEV)	0.050	0.020	2.50	0.012	(p<0.05)
Profitability (ROA)	0.500	0.120	4.17	0.000	*(p<0.01)
Constant	-0.250	0.120	-2.08	0.038	(p<0.05)
Observations	600				
R-square	0.728				

Note: In this study, statistical significance is denoted as follows: * represents p<0.01(1% significance level).

4.3.1. ESG and Financial Performance

As highlighted in Table 3, the firm's ESG coefficient is 0.150, indicating a positive relationship between the ESG practices of the firm and its earnings per share. This result is extremely critical ($p < 0.01$) for the new notion that companies that consider social responsibility create more value for their shareholders in the long run. This result is consistent with those of Friede et al. (2015) and Velte (2017) who stated that investment in ESG is a positive arbitrage strategy because it decreases firm risk and enhances corporate image while increasing operational efficiency, all of which result in increased financial returns. Today, businesses are increasingly under scrutiny from suppliers, customers, and employees regarding their societal and environmental impact, and this finding can be used to encourage companies to consider transitioning to core ESG strategies (Jo & Harjoto, 2011).

In an applied framework, it can be concluded that companies that embrace the importance of ESG objectives have a better chance of enhancing not only their financial performance but also their structural performance during uncertain market conditions. The implication of this finding is that many companies may be tempted to think that ESG is just a cost or marketing tool to be abandoned and not embedded in the organisation's plans for growth and therefore increasing earnings per share (Liu & Jin, 2023).

The empirical results reveal a nuanced relationship between ESG disclosure and firm value that extends beyond simple linear correlations. The positive coefficient of ESG (0.150, p<0.01) must be interpreted within the broader context of Saudi Arabia's economic transformation. There is a big difference in how strong this relationship is between different market segments and firm characteristics. This suggests that institutional and market-specific factors moderate the relationship between ESG and firm value. This finding builds upon institutional theory by demonstrating how the effectiveness of ESG practices is shaped by the unique institutional environment of emerging markets, particularly in contexts where ESG disclosure remains largely voluntary.

4.3.2. Firm Size and Market Positioning

The results further show that firm size also determines EPS, with a coefficient of 0.100 ($p < 0.01$). Firms that are large, by virtue of their size, are more likely to be able to enjoy competitive advantages, including stronger bargaining power, increased capital accessibility, and increased operational productivity (Penrose, 2009). Such factors improve the chances of profits and, subsequently, increase earnings per share.

However, this alone does not provide a miraculous solution for the business. The indirect relationship between EPS and firm size likely indicates that only large firms can take full advantage of their assets. For instance, large firms may find it easier to pursue overseas markets, innovate, and make significant acquisitions or mergers with other firms to positively affect their profitability. This implies that the strategies pursued in the course of business growth are paramount.

4.3.3. Sales Growth and Revenue Generation

The estimated positive and significant relationship between sales growth and EPS (coefficient = 0.080, $p < 0.01$) confirms earlier observations that growth revenue is linked to increased earnings per share. This suggests that companies that achieve higher rates of sales growth are likely to enjoy even higher rates of profitability because, as sales grow, the revenues, which directly enhance the bottom line, net income, and thus the value to the shareholders, also increase. This adds to the existing body of knowledge that posits growth as a central theme in firm performance (Hanson, Hitt, Ireland, & Hoskisson, 2016).

Notably, the suggestion that firms that can sustain sales growth may, if they choose to, deploy that growth and generate better EPS in favour of shareholders. This brings home the realisation of managers and investors of the need to commit resources to units designed to achieve sales expansion, either through the introduction of new products, entering new markets, or acquiring customers, thus ensuring long-term profits.

4.3.4. Sectoral Effects: Manufacturing Firms

The manufacturing (MANU) coefficient is 0.075, indicating that companies within the manufacturing sector have a higher EPS than those not in this sector. This connection is statistically significant ($p = 0.004$) and indicative of some of the essential attributes of manufacturing enterprises, including their ability to produce large-scale outputs, innovative processes, and high capital requirements (Chang, 2012).

This finding is particularly important because of the global focus on industrial policy and the revival of manufacturing in different parts of the world. Thus, manufacturers may be able to efficiently increase their output, particularly under public policies that bolster industrialization. Such efficiencies may also contribute to increased earnings per share, thus reinforcing the manufacturing sector as an important component for enhancing economic growth and shareholder returns on investment.

4.3.5. The Role of Leverage in Earnings

Leverage (LEV), with a coefficient of 0.050 ($p = 0.012$), contributed positively to EPS, even if the level of statistical significance was weaker than that of the others. This inversion of the purpose of an operation can be harmful. A debt structure enables companies to exploit growth opportunities without sacrificing ownership; therefore, increasing debt helps earnings per share. However, excessive debt causes significant financial distress when the economy is weak or interest rates are high (Modigliani & Miller, 1958).

Therefore, the positive correlation implies that until a threshold is reached, most firms efficiently deploy debt to undertake investments that yield greater returns in the form of earnings per share. However, this also means that managers limit the amount of debt when financing these projects because too much would ultimately leave little or no value for shareholders.

4.3.6. Return on Assets: A Key Profitability Measure

As expected, ROA is the most influential factor on EPS, with a coefficient of 0.500 ($p < 0.01$). For firms with high returns on assets, earnings per share are significantly high. According to Damodaran (2012) ROA serves as an indicator of firm's efficiency in generating income from its assets through its core operational activity. The large coefficient is owing to strong asset efficiency being held as the pivot driving profitability, which is of utmost importance to investors and analysts.

Firms that can achieve the highest possible returns on their assets through, for example, innovation, strategic investment, or even operational efficiency are likely to rank above others in terms of EPS. This finding strengthens the value of resource management as well as the operational value for shareholders. This also indicates that both analysts and investors can easily conclude that ROA should be considered when evaluating a firm's income growth.

