VILNIUS UNIVERSITY
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MASTER THESIS

ESG VEIKSNIŲ POVEIKIS ĮMONĖS VERTEI EUROPOS ŠALIŲ PAVYZDŽIU	**ESG SCORE IMPACT ON VALUE OF A COMPANY. EVIDENCE FROM EUROPEAN COUNTRIES**

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INTRODUCTION

Relevance of the topic. The relevance of examining the impact of ESG scores on company value lies in the increasing recognition by investors, policy makers and enterprises of the importance of sustainable and ethical practices. Investors are incorporating ESG factors into their decision-making processes to assess long-term viability and risk, driven by evidence that companies with strong ESG performance often exhibit lower risk and greater resilience. Furthermore, regulatory bodies are mandating greater ESG disclosure to enhance market stability and integrity. For firms, integrating ESG factors is a strategic move that can lead to competitive advantages such as enhanced brand reputation, customer loyalty, and operational efficiencies, ultimately driving long-term benefits.

ESG scores reflect a company's broader societal and environmental impact, aligning corporate operations with societal values and addressing global challenges such as climate change and social inequality. This comprehensive view of ESG integration emphasizes its significance for investors, enterprises, regulators, and overall society, therefore scholars are increasingly studying various angles of ESG impact to society. As firms are first and foremost concerned about profitability and positive cash flows, it is questionable how non-financial initiatives as ESG can impact the firms financials, and therefore studies regarding the ESG impact on the financials of the firm are conducted. This Thesis contributes to this study field in determining how ESG impact firm value in developed European economies.

The level of exploration of the topic. The exploration of the impact of ESG scores on company value in scientific literature is quite large but presents mixed findings; while numerous studies suggest a positive correlation between high ESG scores and improved financial performance and reduced risk (meta-analyses from Friede et al., 2015; Alshehhi et al., 2018; Whelan et al., 2021; Coelho et al., 2023; Saini et al., 2023) , others, especially in developing economies, highlight the negative correlation between ESG scores and firm's financial performance (Duque-Grisales & Aguilera-Caracuel, 2021; Nareswari et al., 2023; Rao et al., 2023). Some inconsistencies and challenges, such as varying methodologies, datasets, time horizons exist, indicating the need for further research in this area.

The novelty of the Master thesis. There is some research done to evaluate ESG score impact on firm's value in European countries (De Lucia et al., 2020; Engelhardt et al., 2021; Makridou et al., 2024), however none of the found studies have particularly studied developed economies in Europe as a whole. While the findings about ESG impact on firm value are generally mixed, the research shows that negative impact is more frequent in developing countries rather

than developed (Garcia & Orsato, 2020; Kalia & Aggarwal, 2023). Therefore all developed European economies firms are taken into account in this Thesis as a way to compare Thesis research results with previous findings and search for consistency in the developed economy parameter. Moreover, no recent (from 2023) studies were found sampling all European listed companies without isolating particular sectors like Makridou et al. (2024) which concentrated on energy sector, therefore newer and broader data selection will be another novelty of this thesis.

The problem of the Master thesis. How does ESG score impact value of the firms operating in developed economies in Europe.

The aim of the Master thesis. This thesis aims to determine the impact of ESG score on the value of companies operating in developed economies in Europe.

The objectives of the Master thesis.

1. Analyse scientific literature to present theoretical frameworks and current findings of ESG impact on company value.
2. Establish methodology required to perform analysis for ESG score impact on firm value.
3. Research the relationship between ESG scores and company value with unique data set, models and available tools.
4. Provide results of the research indicating found impact of ESG score on firm value.
5. Provide with conclusions of the research done, suggest improvements linking research results and real-world problematics of investors, policy makers and firms.

The methods deployed by the Master thesis. Analysis of scientific literature of foreign authors, statistical models, regression analysis.

The description of the structure of the Master thesis. The Thesis is structured into 3 main parts: theoretical analysis, methodology of the research and research results with conclusions and recommendations.

The theoretical part of the thesis presents the ESG concept, covers the theoretical framework linking ESG to company value and presents previous empirical studies on ESG impact as well as criticisms and challenges of ESG integration in European and global context. The methodological part presents raised hypotheses, constructed models with explanations of variables, data selection and methods to be used for analysis. The third part presents analysis results, interpretation and drawn conclusions along with recommendations.

1. ESG IMPACT ON FIRM VALUE, THEORETICAL ASPECTS

This part overviews ESG definition and its components, portrays already gathered information about ESG score impact on firm value in scientific literature, discusses role of ESG in European context and how ESG scores are calculated.

1.1. ESG definition and its components

Environmental, Social and Governance (ESG) represents a framework for evaluating the sustainability and ethical impact of a company's operations, reflecting a broader understanding of corporate responsibility that has evolved over time. During the 20th century, investors began to consider ethical and social concerns in the investment decisions, driven by issues such as civil rights, environmental protection and anti-apartheid activism (Sparkes & Cowton, 2004). Starting with the socially responsible investing (SRI) movement, exclusion of certain sectors or companies from investment portfolios based on moral criteria gradually evolved into a more comprehensive approach that integrates environmental, social and governance factors into financial analysis as shown on Table 1.

Table 1

ESG Ratings Key Issue hierarchy

3 Pillars	10 Themes	33 ESG Key Issues
Environment	Climate change	Carbon Emissions
		Climate Change Vulnerability
		Financing Environmental Impact
		Product Carbon Footprint
	Natural Capital	Biodiversity & Land Use
		Raw Material Sourcing
		Water Stress
	Pollution & Waste	Electronic Waste
		Packaging Material & Waste
		Toxic Emissions & Waste
	Environmental Opportunities	Opportunities in Clean Tech
		Opportunities in Green Building
		Opportunities in Renewable Energy
Social	Human Capital	Health & Safety
		Human Capital Development
		Labor Management
		Supply Chain Labor Standards

Continuation of Table 1

	Product Liability	Chemical Safety
		Consumer Financial Protection
		Privacy & Data Security
		Product Safety & Quality
		Responsible Investment
	Stakeholder Opposition	Community Relations
		Controversial Sourcing
	Social Opportunities	Access to Finance
		Access to Health Care
		Opportunities in Nutrition & Health
Governance	Corporate Governance	Board
		Pay
		Ownership & Control
		Accounting
	Corporate Behavior	Business Ethics
		Tax Transparency

Source: (MSCI ESG Research LLC, 2024)

The environmental component of ESG evaluates how a company manages its impact on natural resources and ecosystems, addressing issues such as climate change, carbon emissions, water usage and biodiversity (Clark et al., 2015). The growing awareness of environmental sustainability highlighted the importance of integrating environmental considerations into business practices.

The social component examines a company's relationships with its stakeholders, including employees, customers, suppliers and the communities in which it operates. This dimension covers aspects such as labour practices, human rights, community engagement, product safety (Friede et al., 2015). The increasing attention to social issues in the corporate world can be traced back to the rise of corporate social responsibility (CSR) movement, where companies began to take more proactive roles in addressing social concerns as part of their business strategies.

The governance component focuses on the structures and processes by which a company is directed and controlled, encompassing factors such as board composition, executive compensation, transparency, and shareholder rights (Gompers, Ishii, & Metrick, 2003). The importance of corporate governance gained prominence following numerous corporate scandals in the early 2000s, such as the Enron and WorldCom cases, which underscored the need for stronger governance practices to protect investors and stakeholders.

Collectively, these components provide a comprehensive assessment of a company's long-term sustainability and ethical positioning, reflecting its ability to manage risks and opportunities

in an increasingly complex global environment (Eccles & Serafeim, 2013). The evolution of ESG from its origins in socially responsible investing to its current status as a critical component of corporate and investment analysis illustrates the growing recognition of the importance of sustainability and ethical governance in the global economy.

1.2. ESG score impact on firm financial performance

The relationship between ESG scores and financial performance, has been discussed in academic literature widely, reflecting the growing interest in the area. Most of the found sources suggest a positive correlation between stronger ESG performance and firm value, profitability.

Friede et al. (2015) conducted a meta-analysis of over 2,000 studies and found that the majority report a positive relationship between ESG criteria and corporate financial performance. This link is attributed to several factors including improved risk management, greater efficiency in resource use and enhanced reputation. Another paper from Alshehhi et al. (2018) finds that majority of their analysed publications report a positive relationship between corporate sustainability and financial performance, although mentioning that the social dimension of ESG contributes more to the positive result. Furthermore, conclusions from Coelho et al. (2023) analysis of related content articles, also suggest that corporate social responsibility directly impacts company's financial performance and this impact becomes more significant as the company's ESG scores improve. Another meta-analysis from Saini et al. (2023) concludes, that most of the research demonstrated no question regarding the favourable link between business efficiency, including risk management, cost of capital, firm's performance, and corporate social responsibility strategy. Finally, another aggregate evidence from more than 1000 studies conducted by Whelan et al. (2021), states that majority of studies, which focused on operational metrics such as Return on Equity, Return on Assets or stock price, find a positive relationship between ESG and financial performance of a firm, only 8% of studies showing negative relationship. However Whelan et al. (2021) mark that improved financial performance due to ESG becomes more marked over longer time horizons. All of the afore-mentioned meta-analyses suggest that majority of studies related to relationship between ESG scores and firm value conclude positive relationship, however the percentage of positive studies in each analysis differ because of different scopes, periods taken.

