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ESG Scores and Firm Valuation: Comparing the Consumer Goods and Industrial Industries

Bachelor Thesis - International Bachelor Economics and Business Economics

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Abstract

In today's dynamic business landscape, sustainability is a leading decision-making driver. With environmental, social, and governance (ESG hereafter) factors guiding company investments and strategies, the question is whether embracing ESG principles not only aligns with ethical standards, but also enhances the market's perception on firm value. This paper studies the potential association between ESG scores and firm value across 139 Eurozone companies from 2015 to 2023, using data from the LSEG Workspace. Furthermore, this study investigates how consumer awareness and firm visibility of ESG initiatives influence a company's perceived value by comparing the consumer goods and industrial industries. The findings reveal a significant association between ESG scores and firm valuation. However, the interaction between ESG scores and whether a firm is in the consumer goods industry, relative to industrial firms, shows an insignificant association with firm value. These results suggest that while there is a positive association between the ESG score of a firm and its market capitalization, this is not necessarily amplified for more visible industries. Overall, this paper provides valuable insights into consumer goods and industrial firms in the Eurozone, highlighting how policymakers can enhance incentives for firms to adopt more sustainable practices and strategies.

Keywords: ESG, firm value, market capitalization, industry, consumer goods, industrials, visibility

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1 Introduction

1.1 Introduction

Global recognition and increasing investor attention of ESG is driving companies to prioritize the non-financial aspects of their operations. Prior to the 21st century, companies often prioritized short-term profits. Nowadays, operating responsibly and sustainably has become imperative for long term business value creation (Zumente & Bistrova, 2021). In the coming years, the global business landscape will continue to integrate sustainability into corporate strategies, driven by increasing pressure from stakeholders for companies to prioritize ESG (McKinsey, 2020).

Firms initially employed corporate social responsibility (CSR) as a framework to actively operate more responsibly and sustainably. With the aim of implementing socially responsible practices, such as reducing carbon footprints, improving labor conditions, and skill-based volunteering, CSR strategies are employed to achieve specific sustainable objectives. However, more recently, the term ESG has gained popularity, serving as an evaluative benchmark for assessing firm performance amongst key sustainability pillars. An ‘ESG score,’ comprised of factors that highlight firm environmental, social, and governance performance, offers a more numerical approach to measuring corporate sustainability in general (O’Neill, 2023). The key distinction between the two concepts is that CSR provides an internal strategic framework to approach corporate sustainability, while ESG scores serve as quantifiable benchmarks for evaluating and comparing sustainable performance across companies.

1.2 Existing Research

Over the past decades, researchers have extensively studied how ESG activities can provide financial value to companies. Friede et al. (2015) and Whelan et al. (2021) conducted meta-studies regarding the relationship between ESG and firm valuation, finding overall significantly positive results. Other research has been conducted at the country level, with Chen et al. (2024), Yoon et al. (2018), and Yu & Xiao (2022) finding a positive link between ESG and firm valuation in East Asian countries. Alareeni & Hamdam (2020), Signori et al. (2021), and Velte (2017) also found comparable results when studying US S&P 500 firms and European firms. Tahmid et al. (2022) found mixed results when studying different pillars of the ESG score in Europe, rather than focusing on ESG as a composite indicator. Behl et al. (2021), Ersoy et al. (2022), and Ionescu et al. (2019) focused on specific industries, such as energy, banking, and tourism industry, and found a higher ESG score to have a significantly positive effect on the value of firms within those industries.

1.3 Thesis Aim & Contributions

However, limited research has focused specifically on the Eurozone, which accounts for exogenous macroeconomic shocks due to its shared monetary system. Additionally, most studies have concentrated on individual industries like finance, travel, or energy, with few comparing two industries, let alone consumer goods and industrials.

This research aims to investigate if there is an association between the ESG scores of Eurozone firms and their firm value. Specifically, this research will compare the consumer goods and industrials industries. The consumer goods industry is crucial within the current ESG landscape, given that consumer choices are increasingly influenced by a brand's commitment to ESG principles (Torres et al., 2012). In business-to-consumer (B2C) firms, sustainable strategies indirectly boost firm value by improving product market perception (Bardos et al., 2020). Conversely, in the industrial sector, characterized by business-to-business (B2B) interactions, firms are more affected by strict environmental and safety regulations. Due to this contrast in ESG relevance, comparing these two industries is compelling because it tests the interaction between visibility and whether this contributes to higher firm value when consumers can perceive ESG efforts. This bachelor thesis will explore the research question: "To what extent is there an association between the ESG score of a firm and firm value when comparing the consumer goods and industrial industries in the Eurozone?"

This paper contributes academically to the existing literature by focusing on the European bloc and highlights a comparison between two key industries: consumer goods and industrials. Comparing these industries provides empirical insights for European policymakers to enhance ESG-related initiatives and incentives in these respective industries. By aligning policies with financial motivation, this may further optimize ESG best practices and investing in ESG initiatives. Conversely, if a significant association between ESG score and firm valuation is not evident, policymakers may explore methods to enhance incentives for firms to participate in more ESG-related practices, given that such efforts mitigate negative externalities (Ziolo et al., 2019).

From a social perspective, this research is highly relevant for European firms for three key reasons. In January 2021, the European Union extended their proposal of the new Corporate Sustainability Reporting Directive, which plans to include comprehensive ESG disclosure. Non-financial reporting directives will become mandatory for firms located in its member states to begin reporting ESG performance as of fiscal year 2024 (Hahnkamper, 2021). As of 2024, integrating ESG into annual reporting will increase its importance as a crucial non-financial performance metric. The ESG score reporting requirement suggests that it will increasingly influence company valuations, facilitating comparisons both within and across firms.

Moreover, Europe's Green Deal has launched a recent push to reduce carbon emissions, aiming for zero net carbon emissions by 2050. According to Butler (2020), policymakers leverage Europe's Green Deal as an incentive to align green initiatives with improved financial performance, encouraging firms to embrace sustainability. Finally, established in December 2015, the 2030 Paris Agreement, "includes commitments from all countries to reduce their emissions and work together to adapt to the impacts of climate change," (*The Paris Agreement*, n.d.). As countries report on their climate change initiatives every five years, governmental pressure increases on firms to comply with regulatory rules concerning environmental impact.

Overall, this thesis finds a significant association between the ESG score of a firm and its firm value. However, when comparing the consumer goods and industrial industries, an insignificant association is found for firm visibility.

The continuation of this bachelor thesis will be structured as follows: section 2 reviews existing literature and develops two hypotheses; section 3 describes the methodology; section 4 shows the data and results; and section 5 discusses the results and draws conclusions.

2 Literature and Hypothesis Development

This section reviews the existing literature on the relation between CSR performance, ESG scores and firm value. The body of literature forms the foundation for the hypotheses in this thesis. Key frameworks include the stakeholder theory, the resource-based view, the neoclassical view, and the legitimacy theory, which clarify potential mechanisms between ESG scores and firm valuation. Section 2 begins by establishing a comprehensive understanding of CSR and ESG scores. Next, the theoretical frameworks underpinning empirical findings on the association between ESG scores and firm value are defined, leading to the development of the first hypothesis. Finally, the legitimacy theory is explained to support the empirical findings on visibility and cross-industry effects, forming the basis for the second hypothesis. Section 2 is thus structured to first introduce theoretical frameworks and empirical findings, leading to the formulation of hypothesis 1, followed by a parallel approach to formulating hypothesis 2.