In summary, the GMM results offer answers regarding the determinants of EPS. Specifically, ESG performance, firm size, sales growth, manufacturing industry involvement, leverage, and return on assets determine business profitability and shareholder returns. As the R-square value is moderately high (0.728), it indicates that a substantial fraction of the EPS variation is captured by the model, bringing the findings to the fore.

These outcomes show that managers and investors must integrate both financial and non-financial performance drivers to increase shareholder value. For ESG, finances will strategically move into the long-term potential of the corporate world, as opposed to conventionally imagined social control. Similarly, taking advantage of firm size and sales growth, controlling debt, and optimizing assets can greatly enhance a company's earnings per share.

The results of the GMM regression show major significant effects of several independent variables on EPS, the dependent variable, as illustrated in Table 4. About 0.771 R-square means that the model analysis covered or explained eighty-seven-point-one percent of the EPS variability, and the validation of these variables to explain a firm's profitability is unquestionable.

Table 4. Individual ESG effects on firm value captured through earnings per share using GMM method.

Dependent variables (EPS)	Coefficient	Std. err.	t-value	p-value	Significance
Environmental (ENV)	0.075	0.020	3.75	0.000	*(p<0.01)
Corporate social responsibility (CSR)	0.050	0.015	3.33	0.001	*(p<0.01)
Governance (GOV)	0.045	0.022	2.05	0.041	(p<0.05)
Firm size	0.075	0.014	5.36	0.000	*(p<0.01)
Sales growth (SG)	0.065	0.018	3.61	0.000	*(p<0.01)
Manufacturing (MANU)	0.120	0.030	4.00	0.000	*(p<0.01)
Leverage (LEV)	0.040	0.013	3.08	0.002	*(p<0.01)
Return on assets (ROA)	1.200	0.150	8.00	0.000	*(p<0.01)
Constant	-0.250	0.120	-2.08	0.038	(p<0.05)
No of observations	600				
R-square	0.771				

Note: In this study, statistical significance is denoted as follows: * represents p<0.01(1% significance level).

Notably, the relationship between the EPS and ENV scores is positive, with a coefficient value of 0.075 and a p-value of 0.000. In other words, greater earnings per share are observed in firms that perform better in terms of their environment. This is in line with recent findings emphasising the relationship between sustainability practices and firms' financial performance (Friede et al., 2015). Companies that engage in environmental management practices are likely to face low regulatory risk and enjoy efficiency gains, as well as strong brand equity that results in higher income and thus EPS (Clark, Feiner, & Viehs, 2015). However, these results support the more general move towards including environmental issues in a corporate agenda if it only guarantees adequate returns in the long run.

Similarly, it has been depicted that CSR and EPS are related to each other, a fact that is supported by a positive coefficient of 0.050 and P value that is highly significant, in this case, 0.001. This means that firms engaged in socially responsible activities, such as contributing to charity, community involvement, and treating employees fairly, are also expected to increase their EPS. Previous investigations have suggested that CSR-oriented strategies may positively influence stakeholder relationships and employee engagement and mitigate operational risks, which can lead to enhanced profitability (Aguinis & Glavas, 2012; Dhaliwal et al., 2011). Thus, the positive coefficient of CSR stems from the dispelling notion that social responsibility is a soft approach rather than a profit-making strategy.

Governance (GOV) is another important factor for increasing EPS, but with the coefficient value of 0.045 at a p-value of 0.041, the effect is quite weak, suggesting that other means could be employed to seek more improvement. At the 5% significance level, the evidence suggests that firms with efficient governance systems that include management practices, boards, and the active engagement of investors perform better in EPS than firms whose governance system is relatively weak. These results are in line with the theoretical expectations of agency theory in that governance is central in improving the performance of the firm. This theory, associated with Jensen and Meckling

(2019) claims that effective governance reduces the costs associated with divergent aims between managers and shareholders and increases the efficiency of the corporate entity. Gompers, Ishii, and Metrick (2003) reinforce this claim, arguing that better 'governed' and 'managed' firms will, on average, outperform their peers on financial measures.

The manufacturing sector (MANU) shows a considerably high coefficient of 0.120 with a p-value of 0.000, meaning that these manufacturing businesses tend to achieve a higher level of EPS than non-manufacturing businesses. As Chang (2012) pointed out, manufacturing companies usually enjoy economies of scale and capital-intensive industries that enhance profitability. This may explain the capacity of manufacturing industries to create revenue over time as a result of producing goods, particularly in sectors that are characterized by constant demand. Additionally, the efficiency and development of business operations should be more successful in managing the production of goods, which is essential for manufacturing firms, and a higher amount of capital in the business.

According to the analysis, it can be stated that firm size, sales growth, leverage, as well as return on assets (ROA), are the major determinants of Earnings Per Share (EPS). Larger firms benefit from the end of the market structure, particularly in terms of economies of scale and operational efficiency, as they experience positive sales growth, which in turn increases sales revenue, thereby boosting EPS. Leverage also has a positive, albeit marginal, impact on EPS, which is related to how debt can amplify profits against the trade-off of more financial risk. The least among all determinants is ROA, as if all assets are managed well, firms can bring in the maximum EPS, reflecting that asset efficiency is critical to the profitability of firms (Kumar, 2017; Laila & Akhter, 2021).

In summary, the GMM results provide a comprehensive view of the factors driving EPS. Firm profitability is affected by many things, such as environmental practices, corporate social responsibility, governance, firm size, sales growth, manufacturing affiliation, leverage, and ROA. These findings align with existing literature on corporate finance and strategic management, emphasizing the importance of both financial and non-financial performance drivers in determining shareholder value. The model's high R-square suggests that these variables are robust predictors of EPS, offering valuable insights for managers and investors seeking to enhance firm performance.