Having overviewed some meta-analyses it is worthwhile to look into separate studies, that would shed some light over the different scopes of studies with positive and negative relationship findings between ESG scores and firm financial performance. The studies found are usually divided by the selection of countries, regions, sectors.

Country-specific studies provide insights about ESG score impact on firms financial performance in particular country. For example, a research from Chen & Xie (2022), estimates effect of ESG disclosure on corporate financial performance using data of listed firms in China from year 2000 to 2020. They find that ESG disclosure has a significant incentive effect on corporate financial performance (Tobin's Q) with multiple robustness tests, but the effect is more pronounced in companies with ESG investors, longer inception, high media attention and high agency costs. Another research from Alareeni & Hamdan (2020), investigates relationship between ESG disclosures and ROA, ROE and Tobin's Q in US S&P 500-listed companies during the year 2009 to 2018. They found that ESG disclosure positively affects firms performance measures, however measuring ESG subcomponents separately showed mixed results. Fatemi et al. (2018) study, which investigated US companies from year 2006 to 2011, also approves that ESG strengths increase firm value and that weaknesses decrease it. Another study from Velte (2017) demonstrates how ESG performance and each component separately impacts financial performance of companies listed on the German Prime Standard for the business years 2010-2014. Velte (2017) finds, that ESG performance in total and the three components performance scores separately have positive impact on accounting-based financial performance (ROA) of selected companies. He also notes that governance performance has the strongest impact on ROA in comparison to environmental and social aspects. However he adds, that there is no significant impact of ESG performance on market-based financial performance (Tobin's Q). Evidence from Korea shows, that corporate social responsibility practices positively and significantly affect a firm's value (Yoon et al., 2018). It also states that for firms in environmentally sensitive industries, the value-creating effect of CSR is lesser than for firms that do not belong to sensitive industries. Evidence from India, which analyses companies listed on BSE-100 index from year 2011 to 2019, demonstrates a positive relationship between ESG score and firm's financial performance, however mentioning that it is most apparent in the long-term perspective (Ray & Goel, 2023). Furthermore, Ahmad et al. (2021) have revisited the impact of ESG on financial performance of FTSE350 index UK firms for the time period 2002-2018. The results show that ESG has a positive and significant impact on firm market value and earnings per share. However, in the case of the individual ESG performance, the results are mixed (Ahmad et al., 2021). A study about Brazilian companies listed on the Sao Paulo Stock Exchange for the year 2010-2015 was conducted by Miralles-Quiros et al. (2018). They have found, that corporate social responsibility practices positively influences value of companies. However, Miralles-Quiros et al. (2018) add, that market does not significantly value the three ESG pillars separately, more specifically – the market positively and significantly values the environmental practices carried out by companies not related to environmentally sensitive industries and in contrast, the market positively and

significantly values the social and corporate governance practices carried out by the companies belonging to these sensitive industries. Finally, Wong et al. (2021) have researched Malaysian firms over the period of 2005 to 2018 and also found, that companies that pursue greater ESG disclosure enhance their value (Tobin's Q), adding that receiving an ESG rating reduces the cost of capital for a firm by 1.2%.

Region-specific studies often differentiate themselves by selecting group of countries or by choosing particular continent or whole world. For example, De Lucia et al. (2020) have investigated more than 1000 major public companies operating in Europe and found the existence of a positive relationship between ESG practices and financial indicators, namely ROA and ROE. In addition, De Lucia et al. (2020) say, that existing relationship appears more evident when companies invest in environmental innovation, employment productivity and diversity and equal opportunity policies. A study about ESG ratings and corporate financial performance in South Africa, conducted by Chininga et al. (2024) for the JSE-listed companies between 2015 and 2019, revealed positive effect of ESG activities on firms ROE and Tobin's Q performance, however when analysing separate pillars of ESG, only environmental pillar showed positive relationship with financial performance of firms also adding that over the long- term ESG initiatives tend to contribute to the financial performance of firms more positively. Naeem et al. (2021) have studied more than 1000 companies from emerging markets for the period of 2010 to 2019. They have found that aggregate ESG and separate pillar scores have significant positive impact on firm value (Tobin's Q) and profitability (ROA). Khalil et al. (2024) have compared traditional innovations (R&D) and environmental innovations impact on firm's value in ten Asian economies (excluding China). They have found that both of these innovations have a positive impact on firm's value (Tobin's Q), however, research suggest that traditional innovation is favourable only for the firm's market valuation while environmental innovation also contributes to the environmental protection and conservation. Chen et al. (2023), who analysed impact of ESG on financial performance of over 3000 companies worldwide over an interval of 2011 to 2020, have found that ESG has a considerable positive impact on corporate financial performance (ROA), noting that the impact is more evident and significant for large-scale companies and insignificant for small-scale companies.

There are also sector-specific studies, which, most extensively, cover environmentally-sensitive sectors like energy or airline industry. For example, Ari et al. (2023) presented a broad synthesis of empirical studies conducted to determine the relationship between ESG and corporate financial performance in energy sector. They covered 31 publications and found that majority of them indicate a positive relationship between ESG and financial variables (EPS, ROA, ROE, Tobin's Q), only few indicate negative and others mixed relationship. Abdi et al. (2022) explored

airline industry companies from 2009 to 2019 and found that the outcome for funding social and environmental operations would be a decline in firm's market-to-book ratio, but would increase Tobin's Q. Abdi et al. (2022) also found that firm size plays a significant moderating role in conducting this study, but firm age does not. Another study from Zhao et al. (2018), which covers China's listed power generation companies, shows that ESG performance contributes positively to company's financial performance. Finally, Miralles-Quiros et al. (2019), have taken a sample of 166 banks from 31 countries over the period 2010 to 2015. They found no homogeneity in the value relevance of ESG practices adopted by banks, more precisely – the relationship between banks environmental and corporate governance performance with Tobin's Q is positive and significant, on the other hand, there exists a negative and significant correlation of banks' social performance with shareholder value creation.

Having covered literature, which mainly consists of studies with positive relationship between ESG performance and firm financial performance, it is important to list studies, that present negative relationship findings. As mentioned before, in the paragraph where meta-analyses where overviewed, the percentage of studies with negative relationship results is significantly smaller, thus less examples could be presented. Also, usually studies do not present unified results as, for example, overall ESG score could positively impact company's financial performance, and separate pillar – negatively.

Saygili et al. (2022) have investigated Turkish companies listed on the Borsa Istanbul Corporate Governance Index. Their findings indicate that environmental disclosures have negative effect on corporate financial performance, while social and governance have mixed results. Another study from Duque-Grisales & Aguilera-Caracuel (2021) demonstrates a negative relationship between ESG score and financial performance of companies from Latin America (Brazil, Chile, Colombia, Mexico and Peru between 2011 and 2015). Moreover, they add, that all pillars separately show also negative relationship. They consider this relationship to be related to the fact that ESG initiatives are not performed in the correct manner or because there is not enough institutional support to render them more visible, thus not ensuring approval from stakeholders. Alternatively, when Latin countries make high investments in ESG, they may sacrifice their cash flow and divert resources required for their operation, decreasing their performance (Duque-Grisales & Aguilera-Caracuel, 2021).

Another study from Nareswari et al. (2023), also demonstrates negative relationship between ESG score and financial performance of companies in Indonesia, listed on LQ45 index. The authors suggest, that this might be because of several reasons: requirement of bigger and long-term investments, opportunity costs, limited resources and not favourable shareholders reactions. Furthermore, Rao et al. (2023), examine impact of ESG practices on financial performance among

Nifty 50 index companies in India from 2015 to 2022. They find, that environmental and governance pillar scores consistently negatively impact ROE, while the social pillar relationship is insignificant, yet negative. Rao et al. (2023) emphasizes the negative short-term impact of all pillars on companies profitability (ROE) and encourages to think through the trade-off between long-term benefits versus short-term challenges. Giannopoulos et al. (2022) have investigated the relationships in Norwegian listed companies from 2010 to 2019. They have only found 20 companies that reported for that period, thus performing a little limited study, however still contributing to the theme, as Norway is one of the leading countries in the world in sustainability. Giannopoulos et al. (2022) study results show that ESG reporting has positive impact on Tobin's Q and significant negative relationship with ROA. As authors describe - ROA can be seen as a measure of short-term financial performance and Tobin's Q as a proxy of growth and long-term performance. Therefore it matches some of the previously described literature about ESG disclosures having more evident positive long-term impact rather than short-term.