2.1 Corporate Social Responsibility and Corporate Sustainability

Corporate social responsibility (CSR) is a concept that was introduced by Bowen (1953), which quickly gained popularity in the academic literature. CSR fundamentally provides a framework for companies to develop strategies and focus on sustainable business practices: whether it comes to environmental, social, governance, sustainability, or ethical practices. Studies have explored whether adopting CSR practices enhances a firm's financial performance. Clarkson et al. (2011) examined the factors driving firms' decisions to pursue environmental initiatives. They found that increased proactive, environmental-friendly practices eventually led to a higher return on assets, improved operating cash flows, and a better debt-to-equity ratio. Lo & Sheu (2007) studied a related concept, corporate sustainability, which refers to a business strategy focused on generating sustainable shareholder value. This strategy involves capitalizing on opportunities and mitigating risk across three key dimensions: economic, environmental, and social. Lo & Sheu (2007) also find a significant positive relationship between corporate sustainability and firm value. Artiach et al. (2010) studied another similar concept, corporate sustainability performance (CSP). They found that financial incentives exist for firms to invest in CSP-related initiatives because such initiatives strengthen a firm's competitive position. Overall, meta-studies conducted by Margolis et al. (2009) and Wang et al. (2016) identify a general positive link between CSR, corporate sustainability, CSP and firm value and performance. However, CSR, corporate sustainability, and CSP are all rather subjective frameworks that can be utilized by firms to approach sustainability strategically. They do not offer the quantitative and evaluative benefits of ESG scores, which provide a numerical representation of a company's performance in environmental, social, and governance aspects. This numerical approach allows for more objective comparisons and assessments.

2.2 ESG Scores

Building on existing research in CSR and corporate sustainability, the term ‘ESG’ has gained prominence as a more relevant buzzword for evaluating firms based on their responsible and sustainable business practices. Compared to CSR, ESG is a more quantifiable measure that allows more benchmarking across firms (O’Neill, 2023). ESG scores range between 0 to 100, with 0 representing the lowest possible score and 100 representing the highest. Initially, financial data providers constructed ESG scores and sold them to institutional investors to support sustainable investment decisions. ESG scores quickly emerged as a tool for companies to enhance their reputation, alleviate regulatory pressures, mitigate financial risks, and attract investors (Clement et al., 2023). Overall, ESG scores assess a firm’s performance on environmental, social, and governance practices. However, Clement et al. (2023) found that the interpretation of ESG scores varies depending on the context. They also noted ambiguity in the use of ESG scores, when studying 342 top-ranked journals. Approximately 43 percent of the journal articles they studied use an ESG score as a thematic proxy for sustainability or CSR, while 10 percent employ ESG scores for disclosure purposes. Furthermore, a large theme was for financial purposes, as 45 percent of articles considered ESG scores to evaluate financial performance. Finally, a small remainder of articles conducted unrelated cross-disciplinary analyses. Given the novelty and widespread adoption of ESG scores, one common criticism is that rating agencies vary in their methods of calculating these scores, often lacking transparency regarding their exact definitions and calculation processes (Abhayawansa & Tyagi, 2021). Additionally, ESG scores have been criticized for attempting to quantify aspects of sustainability performance that are inherently qualitative. Despite these criticisms, ESG scores can be used as a standardized benchmark to evaluate and compare the sustainability performance of different companies, providing valuable insights for investors and stakeholders.

2.3 Stakeholder Theory, Resource-Based View & Neoclassical View

The body of literature concerning ESG and firm valuation predominantly revolves around two principal views: the stakeholder theory and the resource-based view. Freeman & Phillips (2002) first introduced the view of the stakeholder theory. The stakeholder theory suggests that a firm’s primary goal is to be aligned with the interests of all stakeholders: including customers, employees, society, government, investors, and regulators. They propose this as a firm’s primary goal, advocating for prioritizing objectives beyond solely maximizing shareholder value. According to the theoretical framework introduced by Freeman & Phillips (2002), Artiach et al. (2010) found that stakeholder incentives promoting ESG behavior enhance firm value. This stems from aligning business practices with stakeholder interests, thereby strengthening the firm’s relationships across various stakeholder groups. Companies maintain continued access to resources and uphold their reputation through effective management of relationships with key stakeholders.

For example, companies can enhance their performance through strategic initiatives, such as adopting sustainability practices to attract potential investors and capital; stimulating positive work environments to attract high-quality employees and optimize production factors; and aligning with consumer sustainability preferences to enhance customer acquisition and reputation. Overall, improved production factors and reputation add value to a firm. Thus, stakeholder theory suggests that aligning with stakeholder interests can enhance firm value.

The resource-based view suggests that a firm can enhance its competitive advantage by leveraging unique resources and capabilities. This perspective was initially proposed by Wernerfelt (1984), who emphasized the significance of internal resources and capabilities in determining a firm's success over external factors. Hart (1995) extended the resource-based view by applying it to the context of environmental practices. He proposed that companies adopting proactive environmental strategies can potentially gain a competitive edge by improving manufacturing efficiency, enhancing reputation, and increasing competitors' expenses through influencing industry standards. As the resource-based view suggests that most strategies cannot be mimicked, such investments can lead to long-term market superiority. Given that not all firms can derive equal benefits from a proactive sustainable strategy, it is positively related to financial success (Christmann, 2017). In fact, Surroca et al. (2010) emphasize that managers should prioritize a firm's intangible resources, particularly its innovation, human capital, reputation, and culture. The authors claim that these resources are difficult to replication, leading to a competitive advantage. To conclude, based on the stakeholder theory and resource-based view, a positive relationship is expected between a company's efforts to implement sustainable business practices and its success. As a result, the value of a firm is expected to increase.

In contrast, the neoclassical view offers an alternative perspective that provides a rationale for the potential negative association between increased ESG activities and firm value. While sustainable business activities are generally linked to increased firm value in the longer term, the neoclassical perspective suggests that ESG initiatives primarily incur costs, without yielding immediate short-run benefits (Manrique & Marti-Ballester, 2017). The neoclassical view is focused on profit maximization and optimally efficient resource allocation. Thus, this perspective does not consider ESG investing as a value-enhancing strategy for a firm. Supporting this view, King & Lenox (2008) found that environmental strategies often entail additional costs without corresponding improvements in financial performance.