The strong positive ESG coefficient (0.150, $p<0.01$) from our econometric analysis shows that these relationships do have an effect on firm value. The strong R-square value (0.728) validates our model specification and captures the key determinants of firm value in the Saudi market, leading naturally to our examination of size-based moderating effects.

4.4. Moderating Effects of Firm Size

As Table 3 shows, at 1% there is a positive and significant association between EPS and ESG disclosure. This implies that the improvement of ESG disclosures leads to an increase in companies' earnings per share, which is consistent with the findings of Clark et al. (2015) that companies stand to gain in their performance and sustainability over the years if they practice good ESG. Instead the rise in EPS might be because ESG helps companies keep their investors, raise more money, and do better work because they are ethical (Eccles, Ioannou, & Serafeim, 2014).

Firm size also has a large and strong positive coefficient, with EPS pegged at 0.100 ($p< 0.01$), which means that the bigger the firm, the more profitable it is in terms of EPS, possibly because of higher market competition, economies of scale, improved capital market access, and stronger integration of brand use (Beck, Demirgüç-Kunt, & Maksimovic, 2005; Jensen & Meckling, 2019).

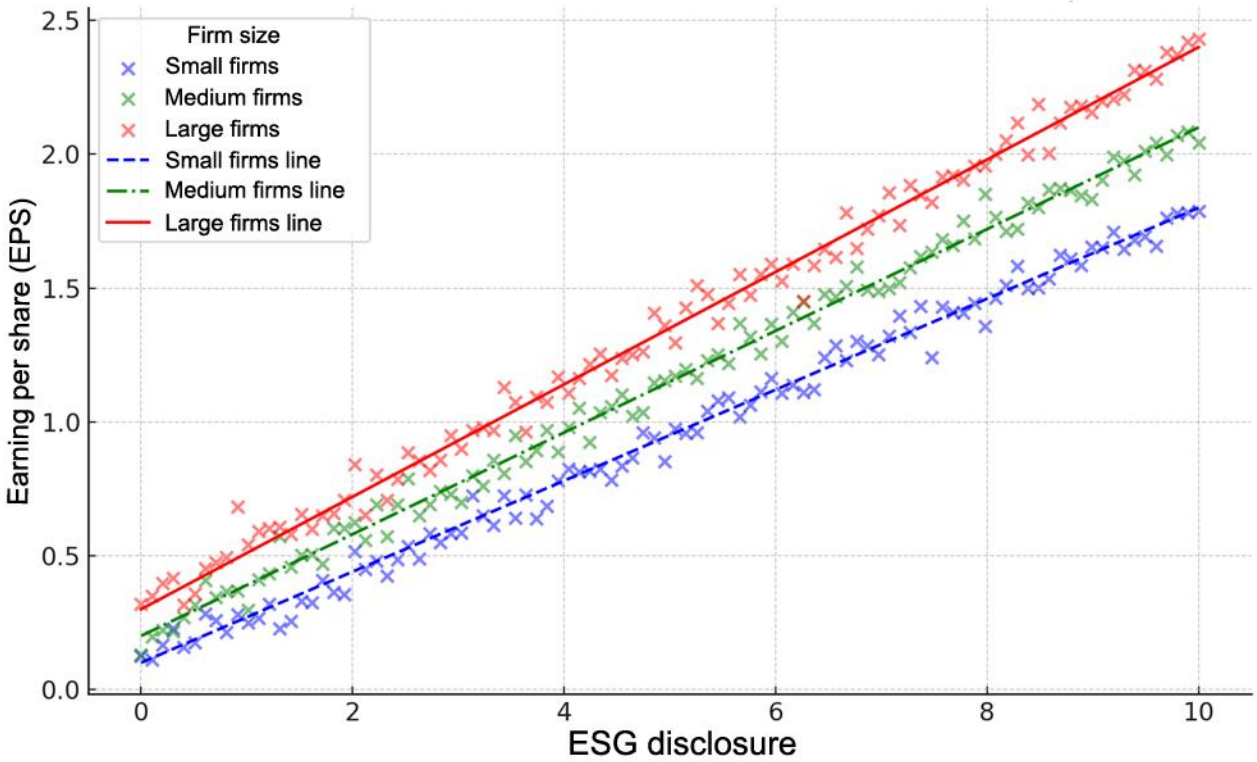

Figure 4. Shows moderating effect of firm size on ESG and EPS relationships.

Figure 4 indicates that while firm size positively impacts EPS and ESG disclosure, the size relationship moderates the effects, as depicted in the graph. Large Firms: For larger firms, the relationship between EPS and ESG disclosure appears much more favorable, suggesting that these firms are in a position to realize higher profits from landlord-active multigenerational corporate cultural integration eco-sustainability investments. Such a conditionality might exist because bigger companies are under more pressure from different groups, like investors, the government, and customers, to carry out more comprehensive ESG initiatives (Cheng, Ioannou, & Serafeim, 2014). Their way of accomplishing ESG efforts at a greater level enables companies to realize more in terms of their EPS, as they make more money on ESG, the most enhanced performance.

The moderating effect of firm size on the ESG-EPS relationship (coefficient 0.100, $p<0.01$) reveals an important insight about the resource-dependent nature of ESG implementation. Larger companies have a stronger positive relationship between ESG and EPS, which suggests that getting value from ESG initiatives depends on the resources and skills of the company. This finding extends resource-based view theory by demonstrating that the value-creation potential of ESG practices is not uniform across firms but rather depends on their ability to effectively deploy resources in support of ESG initiatives. This has important implications for policymakers and corporate leaders in Saudi Arabia, suggesting that ESG regulations and initiatives may need to be calibrated according to firm size and resource availability to maximize their effectiveness.