Kalia & Aggarwal (2023) have researched health-care firms for the business year 2020 across various countries and found, that although ESG activities positively impact firm performance in developed economies, this relationship is negative or insignificant in developing economies, according to the author, due to lack of well-developed ESG reporting systems, weak capital markets and regulatory mechanisms. Similarly, Garcia & Orsato (2020), have also found that ESG performance in developed economies influence the financial performance of companies significantly positively, while in developing – significantly negatively. They stress the factor of institutional differences between developed and emerging economies – companies in developed countries may be more concerned to demonstrate their efforts towards the mitigation of negative socio-environmental impact therefore acquiring public legitimacy, while companies in developing economies do not seem to care enough about disclosure or accounting for the socio-environmental impact of their operations (Garcia & Orsato, 2020).

Lastly, Makridou et al. (2024), have searched for relationship between ESG and corporate financial performance in the European energy sector companies and their findings suggest that those companies' profitability is marginally and negatively affected by ESG performance, at the same time environmental pillar having significant negative effect and, in contrast, social and governance pillar effects are positively but not significantly associated with the company's financial performance.

Table 2 below represents a summary of the covered literature, including meta-analyses and separate studies.

Table 2

Summary of previous research

	Country / Region / Sector	ESG	E	S	G
Abdi et al. (2022)	World, Airline		+	+	
Ahmad et al. (2021)	United Kingdom	+	-	+	+
Alareeni & Hamdan (2020)	United States	+	Mixed	Mixed	Mixed
* Alshehhi et al. (2018)		Majority +			
* Ari et al. (2023)	Energy	Majority +			
Chen & Xie (2022)	China	+			
Chen et al. (2023)	World	+			
Chininga et al. (2024)	South Africa	+	+	-	-
* Coelho et al. (2023)		Majority +			
De Lucia et al. (2020)	Europe	+			
Duque-Grisales & Aguilera-Caracuel (2021)	Latin America	-	-	-	-
Engelhardt et al. (2021)	Europe	+		+	
Fatemi et al. (2018)	United States	+			
* Friede et al. (2015)		Majority +			
Garcia & Orsato (2020)	World	Developed economies +, developing -			
Giannopoulos et al. (2022)	Norway	Mixed			
Kalia & Aggarwal (2023)	World, Health Care	Developed economies +, developing -			
Khalil et al. (2024)	10 Asian economies		+		
Makridou et al. (2024)	Europe, Energy	-	-	+	+
Miralles-Quiros et al. (2018)	Brazil	+	Mixed	Mixed	Mixed
Miralles-Quiros et al. (2019)	World, Banking		+	-	+
Naeem et al. (2021)	Emerging markets	+			
Nareswari et al. (2023)	Indonesia	-			
Rao et al. (2023)	India		-	-	-
Ray & Goel, (2023)	India	+			

Continuation of Table 2

* Saini et al. (2023)		Majority +			
Saygili et al. (2022)	Turkey		-	Mixed	Mixed
Velte (2017)	Germany	+	+	+	+
* Whelan et al. (2021)		Majority +			
Wong et al. (2021)	Malaysia	+			
Yoon et al., (2018)	South Korea	+			
Zhao et al. (2018)	China, Power Generation	+			

*Source: Compiled by author, based on authors in the table above. Sign " + " shows positive relationship, sign " – " shows negative relationship. Sign " * " indicates meta-analysis*

To conclude, from the research discussed above, some patterns could be seen in already written studies: majority of the studies demonstrate positive ESG score impact on company's financial performance, when studying impact to financial indicators ROA, ROE, Tobin's Q. Furthermore, it is more apparent, that a positive relationship is more detectable in developed economies rather than developing, as well as in the long term rather than the short term. Finally, if overall ESG score is negatively or positively impacting the financial performance of a company, it does not necessarily mean, that separate pillars results would be identical as an aggregate.

1.3. Benefits and challenges related to ESG initiatives

As was described in subchapter 1.2., the relationship between ESG factors and firm financial performance is varying depending on the context of the researches. Both positive and negative impacts are evident, and in this subpart the reasons for those differences will be explained.

It has been proposed that ESG/CSR, through a variety of different channels, can positively affect many types of risk, including systematic risk, regulatory risk, supply chain risk, product and technology risk, litigation risk, reputational risk, and physical risk (Gillan et al., 2021). When talking about systematic risk, it is needed to look into studies that studied ESG impact on firm performance during crisis. For example, Lins et al. (2017) found, that during the 2008–2009 financial crisis, companies with strong social capital, as indicated by their corporate social responsibility (CSR) efforts, achieved stock returns that were four to seven percentage points higher than those with lower social capital. These high-CSR firms also outperformed in terms of profitability, growth, and sales per employee compared to their low-CSR counterparts, and they were able to secure more debt financing. This evidence suggests that the trust established between a company and its stakeholders, through investments in social capital, proves valuable when trust in corporations and markets is generally diminished due to economic shocks (Lins, et al. 2017).

Albuquerque et al. (2019), tested a model, which evaluated ESG/CSR impact on firm's systematic risk. Their sample consisted of U.S. firms from 2003 to 2015 and their finding was that the level of systematic risk is statistically and economically significantly lower for firms with a higher CSR score. However, Albuquerque et al. (2019) also add, that these effects are stronger for firms with high product differentiation. When looking at studies, that examined the role of ESG performance in particular regions during crisis, the findings show similar results. For example, Broadstock et al. (2021), have studied China's CSI300 firms and found that ESG performance is positively associated with the short-term cumulative returns of CSI300 stocks around the Covid-19 crisis. They also add, that the role of ESG performance is diminished in 'normal' times, confirming its importance during crisis. Furthermore, Engelhardt et al. (2021), have studied the effect of ESG ratings on firms during the Covid-19 crisis in 14 European countries. They conclude, that high ESG-rated European firms are associated with higher abnormal returns and lower stock volatility. When assessing the impact of separate pillars, Engelhardt et al. (2021) find the social score to be the predominant driver of their results. Further, they argue that ESG is value-enhancing in low-trust countries, and in countries with poorer security regulations and where lower disclosure standards prevail. Another study about European banking sector was conducted by Chiaramonte et al. (2021). Using a sample of European banks operating in 21 countries over 2005–2017, Chiaramonte et al. (2021) found that the total ESG score, as well as its sub-pillars, reduces bank fragility during periods of financial distress. This stabilizing effect holds strongly for banks with higher ESG ratings and the longer the duration of ESG disclosures, the greater the benefits on stability.

Moreover, Clark, G. L. et al. (2015), conducted a research in which they argue that company's thorough engagement in sustainability and ESG issues greatly reduces the risk of possible financial, reputational and legal risks. Their research shows that some companies, that neglected the sustainability issues, have incurred huge amounts of fines or costs reaching up to 50 billion dollars, not mentioning the community criticism and reduced credibility, legal restrictions and therefore credit risks. Also, Kölbel, et al. (2017), find that increased media attention due to corporate social irresponsibility is positively correlated with increased financial risk which is defined as expected downwards volatility of a firm's earnings and credit risk. Giese et al. (2019), further approves this theory, as their research shows that ESG-rated companies had lower risk of severe incidents like financial shocks, also lower systematic risks, which in turn reduce company's cost of capital which in turn increases company's valuation. Finally, firms that prioritize social sustainability—through fair labour practices, community engagement, and customer relations—are more likely to build strong, resilient relationships with stakeholders, thereby reducing the

likelihood of social unrest, strikes, or consumer boycotts that can disrupt operations and erode profit margins (Fatemi et al. 2018).

Additionally, Cheng et al. (2014) adds that a good performance in the area of corporate social responsibility is negatively correlated with capital constraints, thus resulting in better accessibility to financing sources. They argue that it can be attributed to reduced agency costs due to enhanced stakeholder engagement and reduced informational asymmetry due to increased transparency (Cheng et al., 2014). Amiraslani et al. (2023) note, that although they do not find consistent relations between environmental & social performance and bond spreads, during the financial crisis, high social-capital firms benefited from lower bond spreads. Chen, Y. et al. (2023), have also found that ESG performance has significantly reduced cost of equity capital for Chinese A-Share listed companies. Moreover, Eliwa et al. (2021), have researched 15 EU countries and found that firms with higher ESG performance and disclosure have lower cost of debt. However they add, that they cannot distinguish the effect of either performance and disclosure and both can have impact on cost of debt (Eliwa et al., 2021). Finally, when studying companies in the list of S&P 1200 Global Index in 2020, Raimo et al. (2021) also find negative effect of the ESG disclosure on the cost of debt financing.

