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The Impact of ESG Performance on Firm Profitability, Valuation, and Cost of Debt

A Comparative Study of Developed and Emerging European Markets

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ABSTRACT:

This paper examines the impact of ESG performance and three key financial outcomes, profitability, firm value, and cost of debt, together with a comparative study of developed and emerging European markets. Employing a large panel of European firms across both developed and emerging markets, the study incorporates both the aggregate ESG score and disaggregated ESG pillar scores as measures of ESG performance for a more nuanced assessment of how different dimensions of sustainability affect financial outcomes. Although the relationship between ESG and financial performance has been widely studied in previous literature, the results tend to be mixed and inconsistent and lack comparability due to being heavily focused on developed or single markets. The existing comparative studies between developed and emerging markets have considerably focused on a global scope, with limited attention given to the European context. Furthermore, while profitability and firm value were extensively studied in prior literature, the cost of debt remains under investigated.

The study employs fixed-effects panel regressions to study the impact of ESG on profitability, firm value, and cost of debt by incorporating a sample of 2098 publicly listed companies for the period of 2015 to 2024, for 10 developed European countries and 5 European emerging countries based on the classification by Morgan Stanley Capital International (MSCI). The main source of ESG scores and key financial indicators for this analysis was from LSEG (London Stock Exchange Group) Workspace.

The results reveal that both overall ESG score and ESG pillar scores indicated significant and positive effects on firm profitability for the overall sample and developed markets, but positive and insignificant effects in emerging markets. The social pillar emerged as the most influential driver out of the three pillars. The ESG relationship with firm value followed the same pattern with a positive and significant effect in the overall sample and developed markets, but no meaningful impact was found in emerging markets. In contrast, the cost of debt showed no significant effect in any of the samples, indicating lenders primarily rely on financial characteristics rather than sustainability measures in credit risk assessment.

KEYWORDS: ESG, corporate social responsibility, sustainability, responsible investing.

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1 Introduction

1.1 Background and motivation

Nowadays, integration of corporate social responsibility into business strategy is considered a means of achieving financial growth and long-term competitive advantage (Amorelli & García-Sánchez, 2020; Yavuz et al., 2024). Therefore, the business model adopted by any firm should include a business process for corporate social responsibility as a vital instrument to generate profits and improve firm performance comparable to other significant processes, such as operations, finance, and sales (Farag et al., 2014). Environmental, social, and governance (ESG) reporting has emerged as a key consideration in measuring and communicating companies' CSR efforts (Yavuz et al., 2024). Studying how sustainability and ESG affect investments and company performance has become more important due to the increasing prominence of these elements (Bahadır & Akarsu, 2024). It was found that companies incorporating ESG measures have gained longstanding developments in efficiency, reputation, customer loyalty, innovation, and access to capital (Rahi et al., 2021). The significant move was brought about by growing demand from investors, stakeholders, policymakers, and regulators, as well as rising awareness of climate risk, carbon emissions, greenhouse gases, social responsibility, and governance transparency (Khatib et al., 2023).

Although the impact of ESG on profitability, firm value and cost of debt has been extensively studied, the empirical findings of existing literature give mixed and sometimes inconsistent results (Rahi et al., 2021). The conflicting evidence can be attributed to the location of the market, differences in the strength of regulators, investor perspectives, and institutional growth. As noted by Bahadır and Akarsu (2024), the relationship between ESG and financial performance can significantly vary across countries and regions. Also, the prior studies have extensively focused on developed or single markets such as the United States (Delmas et al., 2013; Russo et al., 1997), Germany (Velte, 2017), China (Duan et al., 2023), Turkey (Yavuz et al., 2024), etc., in investigating the association between ESG and financial performance. Furthermore,

many prior comparative studies across developed and emerging markets have embraced a global scope (Naeem et al., 2022) with limited concentration given to the European context. The existing studies within Europe also lack comparative evidence because many studies have focused on developed and single markets within Europe. While profitability and firm value are extensively studied, the cost of debt remains underexplored (Naeem et al., 2022). Given these gaps, it is important to identify how ESG factors would affect profitability, firm value and cost of debt in diverse European settings for cross-border investors, policymakers, and corporate managers. Therefore, this paper aims to address these limitations by investigating the impact of ESG practices on profitability, firm value, and cost of debt with a comparative study between developed and emerging European markets. The study employs both aggregated ESG scores and disaggregated ESG pillar scores as measures of ESG performance for a more nuanced assessment of how different aspects of sustainability affect financial outcomes.

1.2 Previous main studies

ESG performance can be connected to financial performance in two possible ways. The first is the stakeholder theory that argues a company is encircled by a wide range of groups or individuals that influence or are affected by the business's operations. Consequently, stakeholders are directly linked to the company's performance, and companies that successfully manage relationships with stakeholders achieve long-term business success (Freeman, 2010). Some studies identify ESG as a performance evaluator of businesses' dedication to stakeholder interests (Branco & Rodrigues, 2006; Cheng et al., 2013; Ortas et al., 2018). Accordingly, a positive relationship between ESG performance and financial performance is anticipated by the stakeholder theory. In support of this theory, several studies have found that better ESG practices are associated with increased profitability and firm value (De Lucia et al., 2020; Velte, 2017; Aydoğmuş et al., 2022).

The second view is the value-destroying view, which focuses more on the costs incurred to have better ESG practices, such as compliance, reporting, and training costs. This

approach argues that the increasing emphasis on ESG practices prioritizes pleasing stakeholders over company performance, sacrificing the profitability of the business. This view is further supported by the literature, as certain studies have established that firms with better ESG practices have lower profitability and firm value (Di Giuli & Kostovetsky, 2013; Masulis & Reza, 2014).

According to the neoclassical view, corporate social responsibility can be seen as an obligation that only entails costs and efforts for companies without any reward or profit for the business, whereas in stakeholders' view or natural resources theory, it is considered an engine or an instrument to generate profits and improve company performance (Manrique & Martí-Ballester, 2017).

The increasing popularity of ESG performance and the importance of investigating its impact on financial performance have attracted the attention of many scholars. Many studies were conducted to examine how ESG practices affect profitability, valuation, and cost of debt in different markets. Eccles et al. (2014), through a study on the U. S. market, have shown that companies that have established and integrated a significant number of environmental and social principles into their business strategy are long-term-oriented, and they outperform their counterparts both in terms of stock market and accounting performance. Narula et al. (2024), Yavuz et al. (2024), and Błach et al. (2024) have found a positive relationship between ESG performance and firm profitability. According to the research on large U. S. public companies by Ernst and Woithe (2024), companies with better ESG ratings have access to credit at a lower cost compared to companies with poor ESG performance. Additionally, the study by Fatemi et al. (2017) claims that although ESG strengths increase the firm value, ESG concerns weaken it.

1.3 Purpose of the study

Inspired by the previous studies by Narula et al. (2024), Yavuz et al. (2024), Błach et al. (2024, and Ernst and Woithe (2024), the main purpose of this study is to evaluate the financial impact of ESG performance on three key financial dimensions—profitability,

firm value, and cost of debt across developed and emerging markets in Europe. Though ESG practices have become a critical factor for company growth and survival, their financial implications are still unclear and context-dependent. This study intends to fill a gap in the existing literature by providing a comparative study on how these impacts analytically vary among developed and emerging European markets.

An extensive part of the previous research has focused on developed countries or single countries such as the United States (Delmas et al., 2013; Russo et al., 1997), Germany (Velte, 2017; Bergmann, 2016), Italy (Gotschol et al., 2014), the UK (Elsayed & Paton, 2004) etc., making it difficult to understand the setup and dynamics of the emerging countries. Furthermore, only a few studies have examined how ESG impact differs among developed and emerging or developing markets, regardless of the diversities in institutional structure, regulations, and financial infrastructure between countries (Siddiqui et al., 2024). These comparative studies largely concentrated on the global scope (Manrique & Martí-Ballester, 2017; Kong et al., 2023; Naeem et al., 2022) and have not specifically focused on the European context. Due to the strong institutional frameworks and significant cross-country heterogeneity in governance, culture, and industry structures in the European context, the analysis of the ESG impact on financial performance can be extremely beneficial (Fatmy et al., 2025). Significant differences in cultural values, industry ESG sensitivity, and shareholder protection within the region produce a unique empirical background for meaningful comparisons.

Further, the studies focus only on the ESG relationship with profitability and firm value, with less focus on the cost of debt. Therefore, this study aims to investigate the impact of ESG performance on profitability, firm value, cost of debt and how these correlations vary across developed and emerging European markets. The study seeks to discover whether ESG integration yields consistent benefits or varies significantly across different markets through scrutinizing firms in both developed and emerging European markets. The expectation is to inform the findings of the study to investors, policymakers, and

business leaders about the strategic value of ESG and provide guidance on incorporating sustainability-driven strategies in the future.

1.4 Hypotheses, contribution, and research gap

As mentioned earlier, the study focuses on three specific financial characteristics: profitability, firm value, and cost of debt, and how these are affected by ESG ratings while analysing for significant variations in this connection across different markets. Though the existing literature has widely studied this relationship, the results are inconsistent and context-dependent. Despite the extensive research performed in the area, none of these appears to have focused on comparing developed and emerging European markets. The impact of ESG performance on the financial outcomes of the company varies depending on the level of development of the countries (Yavuz et al., 2024; Khemir, 2019).

The study by Naeem et al. (2022) has found that the ESG performance of environmentally sensitive firms has a significant and positive effect on the financial performance of both developed and emerging markets. They further state that this effect is stronger for companies located in developed markets than for firms located in emerging markets. Therefore, the key research question of this paper is whether the impact of ESG performance is stronger in developed European markets than in emerging European markets.

Studies by Rahi et al. (2021), Bahadır and Akarsu (2024), Aydoğmuş et al. (2022), De Lucia et al. (2020), Velte (2017), and Yavuz et al. (2024) document a positive link between corporate responsibility and various profitability measures. In contrast, some studies have found that improved corporate responsibility performance leads to increased costs and a decrease in net benefits (Horváthová, 2010). However, motivated by the vast majority of the recent literature, the first hypothesis of this study is as follows:

H1: *ESG performance is positively correlated with firm profitability in both developed and emerging markets.*

In addition to profitability, firm value is also a significant measure of firm performance. Servaes and Tamayo (2013) show that corporate social responsibility and firm value are positively related with firms with higher customer awareness. Yoon et al. (2018) have also found that ESG practices affect firm value positively and significantly. Based on these findings, the second hypothesis of this paper states that:

H2: ESG performance is positively correlated with firm value in both developed and emerging markets.

The third area of the study is the cost of debt and the benefits of ESG performance. Socially responsible companies are rewarded with a lower cost of debt (Kordsachia, 2020). Previous studies by Eliwa et al. (2019) and Lavin and Montecinos-Pearce (2022) also find that better ESG performance reduces the cost of debt. According to the findings, the third hypothesis of the study is formulated as follows:

H3: ESG performance is negatively correlated with the cost of debt in both developed and emerging markets.

A prior study by Naeem et al. (2022) indicates a stronger correlation between ESG practices and financial performance in developed markets. Further, developed European markets benefit more from ESG practices due to stronger ESG regulations and reporting standards, investor awareness about sustainability, and market efficiency. Also, as per the study based on EU evidence by Eliwa et al. (2019), the rewarding of ESG practices is higher in stakeholder-oriented markets such as France and Germany than in shareholder-oriented markets. The stakeholder-oriented markets are characterized by a more dominant community, which is often the case with developed markets, than shareholder-oriented markets, which gives a significant emphasis on short-term profit

maximization, like in emerging markets. Reflecting on these findings, the fourth hypothesis of this paper states:

H4: The effect of ESG performance on profitability, firm value, and cost of debt is stronger in developed markets than in emerging European markets.

To my knowledge, this thesis contributes to the existing literature by providing the first comparative analysis of the financial effects of ESG across developed and emerging European markets, while previous studies focused on the global context (Kong et al., 2023; Naeem et al., 2022). The study also provides multidimensional evidence by analyzing three important financial outcomes: profitability, firm value, and cost of debt compared to prior studies, which focused mostly on profitability and firm value (Naeem et al., 2022). Moreover, it provides regional insights that help investors and policymakers understand the diverse European markets by offering clear empirical evidence regarding the role of ESG in less developed markets, where its adaptation is still evolving. This research intends to expand the understanding of how diverse institutional environments affect the ESG and finance relationship by bridging the gap between high-income and low-income economies.