2.4 Empirical Evidence of ESG

2.4.1 Meta-Analyses

With the rise of ESG scores and the theoretical frameworks linking them to firm value, extensive research has explored their relationship with firm value and financial performance. While firm value measures the overall worth of a company as perceived by investors and the market, financial performance captures a firm's ability to generate key performance indicators, such as revenue, profit, and growth. Given these differences, examining the relation between ESG and both firm value and financial performance provides a comprehensive understanding of ESG's impact. Overall, this topic has been thoroughly investigated, resulting in numerous meta-studies analyzing the influence of ESG scores on firm valuation. Friede et al. (2015) conducted a meta-analysis on over 2,000 empirical studies, with 90 percent showing nonnegative results. Of the nonnegative results, a large majority emphasized a stable, positive relationship between ESG score and corporate financial performance over time. The studies examined by Friede et al. (2015) included various approaches to studying the link between ESG and firm value: numerous asset classes, across-regions, and individual ESG pillars. Studies that focused on developed regions like North America and Europe reported significant positive outcomes. Furthermore, research studying individual categories of the ESG pillars also found significantly positive results. Environmental and governance-focused studies found higher positive results, compared to socially focused studies. However, Friede et al. (2015) conclude in their meta-analysis that no single indicator has a greater influence on firm value than others.

Whelan et al. (2021) conducted a recent meta-analysis aggregating findings from over 1,000 studies between 2015 and 2020, shedding light on a more recent trend in the relationship between ESG factors and financial performance. Their main conclusions suggest two relevant findings: i) ESG-related improvements in financial performance are 76 percent more likely to show positive or neutral when focusing on the long-term horizon, and ii) firms' sustainability efforts that improve financial performance result from improved risk management practices and increased innovation.

2.4.2 Individual Studies – by Country

Other individual studies have researched the relationship between ESG and firm valuation and performance in specific countries. Yoon et al. (2018) examined the link between ESG score and firm valuation in South Korea, observing firm stock price at the end of the year, and found a significantly positive relationship. Similarly, a significant and positive relationship between ESG and firm value was found for Chinese firms when considering Tobin's Q and return on assets (Yu & Xiao, 2022). Chen et al. (2024) used AI-based ESG scores to study the relation between ESG and firm value for Japanese firms, finding that firms with higher ESG scores experienced a higher Tobin's Q and stock price volatility, relative to low ESG-scoring

firms. Higher stock price volatility presents both the opportunity for increased market capitalization and the increased likelihood of firm value declines. Han et al. (2016) studied the three ESG pillars for Korean firms separately, finding diversified results. While environmental performance was found to have a significantly negative relationship with financial performance, governance performance had a significantly positive link with the financial performance of a firm. Although opposing significant results were found for the environmental and governance pillars, the findings for social performance were insignificant. Sharma & Thukral (2015) studied the relationship between ESG disclosure and firm value among Indian companies, focusing on the 500 largest firms listed on the Bombay Stock Exchange. Notably, their analysis revealed a negative link between ESG disclosure and market-based firm valuation, measured by Tobin's Q. Moreover, they found an insignificant relationship between ESG disclosure and return on assets. The findings of Yoon et al. (2018), Yu & Xiao (2022), Chen et al. (2024), Han et al. (2016) and Sharma & Thukral (2015) provide key implications for ESG scoring and firm valuation in Asian countries. Most studies find a significantly positive result for the link between ESG and firm valuation, however with some showing mixed results.

Alareeni & Hamdam (2020) studied the effect of ESG score disclosure on the US S&P 500-listed firms. Their model revealed that disclosing a firm's ESG score significantly boosted operational, financial, and market performance, considering Tobin's Q, return on assets, and return on equity. In particular, the authors discovered that this beneficial impact occurs over time, highlighting the importance of firms considering duration between implementation and positive outcomes. Velte (2017) focused their study on German firms, concluding that ESG score positively affected return on assets, but did not have the same effect on Tobin's Q, which are both proxies for firm valuation. Furthermore, Velte (2017) found that governance within the ESG composite indicator had the strongest influence on financial performance, outperforming the environmental and social pillars. Signori et al. (2021) employed European firm-level data to evaluate whether ESG initiatives add shareholder value to public firms. Their findings support the stakeholder view and suggest that the implementation of ESG activities can serve as a value-adding source for shareholder value maximization. Tahmid et al. (2022) found mixed results when studying the link between ESG scores and Tobin's Q for European-level data, looking at pillar-level results. For the environmental pillar, they found insignificant results. In contrast, the social pillar showed significant positive results, while the governance pillar yielded significantly negative results. Overall, their findings suggest that specific pillars of ESG scores influence firm value differently. The findings of Alareeni & Hamdam (2020), Velte (2017), Signori et al. (2021), and Tahmid et al. (2022) provide key implications for ESG scoring and firm valuation in developed, Western countries. Most of these studies support the idea that investing in ESG practices benefits stakeholders' long-term interests and yields positive returns once a certain level of ESG performance is attained.

2.4.3 Individual Studies - Within-Industry

Individual studies have also evaluated the extent to which ESG scores and visibility are relevant within specific industries. Behl et al. (2021) explored the relationship between ESG score and firm value using cross-lagged panel analyses in the Indian energy sector. Their analyses initially indicate that the components of ESG have a negative and significant influence on firm value. However, over the long-term, this effect shifts to become significantly positive. Behl et al. (2021) found results that align with the stakeholder and resource-based theories, considering the time lag associated with the implementation of ESG-related initiatives, which is consistent with the findings of Alareeni & Hamdam (2020). Ersoy et al. (2022) studied panel data in the U.S. banking sector, studying the effect of ESG pillar scores on the market value. Their results showed a statistically significant U-shape effect, suggesting important implications for firms in the US banking industry: there is a certain ESG score threshold that a bank must achieve to increasingly gain market value. Otherwise, costs spent on ESG initiatives don't yield financial benefits, as suggested by King & Lenox (2008). Ionescu et al. (2019) studied the global travel and tourism industry, finding that of the three ESG pillars, governance plays the most influential role in this sector. However, they identified a weak link between ESG and firm valuation, suggesting that financial markets have not yet fully recognized this non-financial performance as a measurable intangible asset for firms in the travel and tourism sector. Ionescu et al. (2019) also noted that the visibility effects of ESG reporting are becoming increasingly significant, serving as an effective communication tool with stakeholders and influencing medium- and long-term performance.

Based on the theoretical frameworks of stakeholder theory and the resource-based view, as well as the collective findings from meta-analyses by Friede et al. (2015) and Whelan et al. (2021), along with individual country and within-industry studies, the following hypothesis emerges:

H1: The ESG score and market capitalization of a firm are positively related.

Note that a justification regarding the selection of market capitalization as a proxy for firm value is clarified in section 3.2.2.

2.5 Cross-Industry Studies

Besides focusing on a single industry, other studies have compared the impact of ESG scores on firm value across two or more industries. Qureshi et al. (2020) studied publicly listed European firms and found that higher ESG performance enhanced firm value. Specifically, their study delved into comparing environmentally sensitive and non-sensitive industries to evaluate whether the industry plays a role in the

extent to which ESG affects firm valuation. They defined environmentally sensitive industries as firms where their operations are more visible and include more social contact with consumers. The authors found that firms in environmentally sensitive industries had overall higher ESG scores, but also carried more risk. Their findings suggest that the industry type and visibility of a firm play a crucial role in determining how ESG impacts firm value. Sul & Lee (2020) researched the link between ESG score and firm value using panel data from consumer goods and industrial sectors. Overall, their findings were consistent with previous literature, finding a significantly positive relationship between ESG score and firm value. Moreover, when comparing both industries, they found that both the environmental and social pillars were significant for the consumer goods firms, whilst only the environmental pillar was significant for industrials. Their conclusions highlight the social visibility aspect that stems from increased consumer awareness.