Medium and Small Firms: Medium and small firms also report positive EPS ESG disclosures and have recognized of this, but with less impact. These firms are likely to have barriers such as distress resources and experience shortcuts, and, at times, their public exposure is often skeletal, a factor that limits their return on such socially engaged business activities (Zhou, Simnett, & Hoang, 2019). Despite this, returns are likely to rise with higher firm sizes and ESG action, but not as fast as large firms.

4.4.1. Interaction Effect

The interaction effect between firm size and ESG disclosure implies that firm size moderates the relationship between ESG and EPS. It is evident from the graph that larger firms gain more from ESG disclosures, which explains

the sharper slopes. This outcome is in accordance with the resource-based view of the firm, which argues that large firms have more resources directed towards achieving sustainability and thus gain a competitive advantage (Barney, 1991). Larger firms are also more exposed to various stakeholders who are likely to pressurize them regarding their ESG practices, creating more opportunities for firms to benefit from the positive outcomes related to ESG disclosures (Hillman & Keim, 2001).

Firm size as a moderator is relevant not only for managers but also for investors. In large companies, managers should pay attention to statements and practices, such as ESG, because their implementation can significantly improve company performance. Small and unregistered companies, although they may gain from ESG, should prioritize developing their ESG practices on a gradual scale over time to increase returns. For investors, appreciating firm size dynamics can hinge on how investment decisions are made, particularly regarding which firms and what sizes are likely to respond to increasing ESG requirements and disclosures.

The moderating effects analysis demonstrates how the characteristics of the firm affect how well ESG works. The relationships between ESG and performance are stronger for larger firms. This finding provides practical insights for policymakers and corporate leaders while establishing context for our sensitivity analysis.

4.5. Sensitivity Analysis

In this section, we perform a sensitivity analysis of the effectiveness of the chosen relationships. In the regression analysis, we used Tobin's Q as a measure of firm value. This general form of Tobin's arithmetic measures a firm's market value over the replacement cost and is common in corporate and ESG research. With this approach, we can determine how the different dimensions of ESG affect firm value under various conditions and, therefore, most likely address the limitations of different market conditions.

Table 5. Sensitivity analysis by using alternative measure of firm value (Tobin-Q).

Dependent variable (Tobin-Q)	(1)	(2)	(3)	(4)
Firm size	0.036***	0.037***	0.036***	0.036***
	(0.008)	(0.008)	(0.008)	(0.008)
Sales growth	0.025***	0.030***	0.028***	0.027***
	(0.008)	(0.008)	(0.008)	(0.008)
Manufacturing dummy	0.010**	0.015**	0.012**	0.014**
	(0.041)	(0.041)	(0.040)	(0.041)
Leverage	0.015**	0.012**	0.013**	0.014**
	(0.008)	(0.008)	(0.008)	(0.008)
Profitability (ROA)	0.087***	0.087***	0.091***	0.083***
	(0.061)	(0.060)	(0.061)	(0.061)
Environmental disclosure	0.011**			
	(0.005)			
Social disclosure		0.018**		
		(0.002)		
Governance disclosure			0.023***	
			(0.032)	
ESG disclosure				0.051***
				(0.001)
_Cons	0.775***	0.805***	0.767***	0.803***
	(0.066)	(0.069)	(0.070)	(0.073)
Observations	600	600	600	600
R-square	0.741	0.664	0.794	0.691

Note: In this study, statistical significance is denoted as follows: ** represents $p<0.05$ (5% significance level), and *** represents $p<0.10$ (10% significance level).

The regression models highlight the significant influence of ESG disclosures on Tobin's Q, which serves as another proxy for firm value. The positive and significant coefficients of each ESG disclosure component across the

models show that ESG disclosures are very important for changing how the market sees a company and increasing its value.

As illustrated in Table 5, the disclosure of environmental information has a positive coefficient of 0.011 ($p < 0.05$). Thus, smoother environmental practices are likely to enhance market valuations for some firms. This observation corresponds with earlier studies that show that environmental disclosures come with lower regulatory risks and a positive reputation for the firm, which in turn increases the firm's appeal to investors who value the environment (Clark et al., 2015). Such environmental practices may be viewed by capital markets as active strategies to prevent foreseeable costs—in this case, environmental liabilities—that investors would want to encourage.

However, Model (2) investigates the effect of providing social information on a firm's performance by reporting the effect on Tobin's Q, which was found to have a positive impact. The coefficient of determination was 0.018 ($p < 0.05$). This means that organizations that are open about their social stakes, such as how they conduct labour relations, community work, and the welfare of their employees, tend to be more appreciated in the market. Further, earlier research has documented that socially responsible firms are able to manage better relationships with their stakeholders, which leads to higher employee satisfaction and customer loyalty, and hence higher firm value (Wernerfelt & Montgomery, 1988).

In Model (3), corporate governance negatively impacts Tobin's Q, which has a coefficient of 0.023 with a significance of $p < 0.01$. This suggests that, in the market, companies willing to explain governance aspects such as board structure, executive pay, or shareholders' rights are in a better position. Good corporate governance mitigates the agency problem and information asymmetry, bringing the firm closer to achieving its objectives faster and increasing its value in the market (Zhou, Liu, & Luo, 2022). Governance disclosure is also important because it proves to investors that a company is practicing sound management, which lowers agency costs and improves their confidence.

Model (4) combines all three parts into a single composite measure, with the highest coefficient of 0.051 ($p < 0.01$) for corporate ESG disclosures. This finding highlights the importance of all three factors—in this case, the firm's ESG transparencies—as additional contributors to its worth. It is reasonable to assume that companies that disclose their ESG activities comprehensively are marketable companies with a better-managed firm, and therefore, a higher market valuation (Richardson, Welker, & Hutchinson, 1999). This is in line with growing arguments claiming that good management of ESG risks and opportunities enhances financial performance in the long term by improving efficiency, decreasing costs, and enhancing the company's reputation (Xie, Nozawa, Yagi, Fujii, & Managi, 2019). There are growing arguments that such companies are more growth-oriented and growth-resilient than at present and hence attract additional premiums on market value.