The study is subject to certain limitations, as the data availability and quality may vary among developed and emerging countries, specifically with respect to ESG reporting standards. Further, only publicly listed companies will be considered due to the constraints in data collection and access.

1.5 Structure of the thesis

The remainder of the thesis proceeds as follows. The second chapter of the paper discusses the theoretical background covering important theories related to ESG and corporate social responsibility. The third chapter reviews the previous literature, summarizing the applicable findings on ESG. The fourth chapter explains the data used in the study, together with comprehensive regression models. The fifth chapter presents

and explains empirical findings in detail. Finally, the sixth chapter concludes the study while summarizing the main results and suggesting ideas for further research.

2 Theoretical background

The purpose of this section is to analyze and present the evolution of corporate social responsibility (CSR), environmental, social and governance (ESG), and other latest theories dominating the field. ESG score has become a popular measure of firms' non-financial performance in the field of corporate social responsibility. Furthermore, the integration of ESG factors into corporate strategy is considered a key requirement in understanding financial performance, especially through financial outcomes such as profitability, firm value, and cost of debt. Therefore, this section outlines the ideas behind corporate social responsibility and how it contributed to forming ESG concepts, followed by a discussion on the ESG framework, including theoretical frameworks supporting the relationship between ESG performance and financial outcomes.

2.1 Definition of Corporate social responsibility (CSR)

Corporate social responsibility stands for a set of practices and policies adopted by a firm to address the needs of various stakeholders, such as workers, the community, and the environment, as well as ethical governance and information transparency. Companies were pressurized by the main stakeholders to advance their corporate performance as a method of reaching social legitimacy, and to disclose the practices to gain more credibility with interest groups (Gold et al., 2009).

The theory of corporate social responsibility is linked to ethical and moral considerations relating to decision-making and the behaviour of businesses. It is essential for a firm to know what activities to undertake or refrain from depending on the benefit or harm it could cause to society. Beyond mere legal compliance, CSR can be described as a voluntary commitment by businesses to incorporate social and environmental concerns into their operations and stakeholder collaborations (Branco & Rodrigues, 2006). It encompasses ethical and moral dimensions of business activities, focusing on actions that benefit society or relieve the harm caused by their operations.

CSR can be theorized through Carroll's (1991) model, which comprises four categories of social responsibility. The first category is economic responsibilities that reflect firms' obligation to produce goods and services to meet consumers' needs and wants while being profitable. The second category is legal responsibilities that require compliance with laws and regulations. Ethical and philanthropic are the third and fourth category of responsibilities that comprises more general responsibilities regarding what is right and avoiding harm.

Many definitions of CSR are also related to firms' commitment to contribute to sustainable development, which encompasses environmental preservation, economic growth, and social equity. According to the European Commission (2002), CSR is defined as the contribution by firms to sustainable development through managing their operations in a way that enhances competitive advantage while ensuring environmental protection and social responsibility.

According to the Resource-Based Perspective (RBP), CSR is viewed as a strategic investment that assists companies in creating valuable, rare, and difficult to imitate intangible resources such as corporate reputation, employees' knowledge, experience, skills, and their commitment and loyalty (Barney, 1999; Branco & Rodrigues, 2006). These aspects of CSR contribute to achieving long-term competitive advantage. CSR also refers to firms' ability to meet or exceed stakeholder expectations regarding prevailing social norms and dominant views about corporate behaviour. Businesses engage in CSR practices to build credibility and trust, as well as to align with the values of consumers, communities, employees, and investors (Wood & Jones, 1995; Branco & Rodrigues,2006).

2.2 Evolution of corporate social responsibility

The development of the modern concept of CSR dates as far back as the 1930s, when the discussion about the social responsibility of the private sector commenced. In the 1950s, Howard R. Bowen presented the first theoretical definition of CSR through his seminal work "Social Responsibilities of the Businessman" (1953) by arguing that

businesses are responsible for considering the values of society when making their decisions. During the 1960s, another definition of the concept was introduced by the academic literature, which admitted the relevance of the relationship between businesses and society. However, this view was more focused on economic profitability and was also limited to concerns related to employee satisfaction, management practices, and the welfare of society (Agudelo et al., 2019).

In the 1970s, the rise in awareness about environmental, human, and labour rights contributed to heightened social expectations for corporate behaviour. The Committee for Economic Development in the USA proposed a new reasoning in 1971, demanding that the private sector take on more responsibilities than before, considering the developing social contract between businesses and society. This steered the increasing popularity of CSR, which later became unrestricted and started focusing on waste management, pollution, and human and labour rights (Agudelo et al., 2019).

Carroll proposed the first integrated explanation of CSR in 1979. Carroll recognized the economic and social goals of companies as vital elements of a business environment and enforced some responsibilities and expectations on businesses (Carroll, 1979). A fresh view of the conception as a decision-making process and the emergence of models and frameworks for its application originated from the discussion about the operationalization of CSR in the 1980s and early 1990s.

Burke and Logsdon (1996) claimed that strategic implementation of CSR might result in verifiable and visible creation of value in the form of monetary gains for the business. This triggered a discussion in the strategic execution of CSR in the latter part of the 1990s. Despite additional topics like corporate social performance, stakeholder theory, and corporate citizenship gaining attention, their implementation caused ambiguity about the concept of CSR, and by the end of the decade, the idea had no established definition and ambiguous limits.

Strategic CSR initiatives became prominent by the end of the 20th century because of international contracts that emphasized the vital role of businesses in sustainable development. The 2000s experienced an abrupt shift in attention toward more extensive corporate responsibilities like sustainability and anti-corruption, which resulted in the Sustainable Development Goals of 2015, which emphasized CSR as an essential component of strategy. This constant transformation illustrates a shift from perceiving CSR as an individual preference toward recognizing it as a key component of developing shared value in society (Agudelo et al., 2019).

CSR activities encompassing ESG actions are linked to better profitability and firm value. The structured framework of ESG, encompassing social impact, environmental stewardship, and government practices, is an evolution from unrestricted CSR activities. The early literature prior to 2015 was mostly based on CSR rather than ESG, which faced many challenges due to its short-term focus and inconsistent measurement. The shift towards ESG was accelerated with the introduction of global policy initiatives such as the United Nations Principles for Responsible Investment (UNPRI) in 2006 and the Paris Climate Agreement in 2015 (Bani-Khaled et al., 2025).

2.3 Environmental, social, and governance (ESG)

ESG is a mechanism for assessing the sustainability and community impact of an enterprise or investment. ESG factors have become even more essential for investors and various other stakeholders in the past few years while making decisions about investments, as they are now increasingly willing to invest in organizations that consider sustainability and ethical business practices as a top priority (Vasiu, 2023).

The ESG concept was initially introduced in 2006 through the UNPRI report. Following this, many non-governmental companies and institutions have initiated efforts to promote the disclosure of ESG information and evaluation. As per the non-financial reporting directive of the European Union in 2014, which specifies the requirement of large companies to cover ESG issues in their non-financial information disclosure

(Iazzolino et al., 2023). The ESG framework only consists of elements (see figure 1) that could have a positive or negative impact on the financial performance or solvency of enterprises, sovereigns, or individuals (Li et al., 2021). The environmental factors aim at companies' initiatives towards protecting the environment, involving their air pollution, carbon footprint, and climate change policy. Social components take into consideration how enterprises manage their relations with the surrounding community, employees, customers, suppliers, and other stakeholders. Finally, the last component, the governance, is about internal control systems of the company, executive compensation, management team, shareholder rights, and audits (Seow, 2023; Bani-Khaled et al., 2025).

Dimension	Factors	Definition
Environmental (E)	• GHG emissions • Energy consumption and efficiency • Air pollutants • Water usage and recycling • Waste production and management (water, solid, hazardous) • Impact and dependence on biodiversity • Impact and dependence on ecosystems • Innovation in environmentally friendly products and services	Environmental matters that may have a positive or negative impact on the financial performance or solvency of an entity, sovereign, or individual.
Social (S)	• Workforce freedom of association • Child labor • Forced and compulsory labor • Workplace health and safety • Customer health and safety • Discrimination, diversity, and equal opportunity • Poverty and community impact • Supply chain management • Training and education • Customer privacy • Community impacts	Social matters that may have a positive or negative impact on the financial performance or solvency of an entity, sovereign, or individual.
Governance (G)	• Codes of conduct and business principles • Accountability • Transparency and disclosure • Executive pay • Board diversity and structure • Bribery and corruption • Stakeholder engagement • Shareholder rights	Governance matters that may have a positive or negative impact on the financial performance or solvency of an entity, sovereign, or individual.

Figure 1. ESG framework (international frameworks) (Li et al., 2021).

Figure 1 demonstrates the factors considered in the ESG framework.

Awareness about ESG factors heightened with the formal introduction through the UNPRI in 2006. This stimulated institutional investors to incorporate ESG criteria in their

investment decisions to promote responsible investing (Bani-Khaled et al., 2025). They further state that ESG standards were initially regarded as guidelines for ethical investing, which later developed into a comprehensive framework for measuring corporate sustainability. They also mention that this evolution was influenced by international programmes that foster integrated sustainability reporting, such as the United Nations Sustainable Development Goals (SDGs) and the Task Force on Climate-related Financial Disclosures (TCFD). In the literature, ESG dimensions have been used in CSR studies to examine their impact on company profitability and value creation, as well as in Social and Responsible Investing (SRI) (Iazzolino et al., 2023).

Despite the challenges caused by excessive costs and complexities attached to ESG handling, advancements in technology have provided better measurement and analysis of ESG components through innovative digital tools, facilitating strategic decision-making. Further, it is important to note that these frameworks are not completely standardized, and the regional variations in economic, cultural, and regulatory settings may lead to different interpretations and applications of ESG practices across global markets (Bani-Khaled et al., 2025).

2.4 Theoretical perspectives on ESG and financial performance

Stakeholder theory states that the success of an enterprise depends on its capability to handle relationships with stakeholders, who are affected by its operations (Van Beurden & Gössling, 2008; Singhania & Saini, 2021). In accordance with stakeholder theory, organizations can achieve long-term success by catering to the requirements of internal as well as external stakeholders (Freeman, 1984). Since it is required to take stakeholder requirements into account, the stakeholder theory can be linked to ESG (Van Beurden & Gössling). Aras and Crowther (2008) state that organizations are encouraged to disclose sustainability actions to satisfy stakeholder demands. Incorporating ESG factors into businesses may boost company image, improve operational efficiency, and attract socially conscious investors (Kong et al., 2023).

As per this theory, the board of directors is obligated to take stakeholder interests into account in addition to their fiduciary duty of profit maximization (Parkinson, 1995). To be able to fulfil stakeholder needs, corporations need to embrace transparency in disclosures regarding ESG in reaction to escalating sustainability expectations (Seow, 2023).

The agency theory examines the interaction between managers and shareholders, indicating that managers may prioritize their own interests, which might result in agency issues. According to the idea, there is a negative relationship between ESG initiatives and firm value in the context of ESG operations. This is because the managers' personal interests may conflict with the shareholders' goal of increasing profits (Cai et al., 2024; Masulis & Reza, 2014). The agency theory argues that employees of the company concentrate on their own interests and financial prospects. Thus, shareholders design a framework of governance that must be followed to maximize their profit, which might result in a division between agents and principals, as it restricts agents' capacity to improve their earnings. Due to their concentration on handling operations, managers might act selfishly, which might decrease shareholder wealth. By strengthening the information environment and corporate governance procedures, ESG disclosures are expected to mitigate agency issues and improve shareholder wealth (Singhania & Saini, 2021; Seow, 2023).

