

Sector-Specific ESG Impact: Aligning Sustainability Strategies with Financial Outcomes

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Abstract

This study investigates the financial and ESG-related determinants of corporate Environmental, Social, and Governance (ESG) performance across five sectors in the Euro Stoxx 600 Index from 2008 to 2022. Using multiple linear regression and time-series analysis, this research identifies sector-specific financial and non-financial drivers of ESG scores, highlighting distinct patterns across industries.

These findings indicate that capital investments in green technologies significantly enhance ESG performance in the energy sector ($\beta=0.409$, $p<0.01$), while governance structures and regulatory compliance play a dominant role in the healthcare industry ($\beta=0.316$, $p<0.01$). The results emphasize the need for sector-specific ESG strategies that account for financial, governance, and social determinants influencing ESG performance across industries.

This study provides valuable insights for investors, policymakers, and corporate strategists by identifying the financial and ESG-related factors that shape corporate sustainability outcomes. Understanding these sectoral variations is critical for optimizing ESG performance and aligning corporate strategies with long-term sustainability goals.

Keywords: ESG, financial performance, sustainability, sector-specific analysis, Euro Stoxx 600, regulatory compliance

INTRODUCTION

Integrating Environmental, Social, and Governance (ESG) factors into corporate strategies has

become a critical priority for organizations worldwide. Driven by stakeholder expectations, regulatory pressures, and increasing evidence of climate change, ESG principles are central to aligning financial performance with sustainable development goals. The European Union's regulatory frameworks, including the European Green Deal and the Sustainable Finance Disclosure Regulation (SFDR), highlight the growing importance of ESG considerations in corporate governance and investment decisions. The increasing importance of ESG criteria has been underscored by regulatory frameworks such as the European Green Deal (European Commission, 2019).

Although previous research indicates a positive relationship between ESG performance and financial outcomes, sector-specific variations remain largely unexplored. Energy, industrial, and healthcare companies face unique challenges and opportunities in integrating ESG principles. For energy companies, investments in green technologies are crucial to meet carbon reduction targets. Industrial companies benefit significantly from emission control and resource management, while healthcare organizations must navigate regulatory compliance and social responsibility to enhance shareholder value.

This study addresses the following research questions: (1) What are the key financial and ESG-related determinants of ESG performance across different sectors? (2) What are the sector-specific challenges and opportunities in integrating ESG principles? The findings are particularly relevant for investors seeking to align their portfolios with sustainability goals, policymakers aiming to design sector-specific regulations, and corporate leaders striving to enhance financial performance and ESG compliance.

THEORETICAL FOUNDATIONS OF ESG

ESG factors provide a comprehensive framework for assessing corporate sustainability. The ecological aspect emphasizes resource efficiency, emission reduction, and investment in green technologies. Social factors focus on relationships with stakeholders, including employees, customers, and communities, while governance involves ethical corporate practices, transparency, and shareholder rights. Companies can enhance their competitiveness by integrating ESG practices through resource efficiency and innovation investments. Porter and van der Linde (1995) argued that environmental regulations can stimulate innovation, ultimately lowering costs and improving market positioning.

The incorporation of ESG principles is often explained through Stakeholder Theory, which claims that companies addressing the needs of all stakeholders achieve superior financial performance. Empirical evidence supports this relationship, demonstrating how corporate sustainability positively affects organizational processes and performance (Eccles et al., 2014). The Resource-Based View (RBV) also highlights how sustainability-oriented innovations can create competitive advantages by optimizing resources and reducing waste risks.

EMPIRICAL EVIDENCE OF ESG IMPACTS

Numerous studies empirically support the positive relationship between ESG performance and financial outcomes. Friede et al. (2015) examined over 2,000 studies and concluded that approximately 90% demonstrated a neutral or positive correlation between ESG factors and corporate financial performance. Khan et al. (2016) highlight that companies excelling in significant ESG issues outperform their peers in terms of profitability and stock returns. Research has revealed

varying impacts of ESG dimensions across sector-specific contexts. Environmental factors, including emission control and resource efficiency, strongly influence operational performance in energy-intensive industries. Research has shown that ESG factors significantly influence firm risk in European markets, emphasizing the role of governance in risk mitigation (Sassen et al., 2016). The Resource-Based View (RBV) emphasizes that sustainability-oriented innovations create competitive advantages. This is particularly relevant for sectors like energy and industrials, where resource efficiency and emission control are critical.