2.6 Legitimacy Theory

Next to the stakeholder theory and resource-based view, the legitimacy theory plays a role in the visibility and credibility of a firm. The legitimacy theory emphasizes the critical role of societal acceptance in securing a company's survival. In line with the theory, businesses only survive if society perceives them as aligning with societal norms. ESG disclosure is therefore considered a relevant means to project social consciousness and conform to stakeholder expectations (Baldini et al., 2018). In other words, Reverte (2008) describes the importance of visibility, stemming from the legitimacy theory, to create awareness amongst the public about a firm's sustainable practices. Rahman & Alsayegh (2021) emphasize that the legitimacy theory explains why organizations report ESG information in the first place. By disclosing ESG-related information, firms aim to demonstrate their social responsibility and achieve legitimacy in society. Securing societal approval enhances the market perception of a company and ultimately increase firm value.

2.7 Empirical Evidence of Visibility

Aouadi & Marsat (2018) and Servaes & Tamayo (2013) both relate their studies to the role of visibility, finding a significantly positive effect of ESG score on firm value, for firms with high visibility. They define highly visible firms as firms whose practices and initiatives are readily noticeable to their consumers. Based on the stakeholder theory, Servaes & Tamayo (2013) argue that the consumer is one of the key stakeholders. For sustainable motives to influence firm value, they claim that consumer awareness is a prerequisite, especially when firm performance is highly attributed to customer purchasing behavior. For firms characterized by low consumer visibility, the authors find an insignificant relationship between ESG and firm valuation. Bardos et al. (2020) conducted a study that found that more sustainable business activities improved product market perception, thereby increasing firm value. They regard product market perception as a crucial factor that enhances firm value, arguing that consumers are key stakeholders through whom

ESG activities generate company value. Achour & Boukattaya (2021) studied French firms to find that visibility played a positive role between ESG score and financial performance. Companies in their sample with high visibility, that were more exposed to the public, received more attention from various stakeholders, including consumers.

Based on cross-industry findings of Qureshi et al. (2020) and Sul & Lee (2020), the legitimacy theory, and the role of visibility in firm value, the following hypothesis has been developed:

H2: The effect of ESG score on market capitalization is larger for firms in the consumer goods industry compared to firms in the industrial industry.

In short, researchers have extensively studied the relationship between ESG scores and firm value from various perspectives, including the stakeholder theory, resource-based view, neoclassical view, and legitimacy theory. Overall, most findings suggest a generally positive link between the ESG score of a firm and its firm value. Given the limited research focus on this topic within the Eurozone, this paper will concentrate on these specific countries. Furthermore, emphasizing visibility and industry-specific distinctions, the remainder of this thesis will examine the differences between the consumer goods and industrial sectors. The second hypothesis suggests that visibility effects are heightened in the consumer goods industry due to consumers' greater exposure of firm ESG activities.

3 Methodology

3.1 Sample and Data

To test the constructed hypotheses in section 2 and provide empirical evidence to the research question, “To what extent is there an association between the ESG score of a firm and firm value when comparing the consumer goods and industrial industries in the Eurozone?” several variables and a dataset have been selected and extracted. On May 6th, 2024, the dataset was retrieved from the LSEG Workspace (formerly known as Refinitiv): a comprehensive database that consists of financial information for many firms globally. The LSEG Workspace is considered a reliable platform as it is used widely amongst numerous financial and academic institutions (LSEG, n.d.). The retrieved sample consists of 1,278 observations for 139 public companies in the consumer goods and industrial sector with data for the variables described below. Panel data was used, spanning from 2015 to 2023: this period was chosen to allow for enough observations, but also capture recent ESG scores and firm value. Additionally, the year 2015 signifies the establishment of The Paris Agreement (*The Paris Agreement*, n.d.).

The retrieved sample was selected as follows: countries within the Eurozone were included to control for macroeconomic conditions while ensuring a sufficiently large sample size. The Eurozone includes the following countries: Austria, Belgium, Croatia, Cyprus, Estonia, Finland, France, Germany, Greece, Ireland, Italy, Lithuania, Luxembourg, Malta, The Netherlands, Portugal, Slovenia, and Spain. Following the country selection, the firms were filtered on industry to obtain only those in the consumer goods and industrial industries. In total, the LSEG Workspace has a selection of twelve different industries: academic and institutional services; basic materials; consumer goods; energy; financials; government activity; healthcare; industrial; institutions, associations and organizations; real estate; technology; and utilities. The consumer goods industry includes sectors like food and beverages; personal and household products and services; food and drug retailing; automobiles and auto parts; cyclical consumer products; consumer services; and retailers. The industrial industry includes sectors like industrial goods; industrial and commercial services; and transportation. Finally, the independent variable ‘ESG score’ and dependent variable ‘market capitalization’ were selected, followed by the control variables. One of the control variables was extracted from Orbis, a powerful database that contains company-level financial data for over 520 million companies globally (Orbis, 2024). Orbis was used for retrieving one control variable, number of employees, due to previous control variable complications: a previous measure for firm size was significantly correlated with the dependent variable and was therefore no longer used. Thus, for convenience reasons, both the LSEG Workspace and Orbis were used to extract data. Panel data was exported from the LSEG Workspace and Orbis and rearranged in Excel.

3.2 Variables

3.2.1 Main Variables of Interest

This study employs two main variables of interest. The first main variable of interest is the ESG score of a firm. An ESG score numerically assesses how well a firm performs in terms of environmental, social, and governance factors. A higher score indicates stronger ESG integration into the firm's practices compared to those with lower scores. The LSEG Workspace establishes ESG scores using ten weighted factors, as can be seen in Table 1 (LSEG Data & Analytics, 2023). The ESG score ranges from 0 to 100, with 100 indicating a perfect ESG score.

Table 1: LSEG Workspace ESG Score Derivation

ESG Pillar	Pillar Weighting	Sub-Category	Sub-Category Weighting (%)
Environmental	44%	Emission	15
		Innovation	13
		Resources Use	15
Social	31%	Human Rights	5
		Product Responsibility	4
		Workforce	13
		Community	9
Governance	26%	Management	17
		Shareholders	5
		CSR Strategy	3

Note. Adapted from "Environmental, social and governance scores from LSEG," by LSEG Data & Analytics, 2023, December (https://www.lseg.com/content/dam/data-analytics/en_us/documents/methodology/lseg-esg-scores-methodology.pdf?elqCampaignId=9964)

The second main variable of interest is the dummy variable representing industry category. Specifically, it distinguishes between firms in the consumer goods and industrial industries. Firms in the consumer goods industry are assigned a value of 1, while those in the industrial industry are assigned a value of 0. This dummy variable approach enables comparison to assess any potential interaction effect between ESG scores and visibility within the consumer goods industry, compared to the industrial industry.