The significance of societal acceptance is emphasized by legitimacy theory. According to the legitimacy theory, corporations can survive if the public perceives they are acting in compliance with social norms and values. Thus, enterprises deploy sustainability methods to meet the expectations of shareholders. Considering this, legitimacy is one of the most essential resources for long-term business success (Singhania & Saini, 2021). According to the legitimacy theory, businesses engage in ESG initiatives to be consistent with social norms, which improves their legitimacy and protects societal permissions to operate. Effective ESG disclosure eliminates the legitimacy gap and enhances investor trust, which is associated with better financial success. The theory has been criticized for

emphasizing appearances over substantive results, possibly hindering long-term value creation. Recent investigations demonstrate that the credibility of ESG disclosures affects the association between legitimacy and financial benefits (Bani-Khaled et al., 2025).

A framework for strategic management referred to as the Resource-Based View (RBV) ties a company's performance to its own unique internal resources and competencies. In accordance with this theory, resources that are rare, precious, unique, and non-replaceable offer organizations a sustained competitive edge. Companies require generating capabilities or organizational procedures that make resource usage simpler through involvement and education beyond resources. RBV stresses the crucial nature of intangible resources, which are generated through interactions between stakeholders and are more difficult to replicate. According to this perspective, social responsibility initiatives strengthen intangible assets by increasing staff morale and the business's reputation, which in turn enhances financial performance and market positioning. RBV further emphasizes the significance of incorporating social and political factors while generating resources, considering the roles of stakeholders, institutional norms, and social capital (Branco & Rodrigues, 2006).

Signalling theory claims that managers transmit signals to investors to reduce information asymmetry across various stakeholders by means of company financial actions. The legitimacy concept could be extended to include the signalling theory and inspire enterprises to explain more by considering potential risks they confront (Singhania & Saini, 2021).

Social capital theory in the context of ESG is often used to explain how socially responsible firms outperform their counterparts. ESG activities enhance reputation, strengthen stakeholder trust, and build goodwill, which will act as a safety net during uncertain and crisis periods. Social capital theory explains how networks, relationships, shared norms and trust create value for organizations (Sen & Cowley, 2012). The theory

argues that social connections operate as a form of capital that assists in operations, reducing transaction costs, and increasing access to resources. In a business context, social capital is reflected by the quality of the firm's relationship with employees, investors, customers, communities, and regulators (Lins et al., 2017). The empirical study by Lins et al. (2017) shows that CSR-driven social capital enhances firm value, reduces firm risk and improves access to finance. Therefore, this theory provides a strong foundation to comprehend how ESG performance affects firm profitability, valuation, and cost of debt.

According to the institutional theory, many emerging and developing countries have institutional frameworks with weak environmental regulatory, normative, and cognitive pressures compared to developed countries, which affects how companies manage their resources and relations with their main stakeholders (Zhu & Zhang, 2015). Institutional theory is about how businesses align their practices with the regulatory requirements, industry standards, and expectations of society from the broader system of formal and informal rules, regulations, norms and expectations that shape a firm's behaviour. The theory suggests that businesses engage in ESG practices not only for economic benefits but also to meet external expectations of investors, regulators, rating agencies, and general society (Ghazwani, 2025). Therefore, institutional theory provides useful guidance in investigating how cross-country differences can affect the ESG relationship with profitability, firm value, and cost of debt.

2.5 Responsible investing

Responsible investing denotes an investment methodology that actively incorporates ESG factors, aiming to achieve sustainable long-term returns while making positive contributions to the community and the environment. According to the approach, ESG concerns such as climate change, corporate governance, and labour rights can substantially affect the performance as well as the risk profile of investments.

As per the Principles for Responsible Investment (PRI), responsible investment is a methodology and practice that incorporates ESG factors into decisions regarding investments and active ownership. Responsible investing is distinct from impact, ethical, and socially responsible investing as these strategies incorporate moral and ethical concerns with financial returns, whereas in responsible investment, the primary goal is only financial return, since it claims that ignoring ESG factors could lead to neglecting risks and opportunities that could have a material impact on the returns distributed to clients and beneficiaries.

The six principles of responsible investment are put into practice by PRI in collaboration with its international network of signatories. Understanding investment implications of ESG issues and assisting signatories in incorporating these issues into investment and ownership decisions are the primary objectives of PRI. The six guiding principles of PRI are as follows:

Principle 1: **Incorporation** - We will incorporate ESG issues into investment analysis and decision-making processes.

Principle 2: **Active ownership** - We will be active owners and incorporate ESG issues into our ownership policies and practices.

Principle 3: **Appropriate disclosure** - We will seek appropriate disclosure on ESG issues by the entities in which we invest.

Principle 4: **Promote acceptance** - We will promote acceptance and implementation of the principles within the investment industry.

Principle 5: **Work together** - We will work together to enhance our effectiveness in implementing the principles.

Principle 6: **Report activities** - We will each report on our activities and progress towards implementing the principles.

The principles were created by investors, and they are assisted by the UN. After several years of rapid growth, the global signatory numbers seem to be levelling off as the

signatory recruitment in some of the most developed responsible markets reaches the saturation point (see figure 2).

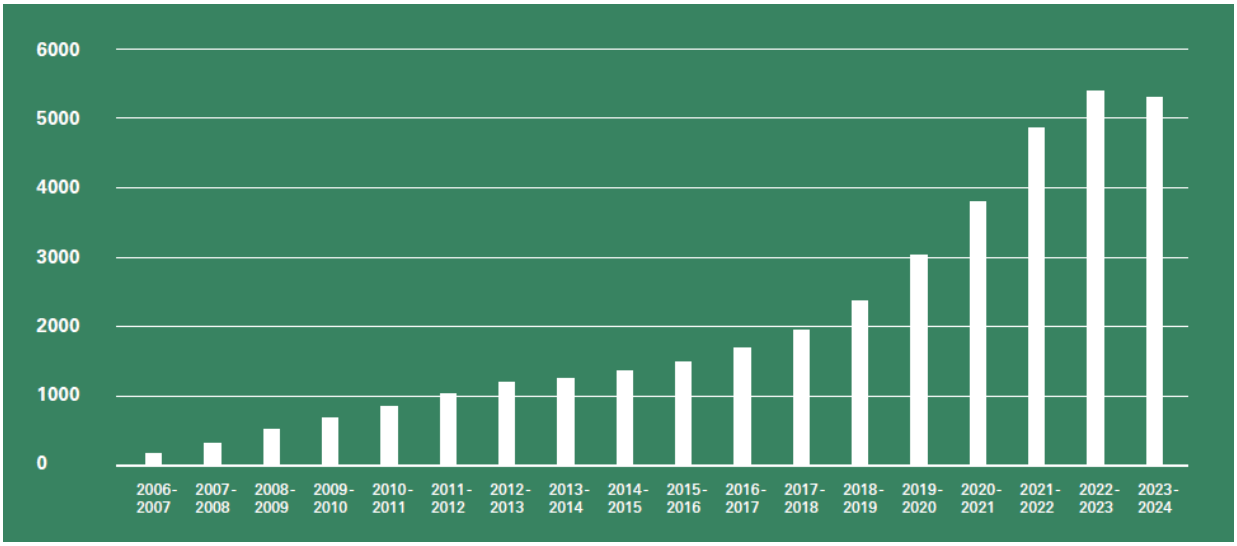

Figure 2. Total signatories, by financial year (Principles for Responsible Investment, 2024)

3 Literature review

ESG factors have evolved from being a minor concept to a central element in business strategy and decision-making. Incorporating ESG practices is associated with Investor confidence, risk management, and long-term value creation (Bani-Khaled et al., 2025). Studies have identified that ESG performance affects profitability, firm value, and cost of debt (Noja et al., 2024; Fatemi et al., 2017); however, the direction and the magnitude of these effects can vary across different markets and contexts (Bani-Khaled et al., 2025). According to Bani-Khaled et al. (2025), there are notable differences, such as regulatory framework and investor activism, between developed and emerging markets affecting the ESG and financial performance relationship.

This chapter presents a thorough review of recent literature regarding the impact of ESG practices on financial characteristics. The section is divided into five sub-sections, where each part focuses on a specific ESG context. The first section is the overview of the literature on ESG and its emergence. The second, third, and fourth sections present how ESG performance is associated with firm profitability, value, and cost of debt, respectively, considering recent literature. The last sections give a summary of the major findings of each section.

3.1 ESG and financial performance

ESG, standing for Environment, Social, and Governance, is a framework for evaluating the sustainability and social impact of a company or investment (Vasiu, 2023). ESG rating has become a non-financial performance index that stems from the concept of corporate social responsibility (CSR). CSR can be defined as additional contributions by companies that make a positive influence on society (Lin-Hi & Müller, 2013). As per Ernst and Woithe (2024), many companies use CSR to draw attention to themselves in a positive way. The emergence of ESG was driven by the probable impact on investment return and risk, and it has motivated investors to combine ESG factors into their investment decisions.

In recent years, the purpose of businesses has not only been limited to shareholders but also extended to employees, customers, suppliers, society, and all other related environments. Stakeholder theory forms a credible basis for the ESG research, as it asserts that the long-term success of businesses is facilitated by meeting the needs of both internal and external stakeholders (Garcia et al., 2017). It is argued that socially responsible behaviour towards non-owner stakeholders may have a net positive impact on performance and firm value, as it allows efficient contracting and opens new pathways to growth and risk reduction (Fatemi et al., 2017).

Innovation is known as one of the key aspects that grants businesses a distinct competitive advantage. Through increasing green innovation, ESG can improve competitive edge and corporate performance. Green innovation enhances the attractiveness of products and services, increases operational efficiency through cutting costs, and builds up the reputation of companies fulfilling ESG requirements (Zhan, 2023).

As per Fatemi et al. (2017), to improve financial performance and progressively reduce the risk, strategic asset allocation methods consider ESG objectives and analysis. Long-term investors are more likely to include ESG factors more frequently than short-term investors due to the large influence of ESG elements on long-term performance, despite their low frequency. As a result, organizations with good ESG performance tend to voluntarily disclose information about their ESG practices, which leads to increasing firm value. Many listed firms tend to engage in ESG activities with the motive of adding value as the awareness within the community and the ESG system evolves. Previous research findings indicate that effective ESG performance improves risk management, corporate value, financial success, and credit quality, while reducing financial costs and increasing market value. Further, good ESG performance helps to promote positive relationships with the government, improve customer loyalty and trust, create a better culture for employees, and develop investor confidence. Good ESG practices also establish for creditors a logical basis to extend preferential lending. Eventually, strong ESG practices

can significantly enhance the financial and market performance of listed organizations (Zhan, 2023).

However, the evaluation of prior literature on ESG and financial performance indicated mixed results. Some studies recorded positive association between ESG and financial performance (Rodriguez-Fernandez, 2015; Zhao et al., 2018; Cahan et al., 2015; Wang & Sarkis, 2017), while some showed negative effects (Gammeltoft et al., 2010), with contradicting or unclear findings (Horváthová, 2010). These studies have entirely focused on developed markets with no attention given to emerging markets. The empirical evidence related to developed markets may not be applicable to emerging markets. Developed and emerging markets drastically differ in terms of their cultural, social and managerial practices (Griesse, 2006). Emerging market firms may be characterized by less corporate governance practices, dysfunctional institutions, challenging business situations and barriers due to government controls (Griesse, 2006).

In studying the relationship between ESG performance and financial performance of environmentally friendly sensitive sectors in developed and emerging markets, Naeem et al. (2022) recorded a significant positive relationship between ESG initiatives and firm financial performance across the full sample, with stronger positive valuation effects in developed markets compared to emerging markets. Manrique and Martí-Ballester (2017), in their study of the relationship between corporate environmental performance and corporate financial performance in developed and developing countries, identified a significant and positive relationship in developed and developing countries, with stronger effects in developing countries. These existing comparative studies focused on a global scope, and the findings are contradictory. This paper tries to fill these gaps by studying the relationship between ESG and financial performance under three key financial outcomes in developed and emerging European markets.

Researchers examined a variety of ESG data sources, including surveys, government reports, and dimensional metrics, such as charitable donations, environmental indexes,

and emission reductions. Some of the critical aggregate measures used by researchers include Kinder, Lyndenberg and Domini (KLD) Research and Analytics (Fatemi et al., 2017). The most frequently used control variables are firm size, beta, leverage, and sales growth (Fatmy et al., 2025; Naeem et al., 2022). The main criteria employed for performance measurement differed from market returns or variables that reflect market and operating performance (Bahadır and Akarsu, 2024; Yavuz et al., 2024; Rahi et al., 2021; Naeem et al., 2022).