On the other hand, as was shown before, along with positive effects, ESG can have negative causes on firm's performance. The most obvious one would be ESG implementation costs – as companies move towards adaptation of ESG initiatives, investments in sustainable technologies and processes, upgrading facilities and equipment, shifting to eco-friendly materials are needed. Also, ESG reporting itself and the maintenance for keeping up with regulations and educated personnel is also costly for companies (Reuters, 2023).

Moreover, as was discussed previously, ESG initiatives positive outcomes on firms financial performance are more evident in the long term perspective, therefore, companies may face challenge of making large investments and having negative short-term returns on their investments. Therefore, as Goldhaber (2023) puts it, firms may decide not to risk such declines in profitability as it could be more than the investors of a firm may bear.

Finally, Damodaran (2021), points, that as in the world there are still no obligatory sustainability, or social awareness or governance requirements for all existing firms, there exists some advantages for some firms not to include ESG initiatives in their agenda because: their products may be cheaper, and customers generally prefer cheaper products, they may have less operational costs, they may have more efficient investments in growth of their core business processes, they would report higher earnings, have higher stock prices and higher cashflows. These advantages represent the so called shareholders value creation theory, first described by

Milton Friedman (1970), and Damodaran (2021) argues, that this theory should be still foundational for any firm and it is not company's responsibility to be social policy maker.

In summary, the relationship between ESG initiatives and firm performance is varying, with support for both positive and negative impacts. On one hand, ESG practices can enhance firms performance through risk mitigation, improved access to capital, and stakeholder trust. They can also lower costs of equity and debt, particularly during crises. On the other hand, the significant costs associated with ESG implementation, including reporting and compliance, alongside the potential for negative short-term financial returns, present substantial challenges and firms may sometimes choose to focus on shareholder value creation, leveraging cost and operational advantages by not adopting ESG practices.

1.4. Role of ESG initiatives in European context

According to Bloomberg Intelligence (2024), Europe, alongside with USA, has been the global leader in the quantities of ESG assets under management (AUM) in the past decade. Also, the report mentions, that in their projected scenario, European share of global ESG AUM may grow up to 45% in 2030. This report highlights not only overall growing ESG AUM quantities globally, but also growing or maintaining level of European governments and businesses leadership in the field. Vast projects like EU Green Deal (European Commission, 2024), which aims to reduce emissions of greenhouse gas to 0% by 2050, are further strengthening the image of Europe as global leader and foster European firms and people positive attitude towards sustainability.

Furthermore, according to KPGM report (2021), the adoption of the Corporate Sustainability Reporting Directive (CSRD) made by EU commission in line with the European Green Deal, will cover around 49,000 of listed and non-listed European entities, which contribute to around 75% of total EU companies turnover by 2027. This Directive will oblige companies not only to report on ESG issues, but also set targets, select a baseline and report progress towards these targets (KPGM, 2021). Alongside with rating regulations, that will be described in paragraph 1.5, CSRD marks the ambition and perspective of Europe's attitude towards ESG and sustainability overall.

On the other hand, regulations come with challenges that are not always willingly accepted and are not easy to overcome. A survey of CFA Institute (2021) members, on current ESG topics revealed that the majority of global investors believe ESG integration should not be imposed by regulators but rather guided by the preferences of clients and their investment managers. Additionally, they emphasized the importance of prioritizing financial materiality when considering the incorporation of ESG factors into investment decisions. Furthermore, survey of

CFA Institute (2024) members in the EU examined the perceived benefits and challenges of EU sustainable finance legislation, aiming to identify solutions for effectively addressing ESG risks and issues. The findings suggest several things: EU legislative efforts on sustainable finance indeed is one of the key drivers pushing asset managers to incorporate ESG factors into their strategies, however, the lack of reliable ESG data, substantial costs for the collection of such data, the need for personnel training on ESG incorporation, excessive information and intricacies of sustainability information, terminology, complexity of disclosure information and possible greenwashing represent challenges that are needed to overcome (CFA Institute, 2024).

In conclusion, Europe has established itself as a global leader in ESG initiatives. Vast projects and constantly issued new legislations demonstrate a commitment to sustainability and the region's leadership in ESG integration. However, significant challenges remain, including the complexity of regulations, data reliability, and resource-intensive compliance requirements. One of the issues is discussed in paragraph 1.5.

1.5. ESG measurement methodologies and challenges

This paragraph will describe the existing ESG measurement methodologies and challenges related to them.

There exists multiple rating agencies, that calculate ESG scores of entities. Their methodologies are rather different and although ESG scoring is already a recognized and acknowledged worldwide phenomenon, the standardization of it is only yet to come. The total ESG score consists of several individual factors (as was shown in Table 1), and rating agencies calculate the scores and weigh those factors differently. Therefore, according to Dimson et al. (2020), companies with a high score from one rater often receive a middling or low score from another rater. Kotsantonis & Serafeim (2019), pinpoint four main reasons for such discrepancies: inconsistency in how companies measure relevant data and report it; how data providers define companies peer groups; differences in the imputation methods to deal with vast data gaps for different ESG metrics; larger reported data of a company results in increasing disagreements rather than clarity.

According to Krueger et al. (2024), to address the gap between investors demand for ESG information and the limited supply provided by firms, several countries, as well as international institutions, have implemented mandatory ESG disclosure regulations. These regulations force companies to disclose high-quality ESG information, either as part of traditional financial reports or through dedicated standalone ESG reports (Krueger et al., 2024). International Financial Reporting Standards (IFRS) foundation has created International Sustainability Standards Board (ISSB), along with Sustainability Accounting Standards Board (SASB), which created standards

with main purpose being to enable companies to disclose decision-useful and comparable information and consolidate the voluntary sustainability-reporting initiatives (IFRS Foundation, 2023). IFRS have also taken over Task Force on Climate-Related Financial Disclosures activities which was widely accepted in Europe and which mainly monitored the disclosures of companies climate-related issues (TCFD, 2023). Furthermore, Global reporting initiative (GRI) standards were launched in late 20th century and were developed constantly until now, to standardize the sustainability reports of worldwide entities (Global Reporting Initiative, 2024). Moreover, the European Parliament in 2024 have adopted a proposal for regulations on the transparency and integrity of ESG rating activities (European Parliament, 2024). These legislations encourage rating agencies to seek for quality and reliability of ESG ratings, transparency of disclosed information, financial institutions information disclosure transparency, weighting transparency, availability and acceptance of supervisory actions from established supervisor with possible penalties if breaches would be found. Finally, in 2022 European Parliament and Council have issued a directive which also aims for reliable and comparable non-financial data disclosed by companies and will come into effect in 2025 (European Parliament and the Council, 2022).

Despite the existing discrepancies in ESG rating methodologies among rating agencies, any interested party, whether it be investor, portfolio manager, regulatory institution etc., must choose one or few, to be able to perform needed analysis. According to European Securities and Markets Authority, there are somewhere between 125 to 150 rating providers, among them 10 to 15 major providers (ESMA, 2021). Among the latter most popular are: MSCI, Sustainalytics, Bloomberg, FTSE Russell, ISS, Refinitiv, S&P Global. Due to the practical reasons, availability and large enough scope of the provider, Bloomberg ESG ratings was chosen for this Master Thesis.

Bloomberg ESG scores measure a company's management of financially material ESG issues (Bloomberg, 2023). The scoring framework assigns ratings on a scale from 0 to 10, with higher values meaning better management of material ESG issues. To ensure consistency, Bloomberg analysts categorize companies into peer groups based on business models, revenue structures, and exposure to similar ESG risks. These groups are defined using the Bloomberg Environmental and Social Industry Classification System (BECS), ensuring that companies within each group can be compared reliably. The overall ESG score reflects the cumulative performance in the Environmental (E), Social (S), and Governance (G) dimensions, with the evaluation conducted by Bloomberg's assessment of ESG financial materiality. For each peer group, the weights assigned to the E, S, and G pillars are determined using Bloomberg Intelligence's fundamental research (Bloomberg, 2023).

The financial relevance of each pillar is ranked on a 1-5 scale, where a rank of 1 denotes the highest materiality. Governance is consistently ranked at 3 for all peer groups, because

governance-related drivers often depend more on regional and company-specific factors than on industry characteristics. These rankings are subsequently converted into percentage weights. The aggregated ESG score is derived using a weighted generalized mean (or power/p-mean) approach. Bloomberg's ESG ratings encompass approximately 15,000 firms, representing 90% of global market capitalization across over 100 countries. ESG data is typically collected on an annual basis, with variations in reporting schedules depending on individual companies. Bloomberg ESG scores are derived from publicly available company-reported data, excluding estimates or analyst-derived inputs. Prior to publication, data undergoes standardization processes to enhance comparability across companies, sectors, regions, and time periods. This methodology ensures the reliability and consistency of the ESG scores across diverse reporting contexts (Bloomberg, 2023).