3.2.2 Dependent Variable

To empirically study a possible association between ESG scores and firm valuation, market capitalization is taken as the dependent variable. The market capitalization is measured by multiplying the current share price by the total number of shares outstanding, giving an indication of the total market value of a company's equity. Several existing studies mentioned in section 2 use other proxies for firm value, such as return on assets and Tobin's Q. In this study, market capitalization was selected as the dependent value

because consumers have a direct impact on this firm value proxy. For most firms within the consumer goods and industrial industries, customers define the demand for their products and services, whether this is B2C or B2B. If there is a general market consensus that a company is involved in ESG controversies, a lower ESG score will significantly and negatively affect the firm's performance, potentially reducing future cash flows indirectly (Nirino et al., 2021). Consequently, this could lead to a decrease in the current stock price, directly impacting market capitalization. The market capitalization of a firm is thus significantly influenced by key stakeholders, such as investors and consumers. This perception plays a crucial role in shaping how the market values the firm. According to the stakeholder theory proposed by Artiach et al. (2010), incorporating consumer market sentiment is crucial to this study. This is particularly relevant because the second hypothesis examines the relationship between visibility, consumer behavior, and ESG factors in relation to firm valuation. Due to the heavy right skewness of the market capitalization data, logarithmic transformation will be applied for analysis. This transformation also enables coefficients to be interpreted in terms of percentage changes.

3.2.3 Control Variables

To control for other factors that may influence the independent and dependent variables in the model, the following control variables are included:

1. Number of Employees, which is a measure for the size of the firm. Firm size can influence the degree to which a firm can engage in ESG initiatives, as well as the potential market capitalization (Clarkson et al., 2011). The logarithm of number of employees will be taken for data analysis, as this variable is right-skewed. Taking the logarithm also allows coefficients to be evaluated on a percentage basis.
2. Price Volatility, which measures a stock's average annual price variation between its highest and lowest price relative to the average price for that year, as represented by the given price volatility percentage. As market capitalization is defined as the stock price multiplied by the number of shares outstanding, price volatility directly affects the market capitalization due to the stock price movement (Tasnia et al., 2020).
3. Research & Development (R&D) Intensity, which is calculated by dividing the R&D expenses by the sales, expressed as a percentage. This measure may affect an ESG score, as a firm investing in research and development to make ESG-related improvements may have a higher firm valuation (Velte, 2017).

4. Leverage, which divides the total debt by the total equity, indicates firm default risk (expressed as a percentage). Companies that choose to participate in ESG initiatives can mitigate the negative impact of forthcoming regulatory expenses on their future cash flow (Clarkson et al., 2008).

Table 2: Variable Descriptors

Variable Type	Variable Name	Empirical Model Abbreviation	Descriptor
Independent Variables	ESG Score	<i>ESG</i>	Assesses the Environmental, Social, and Governance performance of a firm (numerical score from 0 - 100)
	Industry Type Dummy	<i>CONSUMERGOODS</i>	Takes value of 1 for firm in consumer goods industry, and value of 0 for a firm in the industrial industry.
Dependent Variable	Market Capitalization	<i>MARKETCAP</i>	Assesses firm value, calculated by multiplying share price by number of shares outstanding (Euros).
Control Variables	Number of Employees	<i>NUMEMPLOYEES</i>	Measures the size of a firm with a sum of the number of people who work at a firm.
	Price Volatility	<i>PRICEVOLATILITY</i>	Assesses degree of variability in the stock price of a firm (expressed as percentage).
	R&D Intensity	<i>R&DINTENSITY</i>	Assesses how intensely a firm invests in research and development (R&D), divides R&D expenses by sales (percentage)
	Leverage	<i>LEVERAGE</i>	Assesses financial risk and leverage, calculated by dividing the firm total debt by the total equity (percentage)

3.3 Empirical Models

This paper will use firm-random and time-fixed effects. The decision to use firm-random effects over firm-fixed effects was guided by the Hausman test, which assesses whether the unobserved individual effects are correlated with the regressors in the model (Amini et al., 2021). When applying the test, the result was insignificant, with a p-value of 0.878, therefore indicating that a firm-random effects model should be used. Time-fixed effects are used as the stock market, and thus market capitalization, is heavily affected by economic conditions, which may vary over year.

The baseline model, which includes the control variables and dependent variable, is defined as the following:

$$\begin{aligned}
 \log\text{MARKETCAP}_{it} &= \beta_1 \log\text{NUMEMPLOYEES}_{it} + \beta_2 \text{PRICEVOLATILITY}_{it} + \beta_3 \text{R\&DINTENSITY}_{it} \\
 &+ \beta_4 \text{LEVERAGE}_{it} + u_i + \gamma_t + \epsilon_{it}
 \end{aligned}$$

To empirically test *H1: The ESG score and market capitalization of a firm are positively related*, the first main variable of interest, ESG score is added. The following empirical model is used:

$$\begin{aligned} \log\text{MARKETCAP}_{it} &= \beta_1\text{ESG}_{it} + \beta_2\log\text{NUMEMPLOYEES}_{it} + \beta_3\text{PRICEVOLATILITY}_{it} \\ &+ \beta_4\text{R\&DINTENSITY}_{it} + \beta_5\text{LEVERAGE}_{it} + u_i + \gamma_t + \epsilon_{it} \end{aligned}$$

To empirically test *H2: The effect of ESG score on market capitalization is larger for firms in the consumer goods industry compared to firms in the industrial industry*, an interaction term will be included. Therefore the following empirical model will be used:

$$\begin{aligned} \log\text{MARKETCAP}_{it} &= \beta_1\text{ESG}_{it} + \beta_2\text{CONSUMERGOODS}_i + \beta_3(\text{ESG}_{it} \times \text{CONSUMERGOODS}_i) \\ &+ \beta_4\log\text{NUMEMPLOYEES}_{it} \\ &+ \beta_5\text{PRICEVOLATILITY}_{it} + \beta_6\text{R\&DINTENSITY}_{it} + \beta_7\text{LEVERAGE}_{it} + u_i + \gamma_t + \epsilon_{it} \end{aligned}$$

In the models, the logarithm of market capitalization is regressed on main variables of interest and control variables. The Beta coefficients (β) measure the effects of the corresponding independent and control variables on the logarithm of market capitalization. The subscripts i and t represent individual firms and different years, respectively. The term u_i is the intercept term or constant, representing the firm-random effect. The term γ_t is a time-fixed effect, capturing time-specific effects that affect all firms similarly but may vary across different years. Finally, the error term ϵ_{it} captures all other possible factors that may influence the logarithm of market capitalization but are not included in the model.

4 Data and Results

4.1 Sample & Summary Statistics

As mentioned in section 3.1, the variables of interest, control variables, and dummy variables for 139 companies were retrieved from the LSEG Workspace. The total sample comprises 1,278 observations over nine years. However, there were notably fewer observations for the control variable R&D intensity. It was assumed that these missing values occurred randomly. Subsequently, those observations missing R&D intensity were dropped, resulting in a balanced panel dataset. This approach ensures that models can be compared using the same number of observations. Thus, the total number of observations used for data analysis is 494. The summary statistics provide a full overview of the variables in this dataset.