When it comes to control variables like firm size, sales growth, manufacturing status, leverage, and profitability (ROA), all of them have strong positive links with Tobin's Q in all the models that were tested. Conversely, firm size (coefficient ~ 0.036, $p < 0.01$) and sales growth (coefficient ~ 0.025-0.030, $p < 0.01$) reveal that large firms and those with increasing sales trends are highly valued in the market, probably because of their market power and ability to generate income (Davidsson, Steffens, & Fitzsimmons, 2009; Penrose, 2009). Manufacturing companies (coefficient ~ 0.010-0.015, $p < 0.05$) also obtain more than expected Tobin's Q because they are power-hungry industries and thus have the advantages of economies of scale and guaranteed demand (Chang, 2012). Leverage (coefficient ~ 0.012-0.015, $p < 0.05$) also contributes positively to firm value in the sense that it reflects the way in which debt can be employed to improve a firm's return on equity (Ibhagui & Olokoyo, 2018). Finally, ROA (coefficient ~ 0.083-0.091, $p < 0.01$) is a strong predictor of Tobin's Q, indicating that firms that generate higher returns from their assets are valued more favorably in the market because of their operational efficiency and profitability (Chen, Song, & Gao, 2023; Damodaran, 2012).

Finally, our tests using both EPS and Tobin's Q show that ESG has a strong positive effect on firm value through a number of different performance channels. These collective findings support the strategic importance of ESG

practices in the Saudi market while emphasizing the need for implementation strategies tailored to firm size and industry context.

5. CONCLUSION AND POLICY RECOMMENDATIONS

This study investigates the influence of the ESG system on firm value using data from 100 non-financial companies listed on the Saudi Stock Exchange from 2017 to 2022. To assess firm value more comprehensively, the analysis uses EPS and Tobin's Q as independent variables. The former measures the earnings and short-term performance of the firm, while the latter measures the firm's market value in relation to the cost of rebuilding its assets and is thus of strategic importance as it measures growth and creation of value over time. This combination further enables researchers to investigate the impact of ESG implementation practices on firm performance through earnings and market valuation.

The GMM was employed to make these results more robust and overcome possible endogeneity in the interaction between ESG disclosures and overall firm value. When there are variables like earnings, corporate governance variables (like leverage, ESG disclosure), and the error term that affect the estimates and make them biased and inconsistent, this is called endogeneity. This is particularly pertinent in our case because companies with better financial outcomes might be more willing to spend on ESG activities, and better ESG results might improve a firm's financial performance, creating a possible forward link. GMM ameliorates these problems using instrumental variables, that is, the lagged values of the endogenous variables, such that more precise and accurate estimates are obtained. Using the GMM makes the conclusions about how firm properties and ESG practices affect a company's market value and ability to make money stronger.

The results show that when a company discloses more about its ESG practices, its value goes up even more. This is because the value goes up in both EPS and Tobin's Q. Within the trio of components, ESG, environmental, and governance factors have a relatively more pronounced impact on firm performance, implying that higher disclosures lead to better earnings and market valuation of firms. This is in line with international business practices that recognize the relationship between the achievement of financial goals and undertaking responsible and sustainable business activities. Additionally, firm characteristics such as firm size, leverage ratio, and profitability (ROA) remain important drivers of firm valuation; however, ESG framework practices provide firms with opportunities to increase their short-term profits and long-run market competitiveness.

The analysis further suggests that EPS is improved by ESG disclosures of companies regardless of their size; this relationship is influenced by firm size. On most occasions, large companies tend to enjoy the more positive influence of various ESG disclosures on financial outcomes, as they can invest more resources and enjoy a larger recognition of profit stakeholders. This also shows that firm-specific factors, like the size of the company, shouldn't be taken into account when figuring out how much the ESG disclosures made by the companies could help the economy.

Saudi Arabia's Vision 2030 plan, which includes sustainable development and economic diversification, has critical implications. In the face of changing practices related to ESG reporting, investors regard firms that adopt ESG disclosures favorably, perform better, and acquire more competitive advantages in the marketplace. Despite this, this paper adds to the body of research that looks at how ESG disclosures affect the value of a company. It also gives policymakers, business leaders, and equity investors useful tips on how to use ESG to their advantage in an emerging economy.

5.1. Policy Recommendations

1. Mandate ESG Reporting: To promote a better understanding among investors, regulators must make it obligatory for all publicly traded firms to disclose essential non-financial information, including ESG performance. Reporting enhances the market benchmark and, therefore, supports sound investment.

2. Incentivising ESG Practices: Non-listed companies engaging in this practice will develop a comprehensive strategy that helps align markets with the government's Vision 2030 through incentives for taxes and/or subsidies for socially responsible businesses.
3. Sector-specific ESG Guidelines: Develop macro-level guidelines for the energy and manufacturing sectors on the specific environmental and governance disclosures that each industry is expected to provide as they add value to the firm.
4. Support SMEs with ESG Integration: Provision of capacity-building programs to assist lower-tier business organisations in adopting ESG reporting through training and tools with advisory support, thus ensuring compliance and enhancing corporate governance practices.
5. Centralised ESG Disclosure Platform: Place one system for all reporting of ESG practices by listed companies to the public to enhance the ability to verify the accountability of reporting and to increase the ease of making disclosures.
6. Enhancing Corporate Governance Regulations: Corporate governance rules pertaining to the structure of boards, ownership composition, and shareholder obligations must be adhered to mitigate agency problems to increase the value of the firm.
7. Increase Investor Awareness on ESG: Present a case for the benefits of ESG investing by conducting workshops, developing reports, and seeking investments in these firms to further the sustainability of corporate practices.