The theoretical framework established in the first part of the thesis provides an understanding of ESG concepts, their components, impacts on firm financial perforamance as well as role of ESG initiatives in Europe and ESG measurement methodologies. These insights provide the basis for the empirical research methodology selection, which is discussed in the second part of the thesis and include hypotheses, data collection process, analytical tools used to assess the impact of ESG on firm value in developed European economies.

2. METHODOLOGY FOR EVALUATING ESG IMPACT ON FIRM'S VALUE IN EUROPEAN COUNTRIES

In this section, methods for investigating the impact of ESG scores on firm value, focusing on European developed economies companies will be presented including the raised hypotheses and created models for investigation. This chapter will also detail the selection of the sample, data sources and variables of interest, including ESG scores and firm valuation metrics. Finally, it will describe the steps taken to ensure the robustness of the results, such as controlling for potential confounding factors.

2.1 Hypotheses of the research

As was described in the theoretical part of the thesis above, most of the studies agree on positive relationship between ESG score and firm's financial performance (Friede et al., 2015; Whelan et al., 2021). This is grounded with better management of risks, attraction of investors, long-term financial return. However, we have seen that there are country- or region-specific studies which suggest that ESG scores might negatively impact firm value, especially in the short-term, potentially due to the costs associated with implemented ESG practices, not well developed ESG disclosure system, negative reaction from shareholders, other opportunity costs (Duque-Grisales & Aguilera-Caracuel, 2021; Nareswari et al., 2023; Rao et al., 2023). Due to this contrast of opinions a first hypothesis is raised in order to test whether the benefits of strong ESG performance outweigh the downsides:

H1: ESG aggregate score and separate E, S, G scores are positively associated with firm value.

$H1_a$: ESG aggregate score and separate E, S, G scores are negatively associated with firm value.

The second hypothesis focuses on the role of the environmental component of ESG, particularly in industries that are environmentally sensitive. Some authors demonstrated, that separate pillars of ESG may not have a positive or significant impact on firm value, even if the overall ESG score is positively and significantly associated with firm value (Alareeni & Hamdan, 2020; Velte, 2017; Ahmad et al., 2021; Miralles-Quiros et al., 2018). Also, Miralles-Quiros et al.,

2018; Naeem et al., 2022; Yoon et al., 2018 show, that the market negatively and significantly values the environmental practices carried out by companies related to environmentally sensitive industries and in contrast, the market positively and significantly values the social and corporate governance practices carried out by the companies belonging to these sensitive industries. However, these results from named researches come from the developing economies of the world. Regarding this information, another hypothesis is constructed, taking into account developed economies, i.e. most of the European economies.

H2: The environmental pillar score is more positively associated with the firm value in environmentally-sensitive industries than social or governance pillar scores.

$H2_a$: The environmental pillar score is more negatively associated with the firm value in environmentally-sensitive industries than social or governance pillar scores.

2.2 Variables and firm value models with ESG elements

The literature, which was discussed above in part 1, has described many indicators for measuring the financial performance of a company, among them being the most popular – ROA, ROE and Tobin's Q. Tobin's Q is distinguished as the main indicator when measuring firm's value and was used by most of the authors as a dependent variable (Fatemi et al., 2018; Naemm et al., 2021; Giannopoulos et al., 2022; Velte, 2017; Miralles-Quirós 2019, etc.).

Tobin's Q is calculated as the ratio of a firm's market value to the replacement cost of its assets. It has become a common practice in the finance and accounting literature to measure the ratio by comparing the market value of the firm's equity and liabilities with its corresponding book values, as the replacement values of a company's assets are hard to evaluate (Velte, 2017). The q ratio has an advantage, that it includes not only accounting-based measures, but also market-based, which can then include the value of intangible assets like organizational capital and reputational capital, can be less likely affected by managerial manipulation and can include the future prospects for the company looking not only into past financial performance (Ahmad et al., 2021; Lang & Stulz, 1994). However, one of the main disadvantage of using Tobin's Q ratio, is its propensity to be influenced by market fluctuations (especially short-term swings) and investor sentiment (Shepherd, 1986). Finally, Tobin's Q was chosen as the proxy for firm value and as the dependent variable in the regression models, however, some of the control variables needed to be included in the analysis to limit the risk of endogeneity and avoid biased estimates.

When choosing control variables for building the model, it is reasonable to follow an example of scholars that have already conducted similar analysis and were reviewed in part 1 of

the thesis. Among others, firm size and leverage were most often described and used when constructing regression models. (Fatemi et al., 2018; Abdi et al., 2022; Alareeni & Hamdan, 2020; Giannopoulos et al., 2022; Giese et al., 2019).

By including firm size as a control variable, researchers aim to ensure that any relationship observed between ESG scores and firm value is not impacted by the firm's size. This is important because larger firms usually tend to have higher market values, greater stability, and potentially more advanced ESG practices due to their resources. Controlling for firm size helps to more accurately identify whether ESG performance itself is contributing to firm value, rather than just the fact that the firm is large. Furthermore, leverage is one of the most popular control variable in similar studies as leverage includes indicators that can greatly affect firm value like financial (solvency) risk, cost of capital, capital structure etc.

Finally, incorporating ESG scores and separate pillars into the analysis as independent variables makes it possible to evaluate their impact on firm value. The first hypothesis requires to collect aggregate ESG and separate pillars scores, while the second hypothesis requires only separate pillars scores.

Table 3

Summary of variables

Dependent variables	**Description**
TQ – Tobin's Q	Equity Market Value + Liabilities Market Value / Equity Book Value + Liabilities Book Value. Bloomberg score
Independent variables	
ESG – ESG combined score	Bloomberg score
E – Environmental score	Bloomberg score
S – Social score	Bloomberg score
G – Governance score	Bloomberg score
Control variables	
TALN – Firm size	Natural logarithm of total assets
DTE – Leverage	Debt to equity ratio, expressed in decimal form

Compiled by author, based on the literature described in Table 2

For hypothesis 1, 6 models with aggregate ESG and separate pillars scores are constructed:

$$1)\quad TQ_{i,t} = \beta_0 + \beta_1 ESG_{i,t} + \beta_2 TALN_{i,t} + \beta_3 DTE_{i,t} + \varepsilon_{i,t}$$

$$2)\quad TQ_{i,t} = \beta_0 + \beta_1 ESG\_lag_{i,t} + \beta_2 TALN_{i,t} + \beta_3 DTE_{i,t} + \varepsilon_{i,t}$$

$$3)\quad TQ_{i,t} = \beta_0 + \beta_1 \Delta ESG\_lag_{i,t} + \beta_2 TALN_{i,t} + \beta_3 DTE_{i,t} + \varepsilon_{i,t}$$

$$4)\quad TQ_{i,t} = \beta_0 + \beta_1 E_{i,t} + \beta_2 S_{i,t} + \beta_3 G_{i,t} + \beta_4 TALN_{i,t} + \beta_5 DTE_{i,t} + \varepsilon_{i,t}$$

$$5)\quad TQ_{i,t} = \beta_0 + \beta_1 E\_lag_{i,t} + \beta_2 S\_lag_{i,t} + \beta_3 G\_lag_{i,t} + \beta_4 TALN_{i,t} + \beta_5 DTE_{i,t} + \varepsilon_{i,t}$$

$$6)\quad TQ_{i,t} = \beta_0 + \beta_1 \Delta E\_lag_{i,t} + \beta_2 \Delta S\_lag_{i,t} + \beta_3 \Delta G\_lag_{i,t} + \beta_4 TALN_{i,t} + \beta_5 DTE_{i,t} + \varepsilon_{i,t}$$

$TQ_{i,t}$ – is a dependent variable Tobin's Q for company i, at a year t.
$ESG_{i,t}$ – is an independent variable ESG score for company i, at a year t.
$ESG\_lag_{i,t}$ – is an independent variable, lagged ESG score for company i, at a year t
$\Delta ESG\_lag_{i,t}$ – is an independent variable, difference between $ESG_{i,t}$ *and* $ESG\_lag_{i,t}$
E – is an independent variable Environmental score for company i, at a year t.
S – is an independent variable Social score for company i, at a year t.
G – is an independent variable Governance score for company i, at a year t.
$TALN$ – is a control variable, proxy for company size, natural logarithm of total assets
DTE – is a control variable, debt to equity ratio
β – parameter
$\varepsilon_{i,t}$ – is the disturbance for company i, at a year t.