Table 3: Descriptive Statistics

Variable	Mean	Median	Standard Deviation	Q1	Q3	Observations
Log Market Capitalization	15.93	15.93	1.43	14.99	17.00	494
ESG Score	67.88	70.47	15.4	58.79	79.57	494
Consumer Goods Industry	.538	1	.499	0	1	494
Log Number of Employees	10.38	10.35	1.46	9.51	11.57	494
Price Volatility	24.54	23.74	6.06	20.52	27.96	494
R&D Intensity	2.55	1.66	2.64	.63	3.59	494
Leverage	106.37	73.06	176.01	45.34	126.58	494

Notes: The logarithm of the market capitalization is represented; an ESG score ranges between 0 and 100; consumer goods industry has a minimum and maximum of 0 and 1, respectively, as it is a dummy variable; the logarithm of number of employees is taken; price volatility is expressed as a percentage; R&D intensity is expressed as a ratio; and leverage is represented as a ratio. Q1 and Q3 represent the first and third quartile of the data. In combination with the median, these summary statistics better represent central data tendencies and variability, minimizing outlier effects compared to minimum and maximum values.

Table 3 shows that, after logarithmic transformation of certain variables (market capitalization and number of employees), the variables generally conform to a normal distribution. The variable ESG score has a mean of 67.88, a median of 70.47, and a standard deviation of 15.4. Regarding the dummy variable for the consumer goods industry, the mean indicates that 53.8 percent of the sample comprises of firms in the consumer goods industry, while 46.2 percent are in the industrial industry. This suggests a relatively balanced proportion between the two industries for the sample. For a more comprehensive overview of summary statistics, refer to Table 3.

To check for multicollinearity, the correlation amongst the variables was checked, using a correlation matrix in Table 4.

Table 4: Correlation Matrix

Variable	Log Market Capitalization	ESG Score	Log Number of Employees	Price Volatility	R&D Intensity	Leverage
Log Market Capitalization	1.000					
ESG Score	0.338	1.000				
Log Number of Employees	0.577	0.312	1.000			
Price Volatility	-0.554	-0.074	-0.076	1.000		
R&D Intensity	0.241	0.111	0.268	-0.006	1.000	
Leverage	0.011	-0.068	-0.055	0.064	-0.072	1.000

Table 4 shows that multicollinearity among explanatory variables is not an issue. The only notable correlation coefficients are 0.577 and -0.554, which indicate only a moderate correlation between the logarithm of the number of employees and price volatility with the logarithm of market capitalization, respectively.

4.2 Main Results

A regression was performed on the panel dataset to test for the two above hypotheses. Model (1) is the baseline model with the dependent variables and the control variables, allowing to isolate the effect of the main independent variables of interest in subsequent models. Model (2) tests hypothesis 1 and model (3) tests hypothesis 2. Due to heteroskedasticity, robust standard errors were used. Table 5 shows the main results of the three different models that test the two developed hypotheses.

Table 5: Main Results

Variable	Log Market Capitalization (1)	Log Market Capitalization (2)	Log Market Capitalization (3)
ESG Score		.014*** (.005)	.010 (.007)
Consumer Goods			-.324 (.553)
ESG Score x Consumer Goods			.008 (.008)
Log Number of Employees	.273** (.113)	.266** (.107)	.268** (.106)
Price Volatility	-.053*** (.020)	-.055*** (.020)	-.059*** (.020)
R&D Intensity	.005 (.050)	.009 (.048)	.018 (.047)
Leverage	.0002 (.0005)	.0002 (.0005)	.0003 (.0005)
Intercept	14.298*** (1.274)	13.560*** (1.129)	13.813*** (1.119)
Firm RE	Yes	Yes	Yes
Year RE	Yes	Yes	Yes
Within R ²	0.082	0.103	0.102
Observations	494	494	494

Note. Robust standard errors are shown in parentheses, *** $p \leq 0.01$; ** $p \leq 0.05$; * $p \leq 0.10$

Table 5 shows three models, which provide panel data regression results for the first and second hypotheses. Model (1) is the baseline model, showing a regression for the relationship between market capitalization and the control variables, namely: number of employees, price volatility, R&D intensity, and leverage. A significant association is found for two of the control variables in model (1). There is a significant positive relation between the number of employees and market capitalization. Namely, a 1 percent increase in the number of employees is associated with a 0.273 percent increase in market capitalization, on average. Furthermore, there is a significant negative relation between price volatility and market capitalization. Specifically, a 1 percent increase in price volatility is associated with a 5.3 percent decrease in market capitalization, on average. In model (1), the within R-squared value of 0.082 shows that the control variables account for 8.2 percent of the total variation in market capitalization.

Model (2) includes the first main variable of interest to the baseline model, namely the ESG score of a firm. This model can be used to test hypothesis 1. At the 1 percent significance level, there is a positive association between ESG score and market capitalization. A one-point increase in the ESG score of a firm is associated with a 1.4 percent increase in market capitalization, on average. As in model (1), the number of employees and price volatility are significantly associated with market capitalization: a 1 percent increase in the number of employees is, on average, positively associated with a 0.266 percent increase in market capitalization; and a 1 percent increase in price volatility is, on average, negatively associated with a 5.5 percent decrease in market capitalization. In model (2), the within R-squared value of 0.103 shows that the ESG score and control variables account for 10.3 percent of the total variation in market capitalization. Thus, adding the ESG score to model (2) increases its explanatory power by 2.1 percent.

Model (3) includes the interaction effect between the ESG score of a firm and whether the firm is in the consumer goods industry or not. This model can be used to test hypothesis 2. However, by including this interaction effect, there is an insignificant association between the ESG score of a firm, the consumer goods dummy variable, the interaction effect and market capitalization. Thus, while there is an overall significant association between ESG scores and market capitalization, this effect is not significantly stronger for consumer goods firms, compared to industrial firms. Again, the number of employees and price volatility show a significant association: a 1 percent increase in the number of employees is associated with a 0.268 percent increase in market capitalization, on average; and a 1 percent increase in price volatility is associated with a 5.9 percent decrease in market capitalization, on average. In model (3), the within R-squared value of 0.102 shows that the ESG score, industry interaction effect, and control variables account for 10.2 percent of the total variation in market capitalization. Thus, including the industry interaction effect to model (3) decreases its explanatory power by 0.1 percent.

4.3 Robustness Checks

4.3.1 Different Firm Value Measure

Several robustness checks have been conducted to assess the robustness of the findings in Table 5. First, an alternative but closely related measure of firm value was used for the dependent variable. Instead of market capitalization, enterprise value is used as a measure of firm value. This is interesting because, while ESG score had a significantly positive association with market capitalization in model (2) in Table 5, the association for ESG score and the industry interaction term was insignificant in model (3) of Table 5. Considering the enterprise value as a proxy for firm value has several benefits. Enterprise value is calculated by adding the market capitalization and total debt of a firm, and then subtracting cash and cash equivalents. Thus, the enterprise value not only represents the equity portion of a company's value but also the debt and

cash reserves. It reflects the total cost to acquire a company, offering a more comprehensive firm value proxy. As the data for enterprise value is heavily right skewed, the logarithm is taken.