Studies focused on environmental drivers identified that implementation of strict environmental standards can result in a competitive advantage due to the unique potential of green manufacturing processes (Hoffman, 2000). Environmental practices such as reducing pollution can increase productivity and cut costs by less consumption of materials, energy and services (Wagner, 2010). Environmental measures might also improve a company's accessibility to capital market funding sources (Sharfman & Fernando, 2008; Bauer et al., 2006). Reduced environmental performance lowers a company's financial performance and increases the cost of capital (Artiach et al., 2009). Compared to firms with strong governance, weak governance companies demonstrate worse operating performance, lower firm value and equity returns (Giroud & Mueller, 2011). High governance quality is positively associated with firm characteristics such as robust sales growth and institutional ownership (Chung & Zhang, 2010). Social sustainability concentrates on maintaining strong relationships with employees, customers, and the community as a necessary license to operate while managing the business's impact on stakeholders (Ting et al., 2019).

3.2 ESG impact on firm profitability

The relationship between ESG performance and profitability has been extensively investigated in previous literature. The review of these studies proved that the assessment of the relationship between ESG performance and profitability has mixed results. Several studies have found a positive association between ESG performance and firm profitability. The United States based study by Russo et al. (1997) has identified that

corporate environmental performance is positively associated with profitability. Through a study based on the German market, Velte (2017) has found that ESG performance has a positive impact on profitability, which is measured by return on assets (ROA). Yavuz et al. (2024) in their study of the Turkish publicly listed companies have reported that adopting the environmental and governance sub-dimensions positively affects profitability by return on equity (ROE) as a measure of profitability. Additionally, an empirical study on United States companies by Eccles et al. (2014) examining the relationship between corporate social responsibility and profitability has identified a positive correlation.

In contrast, some studies reported negative effects with unclear or inconsistent findings between ESG and profitability. Horváthová (2010) has shown that improved environmental performance leads to increased costs, causing marginal net profit to decrease by conducting a meta-regression analysis of 64 results from 37 empirical studies. Additionally, the study by Humphrey et al. (2012) states that they found no significant relationship between ESG rating and firm performance, concluding that executing an ESG strategy in UK firms does not create high financial costs or benefits. Rahi et al. (2021) have found a negative relationship between ESG activities and financial performance, which is conveyed through Return on Invested Capital (ROIC), ROE, and Earnings Per Share (EPS). Also, Bahadır and Akarsu (2024) have found a negative association between ESG and profitability, which is measured through ROA. They further suggest that improved operational efficiency, better communication, and information sharing prevent ESG from adversely affecting profitability at the expense of shareholders.

A study based on Japan has found that companies with solid ESG performance demonstrate positive valuation effects. However, due to the initial expenses of implementing sustainability initiatives, these are always followed by short-term decreases in profitability. This complies with the idea behind the stakeholder theory, which states that ESG investments are long-term commitments instead of an immediate fix for financial performance (Bani-Khaled et al., 2025). The study by Atan et al. (2018)

examining the impact of ESG on the financial performance of Malaysian public limited companies has found no significant correlation between ESG and profitability.

The majority of studies are based on developed markets, with less attention given to emerging markets. The previous literature seems to have focused on a single country context with limited concentration on comparative studies between developed and emerging markets. Additionally, the existing comparative studies have concentrated on a global scope, with the European context being underexplored (Naeem et al., 2022; Manrique & Martí-Ballester, 2017). Naeem et al. (2022) found a significant positive association between ESG and ROE as a measure of profitability in both developed and emerging markets. Manrique and Martí-Ballester (2017) found that environmental performance has strong positive effects on profitability, which is measured by ROA in both developed and developing countries, with stronger effects in developing countries. The current study aims to investigate the impact of ESG practices on profitability across the full sample and how it varies in developed and emerging European markets.

3.3 ESG impact on firm value

Firm value is commonly measured through Tobin's Q, and it reflects the market perception of future growth and risk. Tobin's Q is a long-term measure of a company's value, which indicates whether an asset is overvalued or undervalued (Yavuz et al., 2024). The study by Yavuz et al. (2024), based on the example of Turkey, indicates that adopting environmental and governance sub-dimensions positively affects Tobin's Q. Employing data gathered by KLD Research and Analytics as a proxy for ESG practices, and Tobin's Q as a proxy for firm value, Fatemi et al. (2017) found that ESG strengths increase the firm's value while weaknesses decrease it. However, Fisher-Vanden and Thorburn (2011) have found that firms reporting commitment in environmentally friendly activities experience negative abnormal returns. This indicates that investors perceive such actions as costly investments.

The moderating factors, like company ownership structure and regulatory environment, could cause further complications to the relationship between ESG practices and firm value. For instance, research on Chinese listed companies showed that ESG methods increase market value, mainly through good financial performance and operational capacity, with a greater impact on state-owned businesses (Zhong et al., 2022). Additionally, companies operating in certain cultures might not experience the same level of benefits through disclosure due to differences in expectations of stakeholders and strategic priorities. For example, companies having cultures indicating high power distance or uncertainty avoidance always restrict disclosures to prevent disputes and to sustain power structures, which may lead to decreasing benefits of transparency (Wasiuzzaman et al., 2022).

Although many studies highlight the beneficial effects of ESG commitment, there are situations where ESG practices may show neutral or even negative influences on firm value. For instance, studies examining stock market reactions to companies' carbon neutrality commitments show that such announcements can cause a decrease in market value, especially for businesses that lack strong ESG practices and fail to provide comprehensive disclosures (Xie et al., 2023).

Existing comparative studies between developed and emerging or developing markets demonstrate considerable differences in terms of how ESG impacts firm value (Manrique & Martí-Ballester, 2017; Naeem et al., 2022). Naeem et al. (2022) conducted a comparative study among developed and emerging markets examining how ESG performance of firms in environmentally sensitive sectors affects financial performance. According to them, ESG scores and pillar scores have a significant positive relationship with valuation measures like Tobin's Q and ROE for companies in developed markets. They further explain that emerging markets also show a positive connection between the values, but the magnitude and consistency are higher in developed markets. Manrique and Martí-Ballester (2017) recorded a significantly positive relationship between ESG and firm value in their comparative study within developed and developing

markets with a global scope. They further state that the impact of ESG on firm value is stronger for developing markets than developed markets.

Comparatively weaker legal frameworks and enforcement methods in emerging markets can increase the signalling of ESG activities, which could attract foreign investment and improve market views. On the contrary, in developed markets with strong regulatory analysis, ESG reporting requirements are frequently stronger, but companies might face a thorough assessment of their sustainability commitments (Bani-Khaled et al., 2025).

3.4 ESG impact on cost of debt

Sustainable firms may benefit from the lower cost of debt if the sustainability can reduce the default risk of loans (Ernst & Woithe, 2024). Kozak (2021) investigated how the intensity of CO_2 emissions affects the cost of debt by incorporating large non-financial companies operating in 15 EU countries. The results of the study indicated a positive and statistically significant relationship between CO_2 emissions and the cost of debt. Kordsachia (2020) states that corporate social responsibility disclosures can reduce the cost of debt by reducing the information asymmetry between managers and stakeholders. The study investigating the association between CSR and the marginal cost of credit of European companies by Kordsachia (2020) has found a negative association. They further assert that even after using many different models and more detailed measures of CSR, the negative relationship continued to persist. According to them, the negative impact is stronger for companies with low interest coverage ratios.

A growing strand of literature has shown that ESG performance reduces the cost of debt. Ernst and Woithe (2024) have shown that companies with better ESG scores benefit from lower cost of debt and equity by using the S&P 500, Bloomberg financial data, and MSCI's ESG score for 498 companies. The same relationship appeared in the study of Raimo et al. (2021), who demonstrated that companies with increased transparency of ESG information benefit from better terms in debt by analyzing companies of the S&P 1200 Global Index. Eliwa et al. (2019) have discovered that lending institutions appreciate

both ESG performance and disclosures and incorporate ESG information in their credit decisions. According to their investigation of lending companies in 15 EU countries, companies with greater ESG performance have a lower cost of debt. They further state that ESG disclosure is equally important as ESG performance.

Lavin and Montecinos-Pearce (2022) conducted a study on Chilean listed firms to understand the contribution of ESG disclosure to a firm's cost of debt in an emerging economy. They explored two correlation channels between ESG disclosure and the cost of debt. They further state that greater disclosure is associated with lower cost through direct channels, whereas through indirect channels, disclosure relates to growth opportunities, which is a proxy for the company's potential risk, and greater disclosure relates to a higher cost of debt. In contrast, Gigante and Manglaviti (2022) found no statistically significant relationship between ESG score and cost of debt by studying European nonfinancial corporates for the period of 2018–2020.

The literature on ESG disclosure highlights that a higher level of ESG disclosure decreases the cost of debt financing for all companies as well as the equity cost of capital in developed markets. This relationship influences the process of building value for stakeholders and shareholders and is important for both the financial costs and the intrinsic value of companies. In emerging markets, where unique political, social, and economic situations prevent direct comparisons to developed markets, it is particularly important to understand this connection (Lavin & Montecinos-Pearce, 2022).

3.5 Conclusions from previous findings

The studies reviewed suggest a consistent pattern regarding the financial implications of ESG performance. Prior literature indicates that ESG performance generally improves firm's profitability and market valuation. The previous studies also indicated that strong ESG performance is associated with lower cost of debt, while ESG controversies and weak governance lead to higher cost of debt. However, the magnitude of the relationship is dependent on the market context, institutional environment, and ESG dimension. The

disaggregated analysis of ESG pillar scores demonstrated that environmental and social pillars constantly indicate positive financial impact, while governance outcomes are insignificant and largely context-dependent. Prior comparative studies between developed and emerging markets that studied the relationship of ESG performance with firm value and profitability established that the effect is significantly positive in both developed and emerging markets, but the effect is stronger in developed markets.

4 Data and methodology

This segment aims to present the data and methodology applied in the study. The first sub-section states a summary of the sample, which is followed by a detailed discussion of the regression variables used in the study. The last section presents the final regression model of the study.

4.1 Sample

The main purpose of this paper is to study the impact of ESG performance on profitability, firm value, and cost of debt. Therefore, it is essential to have reliable ESG rating data for the investigation. Following Manrique and Martí-Ballester (2017) and Naeem et al. (2022), the main source of ESG metrics and key financial indicators for this analysis is from LSEG (London Stock Exchange Group) Workspace. LSEG Workspace was previously known as Refinitiv or Thomson Reuters Eikon. It offers fundamental data on public and private companies around the world. Their fundamental data on the world's leading private and public companies corresponds to 95% of the global market value. Observing the research by Paramati et al. (2017), the selection of sample countries from both developed and emerging markets is based on the classification by Morgan Stanley Capital International (MSCI).

The initial sample included annual ESG performance metrics and key financial indicators for 13,354 publicly listed firms over the period of 2015 to 2024. The sample was condensed to exclude the companies that were missing various variables. The final sample included 2098 companies, which were then divided into two sub-samples: 1914 developed market firms and 184 emerging market firms. The countries considered for the study cover a significant part of the European developed and emerging markets. The developed market countries considered for the study are Denmark, Finland, France, Germany, Italy, the Netherlands, Norway, Sweden, Switzerland, and the United Kingdom, while emerging markets are the Czech Republic, Greece, Hungary, Poland, and Turkey.

Table 1 illustrates the preliminary and the final sample of the study.

Table 1. Description of sample.

	Initial Sample (No. of firms)	**Final Sample (No. of firms)**
Developed Markets		
Denmark	342	61
Finland	418	78
France	1565	184
Germany	2026	491
Italy	880	124
Netherlands	382	54
Norway	728	87
Sweden	1824	295
Switzerland	692	157
United Kingdom	2759	383
	11616	**1914**
Emerging Markets		
Czech Republic	40	4
Greece	223	26
Hungary	65	6
Poland	829	41
Turkey	581	107
	1738	**184**
Total	**13354**	**2098**

As Table 1 displays, ratings and financial information were available only for a small portion of the total number of firms. Therefore, the final sample contains only 2098 publicly listed companies.