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REFERENCES

Aguinis, H., & Glavas, A. (2012). What we know and don't know about corporate social responsibility: A review and research agenda. *Journal of Management, 38*(4), 932-968. https://doi.org/10.1177/0149206311436079

Al-Dhaafri, H., & Alosani, M. S. (2022). Role of leadership, strategic planning and entrepreneurial organizational culture towards achieving organizational excellence: Evidence from public sector using SEM. *Measuring Business Excellence, 26*(3), 378-396. https://doi.org/10.1108/MBE-02-2021-0021

Alareeni, B. A., & Hamdan, A. (2020). ESG impact on performance of US S&P 500-listed firms. *Corporate Governance: The International Journal of Business in Society, 20*(7), 1409-1428. https://doi.org/10.1108/cg-06-2020-0258

Albassam, W. (2014). *Corporate governance, voluntary disclosure and financial performance: An empirical analysis of Saudi listed firms using a mixed-methods research design.* Doctoral Dissertation, University of Glasgow.

Alnori, F. (2020). Cash holdings: Do they boost or hurt firms' performance? Evidence from listed non-financial firms in Saudi Arabia. *International Journal of Islamic and Middle Eastern Finance and Management, 13*(5), 919-934. https://doi.org/10.1108/IMEFM-08-2019-0338

Arellano, M., & Bond, S. (1991). Some tests of specification for panel data: Monte Carlo evidence and an application to employment equations. *The Review of Economic Studies, 58*(2), 277-297. https://doi.org/10.2307/2297968

Atan, R., Razali, F. A., Said, J., & Zainun, S. (2016). Environmental, social and governance (ESG) disclosure and its effect on firm's performance: A comparative study. *International Journal of Economics and Management, 10*(2), 355-375.

Baker, T. L., Hunt, T. G., & Andrews, M. C. (2006). Promoting ethical behavior and organizational citizenship behaviors: The influence of corporate ethical values. *Journal of Business Research*, *59*(7), 849-857. https://doi.org/10.1016/j.jbusres.2006.02.004

Barney, J. (1991). Firm resources and sustained competitive advantage. *Journal of Management*, *17*(1), 99-120. https://doi.org/10.1177/014920639101700108

Baum, C. F., Schaffer, M. E., & Stillman, S. (2003). Instrumental variables and GMM: Estimation and testing. *The Stata Journal: Promoting Communications on Statistics and Stata*, *3*(1), 1-31. https://doi.org/10.1177/1536867X0300300101

Beck, T., Demirgüç-Kunt, A., & Maksimovic, V. (2005). Financial and legal constraints to growth: Does firm size matter? *The Journal of Finance*, *60*(1), 137-177. https://doi.org/10.1111/j.1540-6261.2005.00727.x

Blacconiere, W. G., & Northcut, W. D. (1997). Environmental information and market reactions to environmental legislation. *Journal of Accounting, Auditing & Finance*, *12*(2), 149-178.

Boffo, R., & Patalano, R. (2020). *ESG investing: Practices, progress and challenges*. Paris: Éditions OCDE.

Broadstock, D. C., Chan, K., Cheng, L. T., & Wang, X. (2021). The role of ESG performance during times of financial crisis: Evidence from COVID-19 in China. *Finance Research Letters*, *38*, 101716. https://doi.org/10.1016/j.frl.2020.101716

Cek, K., & Eyupoglu, S. (2020). Does environmental, social and governance performance influence economic performance? *Journal of Business Economics and Management*, *21*(4), 1165-1184. https://doi.org/10.3846/jbem.2020.12725

Chang, H.-J. (2012). *23 things they don't tell you about capitalism*. New York: Bloomsbury Publishing USA.

Chen, S., Song, Y., & Gao, P. (2023). Environmental, social, and governance (ESG) performance and financial outcomes: Analyzing the impact of ESG on financial performance. *Journal of Environmental Management*, *345*, 118829. https://doi.org/10.1016/j.jenvman.2023.118829

Cheng, B., Ioannou, I., & Serafeim, G. (2014). Corporate social responsibility and access to finance. *Strategic Management Journal*, *35*(1), 1-23. https://doi.org/10.1002/smj.2131

Christensen, H. B., Hail, L., & Leuz, C. (2021). Mandatory CSR and sustainability reporting: Economic analysis and literature review. *Review of Accounting Studies*, *26*(3), 1176-1248. https://doi.org/10.1007/s11142-021-09609-5

Cicchiello, A. F., Marrazza, F., & Perdichizzi, S. (2023). Non-financial disclosure regulation and environmental, social, and governance (ESG) performance: The case of EU and US firms. *Corporate Social Responsibility and Environmental Management*, *30*(3), 1121-1128. https://doi.org/10.1002/csr.2408

Clark, G. L., Feiner, A., & Viehs, M. (2015). From the stockholder to the stakeholder: How sustainability can drive financial outperformance. *Available at SSRN 2508281*, 66. https://dx.doi.org/10.2139/ssrn.2508281

Clarkson, P., Li, Y., Richardson, G., & Tsang, A. (2019). Causes and consequences of voluntary assurance of CSR reports: International evidence involving dow jones sustainability index inclusion and firm valuation. *Accounting, Auditing & Accountability Journal*, *32*(8), 2451-2474. https://doi.org/10.1108/AAAJ-03-2018-3424

Cormier, D., & Magnan, M. (1999). Corporate environmental disclosure strategies: Determinants, costs and benefits. *Journal of Accounting, Auditing & Finance*, *14*(4), 429-451. https://doi.org/10.1177/0148558X9901400403

Damodaran, A. (2012). *Investment valuation: Tools and techniques for determining the value of any asset* (3rd ed. Vol. 666). Hoboken: John Wiley & Sons.