Table 6: Robustness Check – Enterprise Value

Variable	Log Enterprise Value (1)	Log Enterprise Value (2)	Log Enterprise Value (3)
ESG Score		.012** (.005)	.005 (.007)
Consumer Goods			-.288 (.473)
ESG Score x Consumer Goods			.012* (.007)
Log Number of Employees	.278** (.127)	.277** (.122)	.281** (.122)
Price Volatility	-.022 (.017)	-.023 (.016)	-.029* (.016)
R&D Intensity	-.032 (.049)	-.031 (.047)	-.015 (.046)
Leverage	.0002 (.0003)	.0003 (.0003)	.0003 (.0003)
Intercept	13.740*** (1.388)	13.038*** (1.280)	13.370*** (1.225)
Firm RE	Yes	Yes	Yes
Year RE	Yes	Yes	Yes
Within R ²	0.152	0.177	0.176
Observations	494	494	494

Note. Robust standard errors are shown in parentheses, *** $p \leq 0.01$; ** $p \leq 0.05$; * $p \leq 0.10$

Table 6 shows three models, which serve as a robustness check on the relation between ESG score and firm valuation. A different proxy has been taken for firm value: enterprise value. The results are somewhat similar to the main results in Table 5, although there are a few notable differences. Considered the baseline model in this robustness check, model (1) shows that there is a significant positive association between the number of employees and enterprise value: a 1 percent increase in the number of employees is associated with an average increase in enterprise value of 0.278 percent. The within R-squared value in model (1) of 0.152 is higher than that of 0.082 in model (1) in Table 5, indicating that the explanatory power of these control variables is higher for enterprise value, compared to market capitalization as a dependent variable.

Model (2) includes the ESG score of a firm, which is significantly and positively associated with enterprise value: a one-point increase in the ESG score of a firm is associated with, on average, a 1.2 percent increase in enterprise value, at the 5 percent significance level. This result is similar to model (2) in Table 5, where a one-point increase in the ESG score of a firm was associated with a 1.4 percent increase in market capitalization, on average. The only notable differences lie in the coefficient and that the result in Table 5 was significant at the 1 percent significance level. Furthermore, model (2) shows that there is a significant positive association between the number of employees and enterprise value: a 1 percent increase in the number of employees is associated with an average increase in enterprise value of 0.277 percent. This result is similar to model (2) in Table 5, where the respective coefficient was 0.266 for the dependent variable market capitalization. The within R-squared value of model (2) in Table 6 is 0.177, which implies that including the ESG score of a firm increases the explanatory power of enterprise value by 2.5 percent.

Finally, model (3) includes the industry interaction term. Despite the insignificant coefficients for ESG score and ‘consumer goods’ industry, the interaction term with ESG score and the consumer goods industry dummy variable shows a notably positive association with enterprise value at the 10 percent significance level. Compared to industrial firms, firms in the consumer goods industry are associated with an average additional 1.2 percent increase in enterprise value for a one-point increase in ESG score. Given the significant ESG score coefficient in model (2) and the significant interaction term, but insignificant ESG score coefficient in model (3), it suggests that the positive association between ESG score and enterprise value in model (2) mainly originates from consumer goods, and not industrial firms. Furthermore, the number of employees and price volatility show a significant association with enterprise value: a 1 percent increase in the number of employees is, on average, associated with a 0.281 percent increase in enterprise value; and a 1 percent increase in the price volatility is, on average, associated with a 2.9 percent decrease in enterprise value. The within R-squared value of model (3) in Table 6 is 0.176, which implies that including the industry interaction term decreases the explanatory power of enterprise value by 0.1 percent.

Overall, this robustness check, which uses a different proxy for firm value, highlights two key differences, compared to the main results in Table 5. Firstly, when comparing model (2) in both Table 5 and 6, when market capitalization is the dependent variable, ESG score shows a significant association at the 1 percent significance level, compared to the 5 percent significance level observed for enterprise value. There is a difference in the significance level at which the coefficients show a significant association, which indicates that there is a stronger degree of confidence for the strength of the association between ESG scores and market capitalization, compared to enterprise value. The second difference is that model (3) shows a significant association between the industry interaction term and enterprise value, whereas model (3) in

Table 5 shows an insignificant coefficient for market capitalization. This finding suggests that the association between the interaction term of ESG scores and the consumer goods industry, and firm valuation may vary depending on the measure of firm value used. Thus, this difference highlights the importance of considering various measures of firm value in assessing the association of ESG and industry factors.

4.3.2 Temporal Comparison

Given the dataset's time span from 2015 to 2023, another robustness check involved splitting the period into two parts to examine if the association between ESG score and firm valuation has changed over time. Model (1) considers the period from 2015 to 2019, while model (2) examines the period from 2021 to 2023. The year 2020 was excluded because the stock market crashed in response to the COVID-19 pandemic lockdowns in March 2020, with the S&P 500 falling 26 percent within four days (Mazur et al., 2021). The crash of the stock market impacts market capitalization and other control variables such as price volatility.

Table 7: Robustness Check – Temporal Comparison

Variable	Log Market Capitalization	Log Market Capitalization
	2015 - 2019	2021 - 2023
	(1)	(2)
ESG Score	-.0004 (.005)	.014** (.007)
Consumer Goods	-.411 (.507)	-.374 (.549)
ESG Score x Consumer Goods	.011 (.008)	.004 (.010)
Log Number of Employees	.324*** (.076)	.490*** (.116)
Price Volatility	-.037*** (.013)	-.089*** (.020)
R&D Intensity	.027 (.036)	.026 (.050)
Leverage	.0007*** (.0001)	.0007 (.0008)
Intercept	13.149*** (.964)	11.840*** (1.452)
Firm RE	Yes	Yes
Year RE	Yes	Yes
Within R ²	0.082	0.136
Observations	280	158

Note. Robust standard errors are shown in parentheses, *** $p \leq 0.01$; ** $p \leq 0.05$; * $p \leq 0.10$

Model (1) shows a model representing the period from 2015 to 2019. Like the results of model (3) in Table 5, the associations between ESG score, the ‘consumer goods’ dummy variable, the interaction term and market capitalization are insignificant. Several control variables, including the number of employees, price volatility, and leverage show significant associations with market capitalization: a 1 percent increase in the number of employees shows an average 0.324 percent increase in market capitalization; a 1 percent increase in price volatility is negatively associated with an average 3.7 percent decrease in market capitalization; and a 1 percent increase in leverage is positively associated with an average 0.07 percent increase in market capitalization. The within R-squared value of 0.082 indicates that the independent and control variables account for 8.2 percent of the total variation in market capitalization between 2015 and 2019.

Model (2) in Table 7 represents the period from 2021 to 2023. The sample of firms in this period show a significant and positive relation between the ESG score of a firm and market capitalization: a one-point increase in ESG score is associated with a 1.4 percent increase in market capitalization, on average, at the 5 percent significance level. However, an insignificant association was found for the ‘consumer goods’ dummy variable, interaction term and market capitalization. Furthermore, the number of employees and price volatility are significantly associated with market capitalization: a 1 percent increase in the number of employees is associated with a 0.490 percent increase in market capitalization on average; and a 1 percent increase in price volatility is associated with an 8.9 percent decrease in market capitalization on average. The within R-squared value of 0.136 indicates that the combined independent and control variables account for 13.6 percent of the total variation in market capitalization between 2021 and 2023. Overall, the results between model (1) and (2) in Table 7 differ significantly, indicating that the relation between the ESG score and the market capitalization of firms in the consumer goods and industrial industries has changed over time. A key consideration when comparing results between the two time periods is the variation in the number of observations: model (1) covers a longer period, including more years than model (2).