4.2 Regression Variables

As explained before, the ESG rating is the most important explanatory variable of this study. Further, following existing literature on ESG and firm performance (Fatmy et al., 2025; Manrique and Martí-Ballester, 2017; Naeem et al., 2022), the study employs several dependent variables, including measures of financial performance and borrowing costs such as profitability, valuation, and cost of debt. Additionally, the

analysis also uses a few variables to control for selected financial characteristics. The following sections explain each of the variables and their formation.

4.2.1 Dependent Variables

Based on prior literature (Fatmy et al., 2025), profitability is one of the primary elements of this study, which will be measured by Return on Assets (ROA_{it}). ROA_{it} is assessed as the ratio between operating income before depreciation divided by total assets at the beginning of the year. As per the findings by Lima and Jucá (2024), Bahadır and Akarsu (2024), and Manrique and Martí-Ballester (2017), ROA_{it} is assumed to be positively associated with ESG ratings for both developed and emerging markets. The effect is expected to be stronger for developed markets than emerging markets (Naeem et al., 2022).

As per previous studies (Fatmy et al., 2025; Naeem et al., 2022), Tobin's Q is employed as the measure of firm value. Tobin's Q is calculated as the sum of total assets plus the market value of equity less book value of equity divided by total assets (Naeem et al., 2022). Further, it is anticipated that Tobin's Q is positively associated with ESG ratings, and the effect is stronger for developed markets. Cost of debt is used as a proxy for borrowing cost, and it is computed by interest expense on debt divided by total debt. Following previous studies (Lavin & Montecinos-Pearce, 2022; Kozak, 2021; Ernst & Woithe, 2024), it is expected that there will be a negative relationship between ESG rating and cost of debt. Prior studies on developed countries often find a negative relationship between ESG and the cost of debt. However, in emerging markets, this relationship can be complex and less predictable due to higher information asymmetries, ownership concentration, and heterogeneity (Lavin & Montecinos-Pearce, 2022).

4.2.2 Independent Variables

The study employs ESG scores from LSEG Workspace, which was previously known as Refinitiv or Thomson Reuters Eikon, as the main independent variable. The effect of the

three pillars (E, S, G) that form the overall score was analyzed individually. The scores range from 0 to 100 points, where 0 – 25 = poor, 25 – 50 = moderate, 50 – 75 = good, 75 – 100 = excellent ESG performance.

The environmental score evaluates an organization's effect on living and non-living ecological systems, such as air, land, and water, as well as entire ecosystems. This shows how distinctly a company employs best management practices to prevent environmental risks and take advantage of environmental opportunities to provide long-term shareholder value. Social score assesses how successfully an organization utilizes best management practices to develop trust and loyalty with its customers, employees, and society. The score displays the business's standing and the validity of its permit to operate, which are important elements in deciding its capability to produce long-term shareholder value. The corporate governance score decides a company's governance performance, which assesses structures and procedures that guarantee board members and executives behave in the best interests of its long-term shareholders. The score displays an organization's ability to employ best management practices to regulate and guide its rights and obligations through developing incentives and checks and balances to create long-term shareholder value.

4.2.3 Control Variables

Following previous studies (Fatmy et al., 2025; Manrique and Martí-Ballester, 2017; Naeem et al., 2022; Yavuz et al., 2024; Eliwa et al., 2019), this paper includes several control variables to avoid attaining biased estimates due to the exclusion of important variables. The control variables included are firm size; which is determined by the natural logarithm of total assets, firm's profitability; which is measured by the Return on Assets (ROA_{it}), leverage; which is measured by dividing total debt with total assets, sales growth measured as a percentage change of the last year, Research and Development Intensity; measured as a ratio of revenue, beta as a measure of systematic firm risk, board size, board independence; which is measured as a percentage of independent members on the board of directors, and interest coverage to measure a company's ability to pay its

interest cost which is derived by dividing total operating income with total interest expense. Additionally, when analyzing the impact of ESG on firm profitability (ROA_{it}) and cost of debt, the previous year's return on assets is entered as an explanatory variable. Similarly, previous years' Tobin's Q is included as an explanatory variable when examining the effects of ESG on firm valuation (Tobin's Q).

The regression analyses on the full sample as well as sub-samples include industry-, country-, and year- fixed effects (Fatmy et al., 2025) to control for specific variations throughout these variables. Two dummy variables were used in the study for developed and emerging markets. For the dummy developed market, one point is granted if the firm is in a developed market; otherwise, zero. In contrast, the dummy emerging market is equal to one if the firm is in an emerging market; otherwise, it is zero.

Table 2 summarizes regression variables and displays descriptive statistics of the full sample, developed markets, and emerging markets.

Table 2. Descriptive statistics.

		Mean	Median	Maximum	Minimum	Standard Deviation
ESG Score	Full sample	53.85	55.68	95.66	1.01	20.89
	Developed markets	53.66	55.32	95.66	1.01	20.84
	Emerging markets	55.97	59.23	95.18	2.19	21.35
Environmental Score	Full sample	49.88	50.73	99.13	0.00	26.73
	Developed markets	49.48	49.98	99.06	0.00	26.62
	Emerging markets	54.34	59.75	99.13	0.00	27.56
Social Score	Full sample	57.23	59.70	98.63	0.34	23.50
	Developed markets	56.99	59.22	98.20	0.34	23.34
	Emerging markets	59.93	65.41	98.63	0.45	25.06
Governance Score	Full sample	52.39	53.56	98.75	0.32	23.19
	Developed markets	52.43	53.55	98.75	0.32	23.30
	Emerging markets	51.93	53.64	95.13	2.59	21.84
ROA	Full sample	4.51%	4.62%	35.05%	-40.76%	9.56%
	Developed markets	4.27%	4.59%	35.05%	-40.76%	9.59%
	Emerging markets	7.17%	5.24%	35.05%	-32.53%	8.79%
Tobin's Q	Full sample	1.84	1.30	10.30	0.64	1.55
	Developed markets	1.88	1.32	10.30	0.64	1.58
	Emerging markets	1.42	1.06	10.30	0.64	1.10
Cost of debt	Full sample	5.14%	3.31%	63.70%	0.00%	7.88%
	Developed markets	4.79%	3.22%	63.70%	0.00%	7.32%
	Emerging markets	9.04%	5.05%	63.70%	0.00%	11.84%
Size	Full sample	14.71	14.61	20.39	9.89	2.12
	Developed markets	14.70	14.60	20.39	9.89	2.15
	Emerging markets	14.83	14.70	18.62	9.89	1.79

		Mean	Median	Maximum	Minimum	Standard Deviation
Leverage (debt-to-assets)	Full sample	0.25	0.24	0.71	0.00	0.17
	Developed markets	0.25	0.24	0.71	0.00	0.17
	Emerging markets	0.24	0.23	0.71	0.00	0.17
Sales growth (1Y)	Full sample	7.79%	3.79%	134.30%	-56.20%	24.81%
	Developed markets	7.40%	3.82%	134.30%	-56.20%	23.99%
	Emerging markets	12.19%	3.51%	134.30%	-56.20%	32.39%
R&D Intensity	Full sample	0.03	0.00	0.70	0.00	0.08
	Developed markets	0.03	0.00	0.70	0.00	0.08
	Emerging markets	0002	0.00	0.24	0.00	0.01
Beta	Full sample	1.04	0.99	2.78	-0.04	0.52
	Developed markets	1.04	0.99	2.78	-0.04	0.53
	Emerging markets	0.98	0.95	2.78	-0.04	0.41
Board Size	Full sample	9.15	8.00	28.00	0.00	3.99
	Developed markets	9.14	8.00	28.00	0.00	4.03
	Emerging markets	9.32	9.00	26.00	0.00	3.39
Board Independence	Full sample	55.05	57.14	100.00	0.00	28.27
	Developed markets	56.58	60.00	100.00	0.00	28.58
	Emerging markets	37.76	35.71	93.75	0.00	16.52

Table 3 represents the correlation coefficients for the dependent and independent variables incorporated in the regression analysis. These were obtained to check for multicollinearity concerns. The correlation coefficients between independent and control variables are less than 0.80, demonstrating that the threat of multicollinearity is limited. The ESG pillar scores are highly correlated with the ESG score and generate similar coefficients as those attained for the ESG score with other variables. Except for correlations between sales growth and other variables, most of the correlation coefficients obtained are statistically significant at 1% or 5%.

Table 3. Correlation coefficients.

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	**ESG Score**	1.00	0.86	0.91	0.76	0.11	-0.11	-0.11	0.65	0.12	-0.02	0.10	-0.07	0.47	0.30	0.01
2	**Environmental Score**	0.86	1.00	0.75	0.48	0.11	-0.15	-0.11	0.65	0.12	-0.03	0.08	-0.12	0.49	0.15	0.01
3	**Social Score**	0.91	0.75	1.00	0.53	0.13	-0.09	-0.11	0.60	0.13	-0.02	0.05	-0.05	0.45	0.18	0.01
4	**Governance Score**	0.76	0.48	0.53	1.00	0.04	-0.08	-0.06	0.45	0.04	-0.01	0.14	-0.02	0.26	0.44	0.02
5	**ROA**	0.11	0.11	0.13	0.04	1.00	0.28	-0.04	0.06	-0.09	0.14	-0.13	-0.29	0.00	-0.01	0.04
6	**Tobin's Q**	-0.11	-0.15	-0.09	-0.08	0.28	1.00	0.04	-0.30	-0.20	0.11	-0.10	0.23	-0.16	0.05	0.02
7	**Cost of debt**	-0.11	-0.11	-0.11	-0.06	-0.04	0.04	1.00	-0.19	-0.24	0.03	0.02	0.05	-0.11	-0.05	-0.02
8	**Size**	0.65	0.65	0.60	0.45	0.06	-0.30	-0.19	1.00	0.15	-0.02	0.04	-0.20	0.60	0.15	0.01
9	**Leverage (debt-to-assets)**	0.12	0.12	0.13	0.04	-0.09	-0.20	-0.24	0.15	1.00	0.04	0.06	-0.03	0.06	0.04	-0.04
10	**Sales growth (1Y)**	-0.02	-0.03	-0.02	-0.01	0.14	0.11	0.03	-0.02	0.04	1.00	-0.02	-0.12	0.06	-0.01	0.04
11	**Beta**	0.10	0.08	0.05	0.14	-0.13	-0.10	0.02	0.04	0.06	-0.02	1.00	0.03	0.02	0.09	0.00
12	**R&D Intensity**	-0.07	-0.12	-0.05	-0.02	-0.29	0.23	0.05	-0.20	-0.03	-0.12	0.03	1.00	-0.05	0.00	-0.01
13	**Board Size**	0.47	0.49	0.45	0.26	0.00	-0.16	-0.11	0.60	0.06	0.06	0.02	-0.05	1.00	-0.02	0.00
14	**Board Independence**	0.30	0.15	0.18	0.44	-0.01	0.05	-0.05	0.15	0.04	-0.01	0.09	0.00	-0.02	1.00	0.02
15	**Interest Coverage**	0.01	0.01	0.01	0.02	0.04	0.02	-0.02	0.01	-0.04	0.04	0.00	-0.01	0.00	0.02	1.00

Table 4. Descriptive statistics by industry.

Industry	No. of companies	Frequency	Mean ESG Score	Mean ROA	Mean Tobins' Q	Mean Cost of debt
Communication Services	102	4.86%	55.97	4.41	1.63	4.15%
Consumer Discretionary	305	14.54%	55.02	5.64	1.97	5.46%
Consumer Staples	117	5.58%	58.12	5.45	1.75	5.50%
Energy	88	4.19%	52.90	0.78	1.49	7.39%
Financials	248	11.82%	56.17	3.25	1.25	4.51%
Health Care	182	8.67%	52.51	0.28	3.09	6.27%
Industrials	519	24.74%	52.33	5.57	1.84	4.87%
Information Technology	218	10.39%	45.31	5.41	2.53	4.92%
Materials	135	6.43%	58.64	6.12	1.60	5.46%
Real Estate	117	5.58%	53.45	4.52	1.16	3.17%
Utilities	67	3.19%	57.57	4.42	1.21	6.40%
All	**2098**	**100.00%**	**53.85**	**4.51**	**1.84**	**5.14%**

Table 4 presents the descriptive statistics of sample firms across 11 industry categories defined by Global Industry Classification Standard (GICS). This demonstrates how ESG score, profitability (ROA), firm value (Tobin's Q), and cost of debt vary across industries. The firms in the sample are reasonably distributed across 11 industry sectors. Materials, consumer staples, and utilities show the highest ESG scores, while Information technology, health care, and energy display the lowest ESG scores. Profitability (ROA) is highest in materials and consumer discretionary industries, whereas it is lowest in health care and energy sectors. Higher Tobin's Q reported in the health care and information technology sectors, which are innovation driven. The cost of debt is highest in the energy and utilities industries, and lowest in the real estate and communication services sectors. The Industrial sector covers the highest number of firms in the sample, with 519 out of

a total of 2098, whereas the lowest is the utilities sector with 67 firms out of a total of 209.