Davidsson, P., Steffens, P., & Fitzsimmons, J. (2009). Growing profitable or growing from profits: Putting the horse in front of the cart? *Journal of Business Venturing*, *24*(4), 388-406. https://doi.org/10.1016/j.jbusvent.2008.04.003

Dhaliwal, D. S., Li, O. Z., Tsang, A., & Yang, Y. G. (2011). Voluntary nonfinancial disclosure and the cost of equity capital: The initiation of corporate social responsibility reporting. *The Accounting Review*, *86*(1), 59-100. https://doi.org/10.2308/accr.00000005

Do, Y., & Kim, S. (2020). Do higher-rated or enhancing ESG of firms enhance their long–term sustainability? Evidence from market returns in Korea. *Sustainability*, *12*(7), 2664. https://doi.org/10.3390/su12072664

Eccles, R. G., Ioannou, I., & Serafeim, G. (2014). The impact of corporate sustainability on organizational processes and performance. *Management Science*, *60*(11), 2835-2857. https://doi.org/10.1287/mnsc.2014.1984

Fombrun, C., & Shanley, M. (1990). What's in a name? Reputation building and corporate strategy. *Academy of Management Journal*, *33*(2), 233-258.

Freeman, R. E. (2010). *Strategic management: A stakeholder approach*. Cambridge: Cambridge University Press.

Friede, G., Busch, T., & Bassen, A. (2015). ESG and financial performance: Aggregated evidence from more than 2000 empirical studies. *Journal of Sustainable Finance & Investment*, *5*(4), 210-233. https://doi.org/10.1080/20430795.2015.1118917

Gompers, P., Ishii, J., & Metrick, A. (2003). Corporate governance and equity prices. *The Quarterly Journal of Economics*, *118*(1), 107-156. https://doi.org/10.1162/00335530360535162

Griffin, P. A., & Sun, Y. (2013). Going green: Market reaction to CSRwire news releases. *Journal of Accounting and Public Policy*, *32*(2), 93-113. https://doi.org/10.1016/j.jaccpubpol.2013.02.002

Hanson, D., Hitt, M. A., Ireland, R. D., & Hoskisson, R. E. (2016). *Strategic management: Competitiveness and globalisation*: Cengage AU.

Harjoto, M. A., & Jo, H. (2015). Legal vs. normative CSR: Differential impact on analyst dispersion, stock return volatility, cost of capital, and firm value. *Journal of Business Ethics*, *128*, 1-20. https://doi.org/10.1007/s10551-014-2082-2

Hillman, A. J., & Keim, G. D. (2001). Shareholder value, stakeholder management, and social issues: What's the bottom line? *Strategic Management Journal*, *22*(2), 125-139.

Ibhagui, O. W., & Olokoyo, F. O. (2018). Leverage and firm performance: New evidence on the role of firm size. *The North American Journal of Economics and Finance*, *45*, 57-82. https://doi.org/10.1016/j.najef.2018.02.002

Jensen, M. C., & Meckling, W. H. (2019). Theory of the firm: Managerial behavior, agency costs and ownership structure in corporate governance. In (pp. 77-132). Gower.

Jo, H., & Harjoto, M. A. (2011). Corporate governance and firm value: The impact of corporate social responsibility. *Journal of Business Ethics*, *103*, 351-383. https://doi.org/10.1007/s10551-011-0869-y

Kang, W., & Jung, M. (2020). Effect of ESG activities and firm's financial characteristics. *Korean Journal of Financial Studies*, *49*(5), 681-707. https://doi.org/10.26845/KJFS.2020.10.49.5.681

Konar, S., & Cohen, M. A. (2001). Does the market value environmental performance? *Review of Economics and Statistics*, *83*(2), 281-289. https://doi.org/10.1162/00346530151143815

Kumar, P. (2017). Relationship between degree of financial leverage and earning per share. *IMPACT: International Journal of Research in Business Management*, *5*(11), 5-10.

Laila, N., & Akhter, T. (2021). Financial leverage and its impact on earning per share. *IOSR Journal of Economics and Finance*, *12*(1), 1-7.

Li, H., Shen, Q., & Bart, Y. (2018). Local market characteristics and online-to-offline commerce: An empirical analysis of Groupon. *Management Science*, *64*(4), 1860-1878.

Liu, D., & Jin, S. (2023). How does corporate ESG performance affect financial irregularities? *Sustainability*, *15*(13), 9999. https://doi.org/10.3390/su15139999

Liu, Y., Kim, C. Y., Lee, E. H., & Yoo, J. W. (2022). Relationship between sustainable management activities and financial performance: Mediating effects of non-financial performance and moderating effects of institutional environment. *Sustainability*, *14*(3), 1168. https://doi.org/10.3390/su14031168

Magnan, M., St-Onge, S., & Cormier, D. (2005). The adoption and success of profit-sharing plans in strategic business units: Opportunism or contingency? *International Journal of Productivity and Performance Management*, *54*(5/6), 355-369. https://doi.org/10.1108/17410400510604520

Mahmud, M. T. (2020). Quest for a single theory to explain managerial motivations for sustainability disclosures: Legitimacy theory, stakeholder theory or institutional theory. *Bulletin of Japanese Association for International Accounting Studies*, *7*, 135-159.

Malarvizhi, P., & Matta, R. (2016). Link between corporate environmental disclosure and firm performance–perception or reality? *The British Accounting Review*, *36*(1), 107-117.

Modigliani, F., & Miller, M. H. (1958). The cost of capital, corporation finance and the theory of investment. *The American Economic Review, 48*(3), 261-297.

Moktar, N., Deli, M. M., Rauf, U. A. A., Idris, F., & Purwati, A. A. (2023). ESG disclosure: The extent of investors' confidence in stock market. *International Journal of Academic Research in Progressive Education and Development, 12*(3), 1008-1027.

Myers, B. (2002). *Principles of corporate finance.* New York: The McGraw-Hill Companies.