5 Discussion and Conclusion

5.1 Discussion of Results

This paper intends to examine the relationship between ESG scores and the value of a firm. By comparing the consumer goods and industrial industries in the Eurozone between 2015 and 2023, this thesis aims to investigate whether this association is amplified in industries that are more visible to consumers. The two hypotheses tested are *H1: The ESG score and market capitalization of a firm are positively related*; and *H2: The effect of ESG score on market capitalization is larger for firms in the consumer goods industry compared to firms in the industrial industry*. Overall, the research question under investigation is: “To what extent is there an association between the ESG score of a firm and firm value when comparing the consumer goods and industrial industries in the Eurozone?”

5.1.1 General Results

In summary, the overall results show mixed findings for the association between the ESG score of a firm, the industry interaction effect, and its market capitalization. The results show a significantly positive relation between the ESG score and market capitalization of a firm. Therefore, there is sufficient evidence to reject the first null hypothesis, *H1: The ESG score and market capitalization of a firm are positively related*. Regarding the first hypothesis, the results are consistent with the findings of Friede et al. (2015) and Whelan et al. (2021), whose meta-studies found a significantly positive relation between ESG scores and firm value. Furthermore, the results align with those reported by Velte (2017) and Signori et al. (2021), found that increasing ESG initiatives added to the value of a firm in Germany and among European firms, respectively. The results contain sufficient evidence to support the key theoretical frameworks that developed the first hypothesis, namely the stakeholder theory (Artiach et al., 2010) and the resource-based view (Christmann, 2017), to some extent.

Regarding the second hypothesis, the main results show an insignificant association between the interaction term of a firm’s ESG score and consumer goods industry, and its market capitalization. This suggests that the association between ESG scores and market capitalization does not differ significantly between consumer goods and industrial firms. Thus, there is insufficient evidence to reject the second null hypothesis, *H2: The effect of ESG score on market capitalization is larger for firms in the consumer goods industry compared to firms in the industrial industry*. The results are inconsistent with the findings of Aouadi & Marsat (2018), Servaes & Tamayo (2013), Bardos et al. (2020), and Achour & Boukattaya (2021). One reason for the difference in findings between this thesis and the mentioned studies could be the sampled firms. This study focuses on firms in the Eurozone, whereas the previously mentioned papers examined

international, French, and U.S. firms. Thus, variations in geographical and regulatory context may have contributed to differing results. Another potential explanation for the differences in findings is the variation in the definition of ‘firm visibility’. This paper proposes consumer goods firms to be more visible to consumers, compared to industrial firms. This may influence the relation between ESG scores and firm valuation differently across these industries. Differing definitions of visibility in other studies may have contributed to inconsistent results. Therefore, when considering the dependent variable, this thesis provides insufficient evidence to support the legitimacy theory (Reverte, 2008). However, robustness checks show that using other proxies for firm value do provide sufficient evidence to support the legitimacy theory, to some extent.

However, it is notable that when taking enterprise value as a proxy for firm value as a robustness check, there is a significant association between the interaction term of a firm’s ESG score and consumer goods industry, and its market capitalization. A possible reason for the discrepancy in results is the use of different proxies for firm valuation. While market capitalization only reflects the equity portion of a firm, the enterprise value also incorporates debt and not just the market-based value of a firm. This difference in valuation methods may explain why significant results were found when using enterprise value as the dependent variable, giving a more holistic measure of firm value.

Furthermore, the temporal robustness check reveals a recent increase in the significance of ESG scores. When performing a robustness check comparing the period from 2015 to 2019 with 2021 to 2023, a significant difference was found. While an insignificant association between the ESG score of a firm, the interaction term and firm value was found between 2015 and 2019, this relation showed a positive association for the later period from 2021 to 2023. This difference may be attributed to the increasing relevance of ESG scores in the recent years, following the introduction of ESG reporting requirements in Europe announced in early 2021 (Hahnkamper, 2021). This poses the question of how the significance and impact of ESG scores will evolve in the coming years, especially with the European Union mandating ESG scores as part of the non-financial reporting directive beginning in fiscal year 2024.

5.1.2 Implications

The overall results show that a higher ESG score is positively associated with firm value, but that there is no significant difference in the association between ESG performance and firm value between consumer goods and industrial firms. These findings offer insights into how policymakers can potentially enhance company incentives to continue improving ESG-related initiatives. As ESG scores are positively associated with the value of a firm, it can be concluded that there is an overall financial incentive for firms to increase

ESG efforts. Since the main results show an insignificant difference when comparing the consumer goods and industrial firms, this implies that policymakers can implement more uniform policies within these industries. For example, tax incentives or subsidies for sustainable investments could be applied across both industries to encourage enhanced ESG efforts.

5.2 Limitations

One limitation is the use of the financial data provider LSEG Workspace, which only offers composite measures of ESG and lacks performance information per ESG pillar. Other studies had the advantage of analyzing each pillar individually, allowing for a more detailed analysis. Another limitation is that the selected sample does not represent the entire population of consumer goods and industrial firms in the Eurozone, as it excludes firms with missing values. The dataset from the LSEG Workspace includes ESG scores for firms that have disclosed this information, but not all firms in the population have done so, leading to a sample bias. This bias arises because firms with disclosed ESG scores are more likely to be actively involved in ESG practices. Consequently, the sample may disproportionately represent companies that prioritize ESG, thereby skewing the results. This selective inclusion of firms raises internal validity concerns, limiting the generalizability of the findings and potentially overstating the impact of ESG activities. Another limitation is the assumption that the missing values for R&D intensity are random. As previously mentioned, there were notably fewer observations for this control variable. When browsing through the raw panel data upon initial inspection, there are no noticeable patterns for the firms missing this data. However, a more thorough examination with advanced statistical testing may reveal otherwise. This assumption is limiting because it is unclear whether there is a bias in the selection of firms retained after dropping observations.

5.3 Future Research

Future research pursuits in this domain may consider exploring how the relation between ESG scores and firm valuation has evolved over time. With the growing relevance of ESG criteria, it would be valuable to assess how changes in policymaking impact the extent to which ESG scores influence firm value. Furthermore, another compelling research extension may involve conducting cross-industry comparisons, broadening the study scope. Including additional industries would enrich this analysis by revealing varying degrees of visibility and consumer engagement across different industries. This may highlight how consumers are less informed about ESG initiatives in less visible sectors. Moreover, industry-specific empirical findings may assist policymakers in tailoring regulations to further incentivize ESG initiatives effectively across different industries. Raising awareness of these dynamics will enable companies to develop strategies to create long-term sustainable value.

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7 Appendix

7.1 Artificial Intelligence Usage

During the process of writing my thesis, I used two forms of artificial intelligence (AI). Grammarly was used to check for incorrect punctuation. ChatGPT was used to request help with Stata when issues occurred.