Table 5. Descriptive statistics by market.

Market	No. of companies	Frequency	Mean ESG Score	Mean ROA	Mean Tobins' Q	Mean Cost of debt
Czech Republic	4	0.19%	56.63	3.39	1.11	7.34%
Denmark	61	2.91%	51.49	6.55	2.55	4.48%
Finland	78	3.72%	55.63	5.50	1.77	3.87%
France	184	8.77%	61.79	3.36	1.53	3.06%
Germany	491	23.40%	54.28	4.22	1.69	4.76%
Greece	26	1.24%	52.41	3.99	1.14	5.51%
Hungary	6	0.29%	56.11	5.18	1.11	6.42%
Italy	124	5.91%	58.55	4.06	1.62	2.87%
Netherlands	54	2.57%	61.66	5.25	1.86	3.82%
Norway	87	4.15%	50.59	4.28	1.63	5.11%
Poland	41	1.95%	49.10	3.78	1.37	4.74%
Sweden	295	14.06%	46.39	2.05	2.46	6.34%
Switzerland	157	7.48%	50.18	3.41	2.22	4.33%
Turkey	107	5.10%	61.31	10.72	1.59	13.23%
United Kingdom	383	18.26%	53.00	5.53	1.81	5.67%
All	**2098**	**100.00%**	**53.85**	**4.51**	**1.84**	**5.14%**

Table 5 summarizes the ESG performance, profitability (ROA), firm value (Tobin's Q), and cost of debt across 15 European markets. Among these markets, the Czech Republic, Hungary, and Greece account for less than 2%. Despite their lower representation, their ESG scores reasonably outperform other markets in the overall sample. France, the Netherlands, and Turkey display the highest ESG scores among others in the sample, while Poland, Sweden, and Norway show the lowest ESG scores. Profitability is higher in Denmark and Turkey, whereas Sweden and France demonstrate lower ROA. Tobin's Q is

highest in Switzerland, Sweden, and Denmark. The cost of debt is lowest in Italy and France.

4.3 Regression model

Based on existing literature (Fatmy et al., 2025; Naeem et al., 2022; Yavuz et al., 2024), the study employs multivariate analyses on the following regression model to analyze the relationship between ESG performance and financial performance.

$$Financial\ Performance_{it} = \alpha + \beta_1(ESG_{it}) + \beta_{2-n}(Control\ variables_{it}) + \gamma + \delta + \mu + \varepsilon$$

Where the dependent variable, Financial Performance, represents profitability (ROA_{it} and ROE_{it}), firm value (Tobin's Q and market to book ratio), and cost of debt (interest expense on debt divided by total debt). ESG_{it} is measured by the ESG score, and alternatively, it is replaced by sub dimensions Environmental score, social score, and governance score that make up the ESG score. The control variables include firms' financial characteristics, such as size, sales growth, profitability, leverage, R&D Intensity, beta, board size, board independence (Fatmy et al., 2025; Naeem et al., 2022; Yavuz et al., 2024), interest coverage (Eliwa et al., 2019), and previous year ROA and Tobin's Q (Fatmy et al., 2025). γ, δ, and μ represent the inclusion of country, industry, and year-specific fixed effects. According to the sub-sample selection, related fixed effects are excluded. All fundamental dependent and independent variables are winsorized at 1% and 99% levels. Robust standard errors that are controlled for heteroscedasticity and clustered by firm are used in the regressions.

5 Results and discussion

To estimate the effect of ESG performance on profitability, firm value, and cost of debt, several regression models were utilized. The first section narrates the outcomes of the profitability analysis, which is followed by the outcomes of the analysis on firm value and cost of debt.

5.1 Regression analysis on profitability

Table 6 represents the regression results for the relationship between different ESG performance and profitability using ROA as the primary profitability instrument. Each regression model explains how different ESG dimensions are associated with ROA by isolating a specific ESG component. The regression results of the four models demonstrate that ESG performance is positively and significantly related to profitability, which supports the hypothesis H1, that is, ESG performance is positively correlated with firm profitability in both developed and emerging European markets. The results are consistent with the findings of prior studies that ESG performance positively affects profitability (Yavuz et al., 2024; Fatmy et al., 2025; Naeem et al., 2022) but inconsistent with the findings of Bahadır and Akarsu (2024), who found that ESG practices are negatively associated with profitability, and the findings of Rahi et al., who recorded a negative relationship between ESG activities and financial performance.

The analysis was further extended to see how disaggregated ESG pillars affect profitability. As per the results, all three ESG pillars are positively and significantly correlated with profitability, with the social pillar having the strongest effect. This finding is congruent with the social capital theory and stakeholder theory, which highlight the importance of strong relationships with employees, customers, suppliers and the community. According to the previous study by Lins et al. (2017), companies with strong social capital outperform their peers with weak social capital during periods of uncertainty, indicating that social practices generate trust and resilience that convert into higher financial performance. The strong positive impact of environmental

performance on profitability aligns with findings of Manrique and Martí-Ballester (2017), who recorded that adoption of environmental initiatives significantly and positively affects financial performance. This finding also supports the resource-based view, which argues that environmental practices are a source of competitive advantage.

The governance pillar displays a small yet significant at 5% relationship with profitability. This aligns with the results of Ting et al. (2019), who recorded that governance performance is related to improved financial performance, but is inconsistent with the findings of Fatmy et al. (2025) that the governance pillar has no effect on profitability. This finding is consistent with the European context, as governance guidelines are already high and standardized due to regulatory harmonization. Therefore, governance score displays a limited explanatory power while environmental and social practices vary extensively across firms, appearing to be valued by investors. In addition, the results also indicate that leverage and beta (Fatmy et al., 2025; Yavuz et al., 2024) have a negative effect on profitability, while $ROA_{(1-t)}$ and sales growth rate have a positive impact on profitability (Yavuz et al., 2024), being consistent with established literature.

Table 6. Regression results on profitability.

	ROA			
	ESG Score	**E-Score**	**S-Score**	**G-Score**
Constant	0.02 (0.01)	0.01 (0.01)	0.01 (0.01)	0.003 (0.01)
ESG Score	0.0003*** (0.0001)	-	-	-
Environmental Score	-	0.0002*** (0.0004)	-	-
Social Score	-	-	0.0003*** (0.00004)	-
Governance Score	-	-	-	0.0001** (0.00004)
ROA_{t-1}	0.57*** (0.02)	0.57*** (0.02)	0.57*** (0.02)	0.57*** (0.02)
R&D Intensity	-0.16*** (0.02)	-0.16*** (0.02)	-0.17*** (0.02)	-0.16*** (0.02)
Beta	-0.01*** (0.002)	-0.01*** (0.002)	-0.01*** (0.002)	-0.01*** (0.002)
Size	0.001 (0.001)	0.002** (0.001)	0.001 (0.001)	0.003*** (0.001)
Leverage	-0.04*** (0.01)	-0.04*** (0.01)	-0.04*** (0.01)	-0.04*** (0.01)
Sales growth	0.07*** (0.01)	0.07*** (0.01)	0.07*** (0.01)	0.07*** (0.01)
Board Size	-0.004* (0.0002)	-0.0004* (0.0002)	-0.0004* (0.0002)	-0.0003 (0.0002)
Board Independence	-0.00004 (0.00003)	-0.00001 (0.00003)	-0.00002 (0.00003)	-0.00002 (0.00003)
Industry, market and year FE	Yes	Yes	Yes	Yes
Observations	12632	12632	12632	12632
R-Squared	0.49	0.49	0.49	0.49

Adjusted R-Squared	0.49	0.49	0.49	0.49
F-Statistic	167.60	167.26	167.88	166.67

Correlation coefficients are followed by the corresponding robust standard errors, which are stated in parentheses. The * represents the significance of the coefficient at 10% level, ** at the 5% level, and *** at 1% level.

Further examinations were conducted to see how ESG impacts on profitability vary among developed and emerging European markets. Table 7 illustrates the ESG initiatives' impact on profitability in developed and emerging markets. The results show that the ESG score is positively and significantly correlated with profitability in developed markets, emphasizing businesses with strong ESG practices achieve superior profitability. In contrast, the relationship between ESG score and profitability is positive but not statistically significant in emerging markets. This finding is consistent with the finding of Naeem et al. (2022) that recorded the impact of ESG performance on financial performance is stronger for developed markets than emerging markets, but inconsistent with Manrique and Martí-Ballester (2017), who found that this effect is stronger for developing markets than developed markets. The finding also supports the hypothesis H4 that the impact of ESG performance on profitability is stronger for developed markets than emerging markets.

The relationship of environmental and social pillar scores with profitability in both developed and emerging markets also follows the same positive pattern, but is statistically significant for emerging markets. The relationship between the governance pillar and profitability is positive but statistically insignificant for both markets. These findings are consistent with the results on the relationship between ESG pillar scores and ROA in the prior study by Fatmy et al. (2025). The relationship between governance dimension and profitability, being insignificant in developed markets, can further be supported by Kong et al. (2023), who argue that governance improvements yield insignificant financial benefits in countries where governance standards are already high.

The results suggest that ESG can be treated as a strategic investment in developed markets rather than a compliance mechanism. This implies that companies should integrate ESG initiatives into their business models by linking sustainability to financial KPIs to maximize profitability. The social pillar, having the highest impact on ROA in developed markets, suggests that firms should prioritize social initiatives to strengthen stakeholder relationships and social capital. The positive but insignificant relationship between ESG and ROA in emerging markets suggests that ESG investments may not translate into profitability, reflecting less investor pressure, lower ESG disclosure quality, and inadequate institutional backgrounds. The findings also emphasize that investors should overweight firms with high ESG performance in developed markets, while in emerging markets, investors should combine ESG metrics with financial characteristics, such as size and sales growth, when assessing firms. The strong relationship between ESG and profitability indicates that ESG performance can be viewed as a proxy for financial resilience, and banks can incorporate ESG ratings in the credit risk assessment. The regulators and companies in emerging markets should concentrate on advancing the quality of ESG disclosure and transparency to achieve financial value.

Table 7. Comparison of ESG impact on Profitability in developed and emerging markets.