For hypothesis 2, three models with separate pillars scores is constructed:

$$7)\quad TQ_{i,t} = \beta_0 + \beta_1 E_{i,t} + \beta_2 S_{i,t} + \beta_3 G_{i,t} + \beta_4 TALN_{i,t} + \beta_5 DTE_{i,t} + \varepsilon_{i,t}$$

$$8)\quad TQ_{i,t} = \beta_0 + \beta_1 E\_lag_{i,t} + \beta_2 S\_lag_{i,t} + \beta_3 G\_lag_{i,t} + \beta_4 TALN_{i,t} + \beta_5 DTE_{i,t} + \varepsilon_{i,t}$$

$$9)\quad TQ_{i,t} = \beta_0 + \beta_1 \Delta E\_lag_{i,t} + \beta_2 \Delta S\_lag_{i,t} + \beta_3 \Delta G\_lag_{i,t} + \beta_4 TALN_{i,t} + \beta_5 DTE_{i,t} + \varepsilon_{i,t}$$

In addition to models using contemporaneous data, models incorporating one-year lagged values of ESG and E,S,G scores were created to capture potential delayed effects of those scores impact on firm value as suggested by many scholars discussed in the Part 1 of the Thesis. Moreover, models with ΔESG and ΔE, ΔS, ΔG scores were created. This transformation, also called first difference method (Wooldridge, 2010), calculates the difference between a company's current scores and its previous period's score, resulting in the display of the effect of changes in ESG performance rather than the level itself, which could potentially lead to different estimation results than with simply lagged variables.

2.3 Data selection

Initially, all available publicly listed companies of developed economies in Europe from Bloomberg database were selected which included 13 482 companies. Developed economies in Europe were selected according to United Nations report (United Nations, 2024), leaving with 31 countries observed namely: Austria, Belgium, Bulgaria, Cyprus, Croatia, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Italy, Ireland, Latvia,

Lithuania, Luxembourg, Malta, Netherlands, Norway, Spain, Sweden, Poland, Portugal, Romania, Slovakia, Slovenia, Switzerland, United Kingdom. Then, companies that have ESG scores calculated from year 2015 to 2022 are filtered, leaving primary resarch data with 561 companies from 24 countries and 4,488 firm-year observations.

For the financial data, Tobin's Q, total assets and debt to equity ratios for years 2015 to 2022 were retrieved from Bloomberg database for the selected companies. For the simplicity of the research, the same observation amount for every firm was left while missing values at a particular period were excluded from the data list to have a balanced panel data versus unbalanced panel data (Wooldridge, 2013).

As some of the previous researches were conducted including in the dataset only one or two sector data (Makridou et al., 2024; Kalia & Aggarwal, 2023; Miralles-Quiros et al., 2019; Zhao et al., 2018), additional side-analysis for the first hypothesis was conducted by segmenting the primary dataset companies into seven sectors. The segmentation was performed partially based on Bloomberg Industry Classification, level 1 (Bloomberg, 2020). However, Real Estate sector was separated additionally as it is exclusive for its unique characteristics like capital intensivity, exposure to environmental issues, regulatory frameworks, market dynamics. Finally, 7 sector groups include: Consumer Discretionary, Financials, Energy, Health Care, Industrials merged with Materials, Technology merged with Communications, and Real Estate. However, 24 companies were excluded as they did not belong to any of these sectors and were not unified enough to include as another sector group, therefore leaving with 537 companies out of 561.

To test the second hypothesis, exclusion of non-environmentally-sensitive sectors in the primary data was conducted. According to Naeem et al., 2022; Emma & Jennifer, 2021; Papa et al., 2022; Radhouane et al., 2020 corporations in the energy, mining, metals, construction, transportation, chemical, pulp and paper, utility industries could be classified as environmentally-sensitive owing to their production and business operations and environmental impact. Having these sectors filtered, 210 companies were left with 1,680 firm-year observations. The table below summarizes gathered and used data.

Table 4

Summary of data selection

Sample Period	2015 - 2022
Number of companies	561
Number of countries	24
Total firm-year observations	4,488
Number of Consumer Discretionary companies	74
Number of Financials companies	94
Number of Energy companies	75

Continuation of Table 4

Number of Health Care companies	29
Number of Industrials companies	174
Number of Technology companies	39
Number of Real Estate companies	52
Number of environmentally-sensitive industries companies	210

Compiled by author, based on data gathered from Bloomberg database

2.4 Statistical methods

In this study, following examples of some scholars mentioned in part 1 (Giannopoulos et al., 2022; Naeem et al, 2022; Alareeni & Hamdan, 2020 among others), Ordinary Least Squares (OLS) regression with panel data analysis was used. OLS regression is a fundamental econometric technique used to estimate the linear relationships between the dependent variable (firm value) and one or more independent variables (ESG scores and control variables). Panel data, which consists of multiple observations over time for the same firms, allows for the examination of both cross-sectional and temporal variations, providing a richer dataset compared to cross-sectional or time-series data alone (Baltagi, 2008). Then, to control for unobserved heterogeneity that might influence the variables, fixed or random effects model must be chosen (Wooldridge, 2013).

The fixed-effects model is an econometric approach used in panel data analysis to control for unobserved, time-invariant characteristics of individual entities (such as firms or individuals) that may influence the dependent variable. This model assumes that these individual-specific characteristics are correlated with the independent variables, and it accounts for them by allowing each entity to have its own intercept. This is done by demeaning the data, effectively removing the effects of these unobserved characteristics. As a result, the fixed-effects model focuses on within-entity variation over time, making it particularly useful when the primary interest is in understanding how changes within an entity (e.g., a firm's ESG score) affect the outcome variable (e.g., firm value) (Wooldridge, 2010).

A major limitation of fixed effects model is that it does not permit estimation of time-invariant regressors (Chelawat & Trivedi, 2016). Random effects model allows estimation of effects for time invariant variables and assumes that the unobserved individual-specific effect is a random variable which is uncorrelated with, and distributed independently of the regressors (Chelawat & Trivedi, 2016).

In regression analysis, R-squared measure was obtained to measure the proportion of the variance in the dependent variable that is explained by the independent variables in the model. According to this measure, the fitness of the model was evaluated. While modest proportions of

variance might be obtained by suggested models, still, the significant relationships could be found between variables.

The obtained regression coefficients represent the strength and direction of relationships between variables, with their significance tested through t-tests and confidence intervals. According to Wooldridge (2010), the most popular choice of significance level is 5%, therefore it will be used in this research as well.

2.5 Robustness tests

OLS regression relies on several assumptions to ensure that estimates are unbiased and consistent. Below are the main Gauss-Markov OLS assumptions (Wooldridge, 2010):

- Linearity of the relationship between independent variables and the dependent variable, meaning the effect of a one-unit change in any independent variable on the dependent variable is constant.
- The data is collected through random sampling, meaning each observation is independently drawn from the population. This ensures that each sample observation is representative of the population and allows generalization of the results.
- Sample variation in the explanatory variable, meaning that independent variables must vary across observations.
- Zero conditional mean, meaning that the error term mean has an expected value of zero given any value of the explanatory variable.
- Homoskedasticity, meaning that the error term has the same variance given any value of the explanatory variable
- Exogeneity of explanatory variables, meaning that they are uncorrelated with the error term.
- No multicollinearity, meaning that there should be no exact linear relationship between two or more explanatory variables.
- No autocorrelation, meaning that error terms should be uncorrelated across observations

To ensure validity and credibility of findings on the impact of ESG and E,S,G scores on firm value, a series of robustness tests were conducted.

First, a Pearson correlation matrix was generated to address multicollinearity issues among explanatory variables, as multicollinearity can distort coefficient estimates and inflate standard errors (Gujarati & Porter, 2009).

Model's validity is tested using the Hausman test, which assesses whether the random-effects model's assumptions fits better or if the fixed-effects model is more appropriate (Chelawat & Trivedi, 2016).

To check for heteroskedasticity, the Breusch-Pagan test was employed and to examine autocorrelation, Durbin-Watson test was performed (Wooldridge, 2010). Some of the models have presented heteroskedasticity and autocorrelation, therefore, as suggested by Wooldridge (2010), a correction needs to be conducted to obtain valid standard errors and test statistics. In this research an extension of White's robust standard errors test is used, namely Arellano's method, which adapts White's principle for panel data by additionally accounting for the potential autocorrelation that can occur within individual panels over time (White, 1980; Arellano, 1987).

3. EMPIRICAL RESEARCH OF ESG SCORE IMPACT ON FIRM VALUE

The third part of the thesis, presents an analysis of the study's findings on the relationship between ESG scores and firm value. It also includes a comparison of the results with theoretical frameworks and studies outlined in Part 1. All tests and regressions were conducted with program R.

3.1 Descriptive statistics and correlation matrix

In Table 5, descriptive statistics for the data for the first hypothesis are represented, indicating the minimum, maximum, mean, median, standard deviation and kurtosis values of the selected variables.