Nawaz, W., & Koç, M. (2019). Exploring organizational sustainability: Themes, functional areas, and best practices. *Sustainability, 11*(16), 4307. https://doi.org/10.3390/su11164307

Novita, N., Lindrianasari, L., & Dharma, F. (2023). *Environmental social governance disclosure and firm value: How does esg disclosure impact firm value?* Paper presented at the Proceedings of the 6th International Conference of Economics, Business, and Entrepreneurship, ICEBE 2023, 13-14 September 2023, Bandar Lampung, Indonesia.

Orlitzky, M., Schmidt, F. L., & Rynes, S. L. (2003). Corporate social and financial performance: A meta-analysis. *Organization Studies, 24*(3), 403-441. https://doi.org/10.1177/0170840603024003910

Penrose, E. T. (2009). *The theory of the growth of the firm.* Oxford: Oxford University Press.

Plumlee, M., Brown, D., Hayes, R. M., & Marshall, R. S. (2015). Voluntary environmental disclosure quality and firm value: Further evidence. *Journal of Accounting and Public Policy, 34*(4), 336-361. https://doi.org/10.1016/j.jaccpubpol.2015.04.004

Putri, C. M., & Puspawati, D. (2023). The effect of esg disclosure, company size, and leverage on company's financial performance in Indonesia. *The International Journal of Business Management and Technology, 7*(2), 252-262.

Qureshi, M. A., Kirkerud, S., Theresa, K., & Ahsan, T. (2020). The impact of sustainability (Environmental, social, and governance) disclosure and board diversity on firm value: The moderating role of industry sensitivity. *Business Strategy and the Environment, 29*(3), 1199-1214. https://doi.org/10.1002/bse.2427

Rahman, A. F., Bintoro, N. S., Dewi, A. A., & Kholilah, K. (2024). The effect of ESG and earnings quality on the value relevance of earnings and book value. *Australasian Accounting, Business and Finance Journal, 18*(2), 133-157. https://doi.org/10.14453/aabfj.v18i2.09

Raimo, N., Caragnano, A., Zito, M., Vitolla, F., & Mariani, M. (2021). Extending the benefits of ESG disclosure: The effect on the cost of debt financing. *Corporate Social Responsibility and Environmental Management, 28*(4), 1412-1421. https://doi.org/10.1002/csr.2134

Rajan, R. G., & Zingales, L. (1998). Power in a theory of the firm. *The Quarterly Journal of Economics, 113*(2), 387-432. https://doi.org/10.1162/003355398555630

Richardson, A. J., Welker, M., & Hutchinson, I. R. (1999). Managing capital market reactions to corporate social resposibility. *International Journal of Management Reviews, 1*(1), 17-43.

Roberts, M. R., & Whited, T. M. (2013). Endogeneity in empirical corporate finance1. In Handbook of the Economics of Finance. In (Vol. 2, pp. 493-572), Amsterdam, Netherlands: Elsevier.

Scholtens, B. (2008). A note on the interaction between corporate social responsibility and financial performance. *Ecological Economics, 68*(1-2), 46-55. https://doi.org/10.1016/j.ecolecon.2008.01.024

Serafeim, G. (2020). Public sentiment and the price of corporate sustainability. *Financial Analysts Journal, 76*(2), 26-46. https://doi.org/10.1080/0015198X.2020.1723390

Sharfman, M. P., & Fernando, C. S. (2008). Environmental risk management and the cost of capital. *Strategic Management Journal, 29*(6), 569-592. https://doi.org/10.1002/smj.678

Sullivan, R., & Mackenzie, C. (2017). *Responsible investment.* New York: Taylor & Francis.

Velte, P. (2017). Does ESG performance have an impact on financial performance? Evidence from Germany. *Journal of Global Responsibility, 8*(2), 169-178. https://doi.org/10.1108/JGR-11-2016-0029

Walker, K., & Wan, F. (2012). The harm of symbolic actions and green-washing: Corporate actions and communications on environmental performance and their financial implications. *Journal of Business Ethics, 109*, 227-242. https://doi.org/10.1007/s10551-011-1122-4

Wernerfelt, B., & Montgomery, C. A. (1988). Tobin's q and the importance of focus in firm performance. *The American Economic Review*, *78*(1), 246-250.

Wooldridge, J. M. (2010). *Econometric analysis of cross section and panel data.* Cambridge: MIT Press.

Wooldridge, J. M. (2019). *Introductory econometrics: A modern approach.* Boston, MA: Cengage Learning.

Wu, S., Li, X., Du, X., & Li, Z. (2022). The impact of ESG performance on firm value: The moderating role of ownership structure. *Sustainability*, *14*(21), 14507. https://doi.org/10.3390/su142114507

Xie, J., Nozawa, W., Yagi, M., Fujii, H., & Managi, S. (2019). Do environmental, social, and governance activities improve corporate financial performance? *Business Strategy and the Environment*, *28*(2), 286-300. https://doi.org/10.1002/bse.2224

Yadav, P. L., Han, S. H., & Rho, J. J. (2016). Impact of environmental performance on firm value for sustainable investment: Evidence from large US firms. *Business Strategy and the Environment*, *25*(6), 402-420. https://doi.org/10.1002/bse.1883

Yu, E. P. Y., Guo, C. Q., & Luu, B. V. (2018). Environmental, social and governance transparency and firm value. *Business Strategy and the Environment*, *27*(7), 987-1004. https://doi.org/10.1002/bse.2047

Zhou, G., Liu, L., & Luo, S. (2022). Sustainable development, ESG performance and company market value: Mediating effect of financial performance. *Business Strategy and the Environment*, *31*(7), 3371-3387. https://doi.org/10.1002/bse.3089

Zhou, S., Simnett, R., & Hoang, H. (2019). Evaluating combined assurance as a new credibility enhancement technique. *Auditing: A Journal of Practice & Theory*, *38*(2), 235-259. https://doi.org/10.2308/ajpt-52175