	ROA							
	ESG Score		**E-Score**		**S-Score**		**G-Score**	
	Developed	**Emerging**	**Developed**	**Emerging**	**Developed**	**Emerging**	**Developed**	**Emerging**
Constant	0.01 (0.01)	0.13*** (0.04)	0.01 (0.01)	0.13*** (0.04)	0.01 (0.01)	0.13*** (0.04)	-0.001 (0.01)	0.13*** (0.04)
ESG Score	0.0003*** (0.0001)	0.0001 (0.0001)	-	-	-	-	-	-
Environmental Score	-	-	0.0002*** (0.00004)	0.0001 (0.0001)	-	-	-	-
Social Score	-	-	-	-	0.0003*** (0.0001)	0.0001 (0.0001)	-	-
Governance Score	-	-	-	-	-	-	0.0001 (0.0001)	0.0002 (0.0001)
ROA_{t-1}	0.57*** (0.02)	0.39*** (0.04)	0.58*** (0.02)	0.39*** (0.04)	0.57*** (0.02)	0.39*** (0.04)	0.58*** (0.02)	0.39*** (0.04)
R&D Intensity	-0.16*** (0.02)	0.10 (0.14)	-0.16*** (0.02)	0.11 (0.14)	-0.16*** (0.02)	0.11 (0.14)	-0.16*** (0.02)	0.09 (0.14)
Beta	-0.01*** (0.002)	-0.01 (0.01)	-0.01*** (0.002)	-0.01 (0.01)	-0.005*** (0.02)	-0.01 (0.01)	-0.01*** (0.002)	-0.01 (0.01)

Size	0.001 (0.001)	-0.01** (0.002)	0.002** (0.001)	-0.01** (0.002)	0.001* (0.001)	-0.01** (0.002)	0.003*** (0.001)	-0.01** (0.002)
Leverage	-0.05*** (0.01)	-0.02 (0.02)	-0.05*** (0.01)	-0.02 (0.02)	-0.05*** (0.01)	-0.02 (0.02)	-0.05*** (0.01)	-0.02 (0.02)
Sales growth	0.07*** (0.01)	0.06*** (0.01)	0.07*** (0.01)	0.06*** (0.01)	0.07*** (0.01)	0.06*** (0.01)	0.07*** (0.01)	0.06*** (0.01)
Board Size	-0.001** (0.0002)	0.00003 (0.001)	-0.001** (0.0002)	0.0001 (0.001)	-0.001** (0.0002)	0.00003 (0.001)	-0.0004* (0.0002)	0.0002 (0.001)
Board Independence	-0.0001* (0.00003)	0.0004** (0.0001)	-0.00002 (0.00003)	0.0004** (0.0002)	-0.00003 (0.00003)	0.0004*** (0.0001)	-0.00003 (0.00003)	0.0003** (0.0001)
Industry, market and year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	11617	1015	11617	1015	11617	1015	11617	1015
R-Squared	0.49	0.51	0.49	0.51	0.49	0.51	0.49	0.51
Adjusted R-Squared	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49
F-Statistic	167.53	18.81	167.28	18.77	167.93	18.78	166.55	18.86

Correlation coefficients are followed by the corresponding robust standard errors, which are stated in parentheses. The * represents the significance of the coefficient at 10% level, ** at the 5% level, and *** at 1% level.

5.2 Regression analysis on firm value

This section analyses the association between ESG performance and firm value, which is determined through Tobin's Q. The regression models include both ESG score and ESG pillar scores alongside standard financial controls. The results of the models are illustrated in Table 8. The findings reveal a positive and statistically significant relationship between ESG score and firm value, with a coefficient of 0.003. The finding supports hypothesis H2, which assumes ESG performance to be positively associated with firm value. Additionally, the results align with the findings of previous studies by Yavuz et al. (2024) and Fatemi et al. (2017), who report that ESG initiatives positively affect firm value.

The investigation was further extended to see the impact of ESG pillars on firm value. As per the regression results, the environmental and social scores show positive effects on Tobin's Q, which are statistically significant at 1%, while the effect is small yet positive for the governance score, with a significance level of 10%. The finding aligns with Lins et al. (2017), who argue that companies with high social capital enjoy higher valuation effects, specifically during periods of uncertainty, and the results of Manrique and Martí-Ballester (2017), which record that environmental practices are positively and significantly associated with firm value in both developed and developing markets. The result of the environmental score can be explained as good environmental initiatives assist businesses to have access to sources of funds in capital markets (Sharfman & Fernando, 2008; Bauer et al., 2006).

The behaviour of control variables establishes the patterns of prior empirical studies. Leverage and beta are constantly negatively correlated to the firm value with significance at 1%, and this corresponds with the results of Fatmy et al. (2025). Sales growth is positively associated with firm value across all four models, with significance at 1% (Fatmy et al., 2025). Firm size, which is proxied by the log of total assets, is negatively associated with Tobin's Q in all models with significance at 1% (Naeem et al., 2022).

Table 8. Regression results on firm value.

	Tobin's Q			
	ESG Score	**E-Score**	**S-Score**	**G-Score**
Constant	0.66*** (0.10)	0.67*** (0.09)	0.62*** (0.09)	0.54*** (0.09)
ESG Score	0.003*** (0.001)	-	-	-
Environmental Score	-	0.002*** (0.0003)	-	-
Social Score	-	-	0.002*** (0.0004)	-
Governance Score	-	-	-	0.001* (0.0004)
Tobin's Q_{t-1}	0.80*** (0.02)	0.80*** (0.02)	0.80*** (0.02)	0.80*** (0.02)
R&D Intensity	-0.03 (0.24)	-0.02 (0.24)	-0.03 (0.24)	-0.03 (0.24)
Beta	-0.05*** (0.02)	-0.05*** (0.02)	-0.05*** (0.02)	-0.05*** (0.02)
Size	-0.03*** (0.01)	-0.03*** (0.01)	-0.03*** (0.01)	-0.02*** (0.01)
Leverage	-0.19*** (0.05)	-0.19*** (0.05)	-0.19*** (0.05)	-0.18*** (0.05)
Sales growth	0.24*** (0.04)	0.24*** (0.04)	0.24*** (0.04)	0.24*** (0.04)
Board Size	0.001 (0.002)	0.003 (0.002)	0.001 (0.002)	0.002 (0.002)
Board Independence	-0.0002 (0.0003)	0.0000 (0.0003)	0.0000 (0.0003)	0.0000 (0.0003)
Industry, market and year FE	Yes	Yes	Yes	Yes
Observations	12632	12632	12632	12632
R-Squared	0.79	0.79	0.79	0.79

Adjusted R-Squared	0.79	0.79	0.79	0.79
F-Statistic	648.71	648.96	648.81	646.71

Correlation coefficients are followed by the corresponding robust standard errors, which are stated in parentheses. The * represents the significance of the coefficient at 10% level, ** at the 5% level, and *** at 1% level.

Table 9 displays the regression results of the comparison of the impact of ESG performance on firm value in developed and emerging markets. As per the results, the overall ESG score indicates a positive and statistically significant relationship with firm value in developed markets, while a small and positive but statistically insignificant relationship is shown in emerging markets. The ESG coefficient for Tobin's Q in developed markets is 0.003 and statistically significant, and in emerging markets, it is 0.0002 and statistically insignificant. This is consistent with Naeem et al. (2022), who recorded that ESG has a stronger impact on firm value in developed markets than emerging markets. The finding also supports the proposed hypothesis H4, which states that the effect of ESG performance on firm value is stronger in developed European markets. The results demonstrate that ESG initiatives are increasingly valued by investors in developed markets, where regulatory environments, institutional frameworks, and investor expectations regarding sustainability are more mature (Fatmy et al., 2025).

The investigation was further extended to analyze and compare the impact of ESG components on firm value in developed and emerging European markets. According to the results, the effect of environmental and social pillars on firm value is positive and significant at 1% in developed markets, while the correlation in emerging markets is insignificant for both components. The impact of the governance pillar on firm value is statistically insignificant in both developed and emerging markets. The findings on environmental and social pillars are consistent with Ting et al. (2019), who found that those pillars have a significant and positive effect on firm value in developed markets, but are inconsistent with the findings related to the governance pillar, as they have recorded a significant positive relationship with firm value in developed markets. The

impact of the control variables on firm value is similar to the previous analysis with the full sample.

The results suggest that ESG initiatives are value-improving strategies in developed markets, which are not only ethical but also strategic financial decisions. However, firms in emerging markets should not expect immediate valuation benefits from ESG performances. The results indicate that ESG is a meaningful signal of firm quality in developed markets and investors can use ESG scores for long-term strategic decisions, while in emerging markets ESG scores do not predict firm value and investors need to focus more on size, growth and market fundamentals. The strong ESG and Tobin's Q relationship in developed markets emphasize that mature markets have higher ESG awareness, investors reward ESG performance, and the existence of strong and credible ESG reporting frameworks. The lack of significance in emerging markets suggests that ESG integration is still evolving. This emphasizes the need for strengthening ESG disclosure standards and promoting ESG literacy among investors in emerging markets.

Table 9. Comparison of ESG impact on firm value among developed and emerging markets.

	Tobin's Q							
	ESG Score		**E-Score**		**S-Score**		**G-Score**	
	Developed	**Emerging**	**Developed**	**Emerging**	**Developed**	**Emerging**	**Developed**	**Emerging**
Constant	0.63*** (0.10)	1.41*** (0.33)	0.63*** (0.10)	1.42*** (0.34)	0.59*** (0.09)	1.42*** (0.33)	0.50*** (0.09)	1.42*** (0.34)
ESG Score	0.003*** (0.001)	0.0002 (0.001)	-	-	-	-	-	-
Environmental Score	-	-	0.002*** (0.0004)	0.001 (0.001)	-	-	-	-
Social Score	-	-	-	-	0.002*** (0.001)	0.001 (0.001)	-	-
Governance Score	-	-	-	-	-	-	0.001 (0.0004)	-0.002 (0.001)
Tobin's Q_{t-1}	0.80*** (0.02)	0.66*** (0.07)	0.80*** (0.02)	0.66*** (0.07)	0.80*** (0.02)	0.66*** (0.07)	0.81*** (0.02)	0.65*** (0.06)
R&D Intensity	-0.06 (0.24)	1.62 (1.09)	-0.05 (0.24)	1.58 (1.05)	-0.06 (0.24)	1.50 (1.05)	-0.06 (0.24)	1.99* (1.11)
Beta	-0.05*** (0.02)	-0.13*** (0.05)	-0.05*** (0.02)	-0.13*** (0.05)	-0.05*** (0.02)	-0.13*** (0.05)	-0.05*** (0.02)	-0.13*** (0.05)

Size	-0.03***	-0.06***	-0.03***	-0.06***	-0.03***	-0.06***	-0.02**	-0.05***
	(0.01)	(0.02)	(0.01)	(0.02)	(0.01)	(0.02)	(0.01)	(0.02)
Leverage	-0.20***	0.16	-0.20***	0.15	-0.21***	0.15	-0.20***	0.16
	(0.05)	(0.13)	(0.05)	(0.13)	(0.06)	(0.13)	(0.05)	(0.13)
Sales growth	0.19***	0.39***	0.19***	0.39***	0.19***	0.39***	0.19***	0.38***
	(0.05)	(0.10)	(0.05)	(0.10)	(0.05)	(0.10)	(0.05)	(0.10)
Board Size	0.001	-0.003	0.0003	-0.003	0.001	-0.004	0.002	-0.003
	(0.002)	(0.01)	(0.002)	(0.01)	(0.002)	(0.01)	(0.002)	(0.01)
Board Independence	-0.0003	0.001	0.0001	0.001	-0.0001	0.001	-0.0001	0.001
	(0.0003)	(0.001)	(0.0003)	(0.001)	(0.0003)	(0.001)	(0.0004)	(0.001)
Industry, market and year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	11617	1015	11617	1015	11617	1015	11617	1015
R-Squared	0.79	0.73	0.79	0.73	0.79	0.73	0.79	0.73
Adjusted R-Squared	0.79	0.71	0.79	0.71	0.79	0.72	0.79	0.71
F-Statistic	660.24	48.05	660.55	48.07	660.36	48.13	658.44	48.24

Correlation coefficients are followed by the corresponding robust standard errors, which are stated in parentheses. The * represents the significance of the coefficient at 10% level, ** at the 5% level, and *** at 1% level.

5.3 Regression analysis on the cost of debt

This section discusses the regression results on the relationship between ESG performance and the cost of debt. The regression models include both overall ESG score and ESG pillar scores together with financial controls such as profitability, size, R&D intensity, beta, board size, board independence, interest coverage, and leverage. Table 10 displays the results of the regression analyses. As per the results, the overall ESG score does not have a significant economic impact on the cost of debt. This finding contradicts hypothesis H3, which expects a negative association between ESG performance and cost of debt. The result supports the findings of Gigante and Manglaviti (2022) that there is no significant relationship between ESG initiatives and cost of debt in European corporates, while contradicting Eliwa et al. (2019), who recorded that firms with stronger ESG performance have lower cost of debt in their study of 15 EU countries. Decomposing ESG performance into individual dimensions to investigate the impact of each ESG pillar on the cost of debt displayed no statistically significant effect, similar to the overall ESG score. The results are inconsistent with the outcomes of Eliwa et al. (2019), who found a significant negative association between the cost of debt and both environmental and social dimensions, but not with the governance dimension.