Table 5

Descriptive statistics (1)

	Number of observations	*Minimum*	*Maximum*	*Mean*	*Median*	*Standard deviation*	*Skewness*	*Kurtosis*
TQ	4488	0.2963	19.3461	1.65	1.2345	1.2612	4.4657	31.1418
ESG	4488	0.47	8.53	3.62	3.61	1.2873	0.151	-0.4472
E	4488	0	10	3.06	2.98	2.1627	0.3006	-0.7394
S	4488	0	9.59	2.91	2.58	1.7197	0.7105	-0.0499
G	4488	1.9	8.96	5.91	5.94	1.2973	-0.1725	-0.4651
TALN	4488	17.3443	30.9471	23.37	23.0643	1.9637	0.5057	-0.137
DTE	4488	0	87.0821	1.17	0.6585	2.1548	17.4191	591.5428

The descriptive statistics for the variables provide insights into the distribution, variability of those elements.

Tobin's Q (TQ): With a mean of 1.65 and a median of 1.2345, Tobin's Q has a high degree of right-skewness (4.4657) and a very high kurtosis (31.1418), suggesting that while most values are clustered around the mean, there are extreme outliers pushing the distribution tail towards higher values. The maximum value of 19.3461 reflects some firms with significantly higher market valuations relative to book value.

Overall ESG Score (ESG): The ESG scores have a mean of 3.62 and a median of 3.61, indicating a fairly symmetric distribution around the mean. The skewness (0.151) is low, and the slightly negative kurtosis (-0.4472) suggests a relatively flat, or platykurtic distribution compared to a normal curve.

Environmental Score (E): The mean score of 3.06 and a median close to it (2.98) indicate general symmetry. With a slight positive skew (0.3006) and a kurtosis of -0.7394, the Environmental score distribution is approximately normal, though somewhat flatter than the normal distribution. The maximum score of 10 indicates some companies have strong environmental practices, while the minimum of 0 indicates that others may have very low or no focus on environmental aspects.

Social Score (S): The Social component has a mean of 2.91 and a median of 2.58, indicating a right-skewed distribution (0.7105) with a slight excess in higher values. The range extends to a maximum of 9.59, showing that some companies emphasize social factors, although skewness and a low kurtosis (-0.0499) indicate moderate variability.

Governance Score (G): Governance scores are the highest on average among ESG components, with a mean of 5.91 and median of 5.94. The slight left skew (-0.1725) suggests a mild concentration of values on the higher end, implying that firms may prioritize governance more than environmental or social factors. Kurtosis is also negative (-0.4651), indicating a relatively flat distribution.

Total Assets (Log-Transformed, TALN): TALN, the log-transformed total assets, has a mean of 23.37 with a slight positive skew (0.5057) and negative kurtosis (-0.137), which indicates that while the data are roughly symmetric, there may be a few firms with larger asset sizes. The log transformation has likely reduced skewness, making the distribution more normal and thus suitable for regression analysis as a control variable.

Debt to Equity Ratio (DTE): The Debt to Equity Ratio has the most extreme skewness (17.4191) and kurtosis (591.5428), indicating a highly non-normal distribution with numerous extreme values. The mean DTE of 1.17 and median of 0.6585 show that most firms have relatively low leverage, but a few firms with very high debt relative to equity drive up the maximum value (87.0821).

Secondly, in Table 6, a correlation matrix of the variables for the first hypothesis is presented. Correlation coefficients quantify the degree to which two variables are linearly related, with values ranging from -1 to +1. A coefficient of +1 indicates a perfect positive linear relationship, where increases in one variable are associated with proportional increases in the other. Conversely, a coefficient of -1 shows a perfect negative linear relationship, where increases in one variable correspond to proportional decreases in the other. A coefficient close to 0 suggests little to no linear relationship (Asuero et al., 2007).

Table 6

Correlation matrix (1)

	TQ	*ESG*	*E*	*S*	*G*	*TALN*	*DTE*
TQ	1						
ESG	- .0357	1					
E	.0326	.7784	1				
S	- .1141	.704	.2655	1			
G	- .0383	.4694	.2411	.1426	1		
TALN	- .2434	.1228	.0749	.1066	.0835	1	
DTE	- .1246	- .0296	- .0697	.0048	.0349	.2463	1

The correlation matrix reveals the linear relationships between the selected variables. Tobin's Q shows mild negative correlations with ESG, S, G scores, and slightly stronger negative correlation with DTE (-0.1246), which could suggest that higher leverage could reduce firm value, and even stronger with TALN (-0.2434), indicating, that larger firms may have lower market-to-book ratios.

ESG aggregate score naturally has strong positive relationships with separate E,S,G scores, as the former is aggregate of the latter. Therefore, aggregate score and separate scores are not used in any same model for regression to avoid multicollinearity. Also, ESG moderately positively correlates with TALN (0.1228), which may indicate that the bigger the firm, the greater ESG score is apparent.

Separate pillar scores more or less moderately positively correlate between each other and with TALN, which is consistent with correlation between ESG and TALN, and present little relationship with DTE.

TALN quite strongly correlates with DTE suggesting that the bigger the firm, the larger is its debt to equity ratio.

Table 7 and Table 8 show descriptive statistics and correlation matrix for the data for Hypothesis 2.

Table 7

Descriptive statistics (2)

	Number of observations	*Minimum*	*Maximum*	*Mean*	*Median*	*Standard deviation*	*Skewness*	*Kurtosis*
TQ	1680	0.5135	13.2911	1.6119	1.2721	1.1861	4.4692	27.842
E	1680	0	9.58	3.28	3.24	1.8664	0.2143	-0.3464
S	1680	0	9.59	3.04	2.74	1.6232	0.6882	0.1102
G	1680	2.08	8.91	5.69	5.68	1.2659	-0.0451	-0.333
TALN	1680	18.0139	29.5035	22.936	22.745	1.7393	0.3881	0.1097
DTE	1680	0.0005	35.0811	0.7988	0.5666	1.3867	14.9487	308.50

Table 8

Correlation matrix (2)

	TQ	*E*	*S*	*G*	*TALN*	*DTE*
TQ	1					
E	.0005	1				
S	- .0541	.3543	1			
G	.0206	.2894	.1749	1		
TALN	- .2099	.4699	.2273	.079	1	
DTE	- .112	.0447	.0313	.0351	.0762	1

Both tables 7 and 8 show generally similar patterns as tables 5 and 6, however, it is worth additionally noting, that Environmental component shows moderately strong positive correlation with TALN (0.4699), as well as Social with TALN (0.2273), suggesting that bigger firms of environmentally-sensitive industries tend to have higher E and S scores. It may also be suggested that as these are only environmentally-sensitive industry companies, bigger firms have more impact on environment, therefore they need to contribute to environmental issue more. The results also suggest that E is moderately correlated with S (0.3543), which can mean that firms with higher E scores tend to have higher S scores as well.

3.2 Robustness tests

All created models validity is tested using the Hausman test. If the p-value of the test is below 0.05, the null hypothesis is rejected, indicating that the random effects model is inconsistent, and the fixed effects model should be preferred. Conversely, if the p-value is above 0.05, the random effects model is appropriate, as it assumes no correlation between unobserved heterogeneity and the independent variables. However, all created models show p-value of the test below 0.05, indicating that the fixed-effect model should be used for all regressions.

Furthermore, all models were examined with the Breusch-Pagan test, to address heteroskedasticity. A small p-value of the test suggests the presence of heteroskedasticity in model's residuals. Models from 1 to 9 have all showed the presence of heteroskedasticity. Also, Durbin-Watson test was used, to address autocorrelation in the residuals. The test statistic (DW) which deviates significantly from 2, combined with a very low p-value, suggests strong evidence of autocorrelation in the residuals. Models from 1 to 9 have all showed the presence of autocorrelation. To address the issues of heteroskedasticity and autocorrelation, the Arellano's robust standard errors test was used, which ensured that the standard errors are correctly estimated even if primarily OLS assumptions were violated, making hypothesis testing more reliable.

3.3 Regression analyses

Table 9 shows the panel regression results obtained when testing Hypothesis 1.