Meanwhile, healthcare companies benefit from social and governance factors due to high regulatory scrutiny and stakeholder expectations. These findings underscore the importance of tailoring ESG strategies to the specific needs of each sector. Global trends in responsible investing emphasize the growing significance of ESG factors in capital allocation. Matos (2020) points out that institutional investors increasingly use ESG metrics to mitigate risks and align with sustainability goals, further highlighting the financial advantages of strong ESG performance. A meta-analysis by Whelan et al. (2021) corroborates the positive correlation between ESG performance and financial outcomes, particularly in industries with high stakeholder visibility, such as healthcare and consumer goods. This supports the argument that ESG strategies for sector-specific challenges can yield tangible financial benefits and advantages.

METHODOLOGY

This study employs a quantitative research approach to identify the financial and ESG-related determinants of ESG performance in the Euro Stoxx 600 index. Data from 2008 to 2022 were gathered from 124 firms across five sectors: energy, industrial, healthcare, finance, and consumer. ESG scores and financial metrics were sourced from Refinitiv. Control variables, which include market capitalization, debt-to-equity ratio, and annual stock returns, were incorporated to mitigate external influences.

The dependent variable in this study is the overall ESG performance score, including its components: environmental, social, and governance scores. The ESG performance scores were sourced from Refinitiv, initially presented in a qualitative letter grade format (e.g., A+, A, B). To ensure comparability across firms and sectors, the scores were transformed into a numerical scale using a Grade Point Average (GPA) conversion method, where A+ corresponds to 4.3 and F to 0.0. This transformation facilitates statistical analysis, particularly in multiple regression modeling, where ESG scores are incorporated as the dependent variable.

To ensure consistency and comparability across firms and sectors, the letter grades were transformed into a numerical scale using a Grade Point Average (GPA) conversion method. This approach assigns numerical values ranging from 4.3 (for an A+ rating) to 0.0 (for an F or incomplete rating), aligning ESG scores with a continuous measurement scale. This transformation allows for statistical analysis, including multiple regression modeling, ensuring that ESG scores can be effectively incorporated as a dependent variable in the study.

This method enhances the robustness and interpretability of ESG performance data, making it possible to analyze the key financial and ESG-related determinants that influence corporate sustainability ratings across different sectors. This analysis employs multiple linear regression and time-series models to reveal sector-specific financial and non-financial determinants of ESG

performance. To test for multicollinearity among independent variables, Variance Inflation Factors (VIFs) were calculated.

RESULTS

The results reveal significant variations in the impact of ESG factors on financial performance across these five sectors. Descriptive statistics indicate that the healthcare sector exhibits the highest average ESG score (3.05 ± 1.15), reflecting the importance of social and governance factors in this highly regulated industry. In contrast, the energy sector reports the average ESG score (2.94 ± 1.19), underscoring the challenges faced by resource-intensive industries in achieving sustainability goals.

Regression analysis highlights the dominant role of environmental factors in sectors such as energy and industrials. In the energy sector, investments in green technologies and emission control explain 16.7% of variance in operational performance as measured by EBITDA ($R^2 = 0.167$, $p < 0.01$). This result underscores the importance of sustainability initiatives in enhancing operational efficiency and meeting regulatory expectations. Similarly, in the industrial sector, environmental scores account for 14.0% of variability in financial outcomes ($R^2 = 0.140$, $p < 0.05$), driven by resource management and emission reductions.

In contrast, the healthcare sector has the most substantial influence on social and governance factors. ESG scores in this sector explain 24.5% of variance in ROE ($R^2 = 0.245$, $p < 0.001$). This result highlights the importance of aligning corporate practices with stakeholder expectations and ethical standards in a sector characterized by high regulatory scrutiny. Similarly, social factors play a significant role in the consumer sector, with social scores explaining 11.8% of variance in net profit margins ($R^2 = 0.118$, $p < 0.05$).

While exhibiting the highest governance scores (3.44 ± 0.76), the financial sector shows an influence of ESG factors on economic performance. Governance factors explain 10.2% of variance in Return on Assets ($R^2 = 0.102$, $p < 0.05$), suggesting that while governance is essential, its impact on overall financial outcomes may be limited without more substantial environmental or social contributions.

Table 1: Sector-Specific Correlations between ESG Dimensions and Financial Performance

Sector	Environmental - EBITDA	Social - Net Margin	Governance - ROE	R ²
Energy	0.409 (p < 0.01)	not significant	not significant	0.167
Industrial	0.374 (p < 0.05)	not significant	not significant	0.140
HealthCare	0.188 (p < 0.05)	0.316 (p < 0.01)	0.291 (p < 0.01)	0.245
Consumer	not significant	0.284 (p < 0.05)	not significant	0.118
Finance	not significant	not significant	0.102 (p < 0.05)	0.102

These results (Table 1) emphasize the necessity of tailored ESG strategies for each sector. Environmental factors are critical for achieving operational efficiency and regulatory compliance in high-emission industries such as energy and industrials. Conversely, prioritizing social and

governance dimensions in healthcare and consumer sectors is vital for aligning corporate actions with stakeholder expectations and enhancing shareholder value.