The behaviour of the control variables is largely consistent with the findings of the existing literature. The results indicate a significant negative relationship between cost of debt and both size (proxied by the log of total assets) and ROA (Eliwa et al., 2019). It was also found that there is a small negative correlation with a significance at 1% between the cost of debt and interest rate coverage (Hasan et al., 2017). The relationship between leverage and cost of debt is significantly negative across all regressions, and this is consistent with the finding of Lavin and Montecinos-Pearce (2022).

Table 10. Regression results on the cost of debt.

	Cost of Debt			
	ESG Score	**E-Score**	**S-Score**	**G-Score**
Constant	0.16***	0.16***	0.16***	0.16***
	(0.01)	(0.01)	(0.01)	(0.01)
ESG Score	0.00002	-	-	-
	(0.0001)			
Environmental Score	-	-0.0001	-	-
		(0.0001)		
Social Score	-	-	-0.00001	-
			(0.0001)	
Governance Score	-	-	-	0.00004
				(0.0001)
ROA_{t-1}	-0.06***	-0.06***	-0.06***	-0.06***
	(0.02)	(0.02)	(0.02)	(0.02)
Size	-0.01***	-0.01***	-0.01***	-0.01***
	(0.001)	(0.001)	(0.001)	(0.001)
Leverage	-0.11***	-0.11***	-0.11***	-0.11***
	(0.01)	(0.01)	(0.01)	(0.01)
R&D Intensity	-0.02	-0.01	-0.01	-0.02
	(0.02)	(0.02)	(0.02)	(0.02)
Beta	0.01**	0.01**	0.01**	0.01**
	(0.003)	(0.003)	(0.003)	(0.003)
Board Size	0.00003	0.0001	0.00004	0.00004
	(0.0003)	(0.0003)	(0.0003)	(0.0003)
Board Independence	-0.00001	-0.000004	-0.00001	-0.00002
	(0.00004)	(0.00004)	(0.00004)	(0.00005)
Interest coverage	-0.00001*	-0.000002*	-0.00002*	-0.000002*
	(0.00001)	(0.00001)	(0.00001)	(0.00001)
Industry, market and year FE	Yes	Yes	Yes	Yes
Observations	12632	12632	12632	12632

R-Squared	0.19	0.19	0.19	0.19
Adjusted R-Squared	0.18	0.18	0.18	0.18
F-Statistic	40.12	40.15	40.11	40.13

Correlation coefficients are followed by the corresponding robust standard errors, which are stated in parentheses. The * represents the significance of the coefficient at 10% level, ** at the 5% level, and *** at 1% level.

Further investigations are conducted to analyze the impact of ESG performance on the cost of debt in developed markets and emerging markets. The results of the regressions are displayed in Table 11. According to the findings, the ESG performance shows no significant impact on the cost of debt in both developed and emerging European markets. The overall ESG score indicates no significant impact in either market. The analysis of the impact of ESG pillar scores on the cost of debt also shows no meaningful effect in both markets. The finding does not support the hypothesis H4 that expects the impact of ESG performance on the cost of debt to be higher in developed markets. However, the findings are consistent with Gigante and Manglaviti (2022), who found no statistically significant relationship between ESG score and cost of debt in their study of European nonfinancial corporates. The behaviour of control variables is similar to the regression results of the previous analysis on the full sample, except for interest coverage, which indicates a small negative correlation with significance at 10% for developed markets, but no significant impact in emerging markets.

The results suggest that currently, firms in the European market cannot rely on ESG improvements as a determining factor in obtaining cheaper debt financing. This means that ESG initiatives should not be justified by lower interest rates, but by reputational, operational, and strategic benefits. Furthermore, this emphasizes that firms should prioritize financial factors, such as profitability, leverage, and liquidity, rather than ESG metrics when aiming to reduce the borrowing cost. The implications of the results for banks and lenders highlight that credit assessment is primarily driven by financial characteristics, such as profitability, firm size, leverage and interest coverage, rather than ESG performance. The results further imply that lenders do not reward ESG practices

even in developed markets with strong ESG regulations, and in emerging markets, there is no financial incentive to improve ESG performance.

Table 11. Comparison of ESG impact on the cost of debt among developed and emerging markets.

	Cost of debt							
	ESG Score		**E-Score**		**S-Score**		**G-Score**	
	Developed	**Emerging**	**Developed**	**Emerging**	**Developed**	**Emerging**	**Developed**	**Emerging**
Constant	0.15*** (0.01)	0.40*** (0.08)	0.15*** (0.01)	0.40*** (0.08)	0.15*** (0.01)	0.40*** (0.08)	0.15*** (0.01)	0.40*** (0.08)
ESG Score	0.00004 (0.0001)	-0.0004 (0.0004)	-	-	-	-	-	-
Environmental Score	-	-	-0.0001 (0.0001)	-0.0002 (0.0003)	-	-	-	-
Social Score	-	-	-	-	-0.00001 (0.0001)	-0.0003 (0.0003)	-	-
Governance Score	-	-	-	-	-	-	0.0001 (0.0001)	-0.0004 (0.0003)
ROA_{t-1}	-0.08*** (0.02)	0.17** (0.07)	-0.08*** (0.02)	0.17** (0.07)	-0.08*** (0.02)	0.17** (0.07)	-0.08*** (0.02)	0.17** (0.07)
Size	-0.01*** (0.001)	-0.02*** (0.01)	-0.004*** (0.001)	-0.02*** (0.01)	-0.004*** (0.001)	-0.02*** (0.01)	-0.005*** (0.001)	-0.02*** (0.01)
Leverage	-0.11*** (0.01)	-0.12*** (0.03)	-0.11*** (0.01)	-0.13*** (0.03)	-0.11*** (0.01)	-0.12*** (0.03)	-0.11*** (0.01)	-0.13*** (0.03)

R&D Intensity	-0.02 (0.02)	1.27*** (0.24)	-0.02 (0.02)	1.23*** (0.24)	-0.02 (0.02)	1.24*** (0.24)	-0.02 (0.02)	1.29*** (0.24)
Beta	0.01* (0.003)	0.03** (0.01)	0.01** (0.003)	0.03** (0.01)	0.01** (0.003)	0.03** (0.01)	0.01** (0.003)	0.03** (0.01)
Board Size	-0.0002 (0.0003)	0.002 (0.001)	-0.0001 (0.0003)	0.002 (0.001)	-0.0002 (0.0003)	0.002 (0.002)	-0.0002 (0.0003)	0.001 (0.002)
Board Independence	-0.00004 (0.00004)	-0.0002 (0.0002)	-0.00003 (0.00004)	-0.0003 (0.0002)	-0.00003 (0.00004)	-0.0003 (0.0002)	-0.0001 (0.00004)	-0.0001 (0.0003)
Interest coverage	-0.00002* (0.000001)	-0.000001 (0.000001)	-0.00002* (0.00001)	-0.000001 (0.000001)	-0.00002* (0.00001)	-0.00001 (0.00001)	-0.00002* (0.00001)	-0.000001 (0.000001)
Industry, country and year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	11617	1015	11617	1015	11617	1015	11617	1015
R-Squared	0.18	0.47	0.18	0.47	0.18	0.47	0.18	0.47
Adjusted R-Squared	0.17	0.44	0.17	0.44	0.17	0.44	0.17	0.44
F-Statistic	29.39	15.61	29.42	15.50	29.37	15.54	29.46	15.71

Correlation coefficients are followed by the corresponding robust standard errors, which are stated in parentheses. The * represents the significance of the coefficient at 10% level, ** at the 5% level, and *** at 1% level.

6 Conclusions

The main objective of this paper was to analyze the impact of ESG performance on three key financial dimensions—profitability, firm value, and cost of debt across developed and emerging markets in Europe. Although ESG has been extensively studied in previous literature, the findings are still ambiguous and context dependent. Further, the majority of the previous studies have focused on developed countries or a single country, studying one or two key financial outcomes, and lack comparative studies across developed and emerging markets. Therefore, the study contributes to the literature by providing a comparative analysis of how the financial impact of ESG practices differs among developed and emerging markets in Europe by incorporating profitability, firm value, and cost of debt.

More specifically, following panel fixed-effects regressions, it was tested whether the performance of the overall ESG score and ESG pillar scores has an impact on profitability (proxied by ROA), firm value (proxied by Tobin's Q), cost of debt and how these effects vary across developed and emerging markets in Europe. The sample consisted of 2098 publicly listed companies for the period of 2015 to 2024 for 10 developed European countries and 5 European emerging countries based on the classification by MSCI. The main source of ESG scores and key financial indicators for this analysis was LSEG Workspace.

Firstly, the findings of the study indicated that the ESG performance has a strong positive correlation with firm profitability, which is measured by ROA in the full sample. Disaggregated analysis of ESG pillar scores with the full sample showed that the environmental, social, and governance pillars have a strong positive relationship with ROA, with the social pillar indicating the highest impact and the governance pillar showing the smallest effect. Comparative analysis of the differentiation of this relationship across developed and emerging markets of Europe highlighted that the ESG score is significantly and positively associated with profitability in developed markets,

while the effect is positive but insignificant in emerging markets, indicating that the effect is more pronounced in developed markets. The analysis of pillar scores showed that the environmental and social scores have a strong positive relationship with profitability in developed markets, while the governance pillar indicated no significant effect in either market. The social pillar consistently stands out as the strongest driver of profitability, implying the financial value of stakeholder trust, human capital, and community engagement. The insignificant ESG coefficients in emerging markets suggest that limited stakeholder pressure, lower disclosure quality, and institutional weaknesses may reduce the profitability outcomes of ESG performance.

Secondly, the examination of the relationship between ESG performance and firm value revealed a positive and statistically significant relationship between ESG score and Tobin's Q in the overall sample. The relationship between ESG pillar scores and firm value for the full sample also displayed a strong positive relationship, while environmental and social pillar scores were influential, indicating investors reward firms with strong ESG practices and stakeholder alignment. Further, the ESG score showed a positive and statistically significant relationship with firm value in developed markets, while the emerging markets indicated a small and insignificant relationship. The environmental and social pillars indicated a positive and significant correlation in developed markets, while it is insignificant in emerging markets. The correlation with the governance pillar was insignificant for both markets.

Finally, the analysis of the relationship between ESG score, ESG pillar scores, and cost of debt showed no significant economic impact, either in the full sample or across market types. The findings suggest that lenders primarily rely on financial characteristics, such as size, profitability, leverage, and interest coverage, rather than ESG metrics in credit risk assessments. This emphasizes that ESG integration in the debt market is still inconsistent, limited, and context-dependent. The findings demonstrate that ESG performance is financially valuable for profitability and firm value, specifically in developed markets, but not yet material in debt financing. This asymmetry stresses the

uneven pace of ESG integration across different markets and emphasizes the need for improved data quality, stronger disclosure frameworks, and transparent regulatory guidance.

The findings suggest that investors should prioritize firms with higher ESG performance in developed markets, while in emerging markets, investors should incorporate financial characteristics, such as size, sales growth and leverage, along with ESG ratings in evaluating firms. The regulators should concentrate on advancing ESG disclosure frameworks in emerging markets to improve the quality and transparency for creating better financial value. Companies should focus more on financial factors such as profitability, size, and leverage rather than ESG ratings in reducing borrowing costs. The results also imply that banks and lenders should primarily focus on financial characteristics rather than ESG performance in their credit assessments.

The study was concentrated on Europe as a whole and the two main sub-samples: developed and emerging European markets, without further investigation into individual country-level and industry-level impact. Therefore, this leaves space for future research in identifying whether the impact is more significant in a specific country or an industry. ESG relevance may vary across sectors, and a sector-level analysis might reveal whether ESG is more material in high-impact industries. Future researchers may evaluate the impact of ESG practices on financial performance in different regions, such as Latin American and Asian markets, to see how the relationship changes in developed and emerging markets. Analyzing how ESG performance is associated with other measurements of profitability, such as Earnings Before Interest and Tax (EBIT) and Free Cash Flows (FCFs), is also an area that can be investigated further.

Overall, the findings of the study demonstrate that ESG is not a standardized factor deciding the financial performance of a company, but a context-dependent strategic factor that depends on the regulatory environment, market maturity, and specific dimensions companies decide to prioritize.

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