DISCUSSION

The findings highlight the differentiated impact of ESG factors across sectors for policymakers, investors, and corporate strategists. Policymakers should consider sector-specific dynamics when crafting regulations that reflect the unique environmental, social, and governance challenges of each sector. For investors, these distinctions can be used to identify sectors where ESG factors offer the highest potential for financial returns. While this study provides valuable insights into the impact of ESG factors on financial performance within the Euro Stoxx 600, its scope is confined primarily to European markets. This limitation restricts the ability to generalize the findings across global markets, where ESG impacts might differ due to varied regulatory environments and market conditions. Future research should aim to include data from a broader range of other geographical regions to enhance the generalizability of the findings and explore emerging trends, such as the role of digital innovation in ESG practices.

Environmental factors significantly influence operational performance ($R^2 = 0.167$) in the energy sector, aligning with existing literature that emphasizes the sector's reliance on investments in green technology and emission reductions. These findings highlight the dual benefits of sustainability initiatives: compliance with stringent regulations and improved operational efficiency. This is consistent with studies by Friede et al. (2015), which demonstrate that environmental innovation can create competitive advantages and enhance long-term profitability. The industrial sector exhibits similar dynamics, with environmental factors explaining 14.0% of financial variability. The importance of resource management and emission control reflects the sector's emphasis on operational efficiency and cost reduction. These findings suggest that companies in this sector must prioritize investments in resource optimization and emission technologies to remain competitive.

In contrast, the healthcare sector displays a more significant influence from social and governance factors, with ESG scores accounting for 24.5% of variance in ROE. This is especially noteworthy in a highly regulated industry where ethical practices, data privacy, and stakeholder engagement are vital for maintaining trust and ensuring compliance. This aligns with previous research suggesting that sectors with high stakeholder visibility disproportionately benefit from strong governance and social responsibility practices. The consumer sector also underscores the importance of social factors, as social scores account for 11.8% of variance in net margins. These outcomes indicate that consumer-facing companies gain financial advantages from having strong relationships with stakeholders, including customers, employees, and local communities. These companies can enhance brand loyalty and strengthen their market position by addressing social issues such as labor practices and product safety. The financial sector presents a unique situation: Governance factors lead but account for only 10.2% of variance in economic outcomes. While governance is crucial for maintaining investor confidence and operational integrity, it may not be enough to drive substantial financial gains without supplementary environmental or social initiatives. These findings hold significant implications for policymakers, investors, and corporate strategists. Policymakers should consider sector-specific dynamics when crafting regulations to ensure alignment with industry realities. Stricter environmental regulations may provide considerable benefits to energy-intensive industries but may not adequately address the distinct challenges faced by the healthcare or financial sectors. Investors can use these insights to identify sectors where ESG factors offer the most significant potential for

financial returns, enabling more informed investment decisions. The role of green finance in accelerating sustainability initiatives cannot be understated. Gabr and Elbannan (2024) highlight the rapid growth of the green bonds market as a key instrument for funding ESG-driven projects, particularly in the energy and industrial sectors, where substantial capital is required to implement emission reduction technologies.

From a strategic perspective, companies must adopt a nuanced approach to ESG integration. High-emission industries should focus on environmental initiatives, while sectors such as healthcare and consumer goods must prioritize social and governance strategies to enhance their financial performance and reputation. This sector-specific approach aligns sustainability with financial goals and fosters long-term resilience and competitiveness.

CONCLUSION

This research identifies the key financial and ESG-related determinants of corporate ESG performance across different sectors. Findings confirm that ESG performance is driven by industry-specific financial and governance factors. High-emission sectors benefit most from environmental investments, while governance and regulatory compliance are critical for industries with high stakeholder scrutiny, such as healthcare.

These insights underscore the importance of sector-specific ESG strategies that align with industry-specific sustainability challenges and opportunities. Policymakers should consider differentiated regulatory approaches that reflect these variations, while investors and corporate leaders can leverage these findings to enhance ESG performance through targeted financial and operational strategies.

Future research should expand the scope beyond European markets to examine global ESG determinants and assess the long-term impact of sectoral sustainability strategies. Additionally, integrating panel-data analysis and causal inference methods could further enhance understanding of ESG performance drivers over time.

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