Table 9

Panel data regression results (1)

	Model 1	*Model 2*	*Model 3*	*Model 4*	*Model 5*	*Model 6*
ESG	.0075					
ESG_lag		- .052 *				
Δ*ESG_lag*			.117 *			
E				.00015		
E_lag					- .03 *	
Δ*E_lag*						.054 *
S				- .0052		
S_lag					- .023	
Δ*S_lag*						.0276 *
G				.0063		
G_lag					.005	
Δ*G_lag*						.0395 *
TALN	- .068	.014	- .051	- .056	.017	- .051
DTE	- .003	- .0015	- .002	- .0031	- .0014	- .0021
Adjusted R-squared	- .142	- .162	- .154	- .143	- .161	- .156
F-statistic	1.187	5.228 *	12.99 *	0.72	4.17 *	7.01 *

Note: '' sign shows p value < 0.05.*

The first regression results indicate mixed results of ESG and E,S,G impact on firm value. Models 1 and 4, which incorporate contemporaneous data of variables, show results with small positive effects on the dependent variable, except S in model 4 with small negative effect, however the values are very low and they are not statistically significant according to p-value. Control variables TALN and DTE have small negative effects in both models, though not statistically significant as well. Moreover, models 1 and 4 do not show significant F-statistics suggesting that they are less reliable in explaining the dependent variable.

Models 2 and 5, which contain one-year lagged ESG and E,S,G variables, show somewhat more significant and negative impact on firm value, except for G_lag in model 5. In model 2, ESG_lag has statistically significant slight negative impact on TQ (-0.052), also in model 5, E_lag has statistically significant slight negative impact on TQ (-0.03), while S_lag and G_lag impact show no statistical significance. Control variable TALN has somewhat positive effect in both

models and DTE very low negative effect, however both being statistically insignificant in both models. Statistically significant F-statistics show better fit of the models 2 and 5 than 1 and 4.

Models 3 and 6, which contain the ΔESG_lag, ΔE_lag, ΔS_lag, ΔG_lag variables, show even more statistically significant and positive impact on the dependent variable. In model 3, ΔESG_lag has statistically significant positive impact on TQ (+ 0.117). Also, in model 6, all three pillar variables have statistically significant and positive impact on the dependent variable, ΔE_lag having the highest impact (+ 0.054). As in other models, TALN and DTE variables do not have statistical significance when measuring impact on firm value. According to F-statistics score and significance, models 3 and 6 are best fit across all six models.

The first regression, which is conducted to test first hypothesis, can not fully approve or reject the hypothesis. The findings suggest mixed relationships between ESG scores and firm value. While contemporaneous scores do not show statistically significant impact, the changes in ESG scores (ΔESG_lag, ΔE_lag, ΔS_lag, ΔG_lag) demonstrate a significant positive association with firm value. This suggests that investors value improvements in ESG performance rather than static levels of ESG. In other words it shows, that not the score itself is more important, but rather the fact that it improved, compared to the previous period. On the other hand, lagged ESG scores, most significantly ESG_lag and E_lag, show negative effects, indicating that past performance of ESG may have diminishing effect for firm value, possibly due to costs associated with ESG initiatives. These results align with theoretical perspectives that argue for both positive and negative effects of ESG on firm value. However, the results do not entirely justify the selection of the data of developed economies of Europe, because by opinion of most of scholars, there exists mostly positive relationship between ESG and firm value in developed economies. On the other hand the results do not deny the common findings, that ESG scores impact may be more evident in the long term, and short-term consequences may be associated with negative score impact.

Sectoral side-analysis overview

As mentioned in methodological part of the thesis, the dataset was additionally segmented into 7 sectors. Understanding, that the impact of ESG scores on firm value can vary significantly across industries, sectoral analysis provides deeper insights into ESG impact on firm value. While the initial analysis investigated the aggregate and separate pillar ESG scores, the sectoral analysis focuses only on the aggregate ESG score to identify broader patterns and trends within each sector and to simplify this side-analysis.

Sectoral analysis was conducted in the same way as the first regression – with contemporaneous data, one-year lagged ESG and ΔESG_lag models. Overall, most of the results

show no significant relationship between three variants of ESG variables and dependent variable. Estimate coefficients of ESG vary between -0.07 and +0.09 in contemporaneous data (mixed), -0.15 and + 0.01 of one-year lagged ESG (mainly negative) and +0.02 and +0.33 of ΔESG_lag (positive). However, statistically significant (p value < 0.05) relationships were only in 4 cases: Real-estate sector with contemporaneous data (- 0.07), real-estate sector with one-year lagged data (- 0.124), Consumer Discretionary sector with ΔESG_lag (+ 0.164) and Industrials sector with ΔESG_lag (+ 0.152).

Control variable TALN coefficients vary between -0.19 and +0.21 in contemporaneous data (mixed), - 0.11 and + 0.27 with one-year lagged ESG (mixed) and -0.32 and +0.09 with ΔESG_lag (mainly negative). Only with real-estate sector with one-year lagged ESG data, TALN impact on TQ is statistically significant (+ 0.27).

Control variable DTE coefficients vary between -0.03 and +0.06 in contemporaneous data (mixed), - 0.03 and + 0.04 with one-year lagged ESG (mixed) and -0.02 and +0.04 with ΔESG_lag (mixed), overall showing negligible and insignificant impacts. P value < 0.05 exists in real-estate sector with contemporaneous data (- 0.03) and real-estate sector with one-year lagged data (-0.026), showing slight negative impact of higher debt levels to firm value.

In conclusion, sectoral analysis provide with some minor additional information about ESG impact on firm value. Reliable evidence derives from Real-estate sector where the ESG score impact on TQ is negative, and Consumer Discretionary along with Industrials sector, where some positive impact on TQ of the positive change in ESG score is present. Although there exists moderately high positive coefficients of ΔESG_lag impact on TQ (+ 0.33 in Health Care, + 0.19 on Technology sector), these, according to high p values, are not considered statistically significant, therefore, less reliable. So it can be stated only with caution that results of ESG impact on firm value are mixed, because the most reliable evidence show both positive and negative results.

To continue with the Hypothesis 2, Table 10 was created to show the panel regression results obtained when testing Hypothesis 2.

Table 10

Panel data regression results (2)

	Model 7	*Model 8*	*Model 9*
E	.0261		
E_lag		- .0014	
Δ*E_lag*			.067 *
S	- .0023		
S_lag		- .004	

ΔS_lag			.0014
G	- .0146		
G_lag		- .032	
ΔG_lag			.068 *
TALN	- .0426	.048	- .009
DTE	- .0116 *	- .001	- .01 *
Adjusted	- .142	- .165	- .151
R-squared			
F-statistic	1.132	1.157	4.296 *

Note: '' sign shows p value < 0.05.*

Second regression shows somewhat similar pattern of results as in first regression, however there are several different things worth noting.

In model 7, which incorporates contemporaneous data, the coefficients are mostly negative with exception of Environmental pillar score. Also, only variable DTE has statistical significance, as well as F-statistic is lowest and with low statistical significance, therefore it can be said, that the model itself is not entirely reliable when estimating impact on dependent variable.

Similarly, in model 8, which incorporates lagged E,S,G data all coefficients are relatively low and negative, except TALN, and statistically insignificant. Low and insignificant F-statistic also questions the fitness of the model for reliable impact estimates.

Finally, model 9 shows the most statistically significant coefficients. ΔE_lag and ΔG_lag present a positive and significant impact, 0.067 and 0.068 respectively, on the other hand, DTE has small negative but significant impact (-0.01). Both ΔS_lag and TALN have very low impact, the former being positive, the latter negative, however both statistically insignificant. According to F-statistics score and significance, model 9 is best fit across all three models.

The second regression results can partially approve the second hypothesis. While contemporaneous and one-year lagged scores do not show statistically significant impact, the changes in E and G scores (ΔE_lag, ΔG_lag) demonstrate a significant positive association with firm value. Positive impact of changes in Environmental pillar suggests that firms in environmentally-sensitive industries benefit from improving their environmental practices. However, Governance pillar shows a similar significant positive effect. This finding implies that improvements in governance can be just as impactful as environmental improvements and equally more impactful and significant than Social pillar. Contrary to the fact, that, according to some scholars, environmental practices may have negative impact on firm value in environmentally-

sensitive industries (Miralles-Quiros et al., 2018; Naeem et al., 2022; Yoon et al., 2018), the results show positive and significant impact of ΔE_lag on TQ. On the other hand, again, as described in first regression results, the positive impact is mostly associated with a improvement of the scores, rather than the scores themselves.

To summarize the results of both regressions, represented in Table 9 and Table 10, Table 11 is drawn to visualize accepted and rejected hypotheses.

Table 11

Summarized results of hypotheses

Hypotheses		Conclusion
H1	ESG aggregate score and separate E, S, G scores are positively associated with firm value.	Partially supported
$H1_a$	ESG aggregate score and separate E, S, G scores are negatively associated with firm value.	Partially supported
H2	The environmental pillar score is more positively associated with the firm value in environmentally-sensitive industries than social or governance pillar scores.	Partially accepted
$H2_a$	The environmental pillar score is more negatively associated with the firm value in environmentally-sensitive industries than social or governance pillar scores.	Rejected

H1, which states a positive association between ESG scores, both aggregate and pillar, and firm value, is partially supported. While contemporaneous and one-year lagged ESG scores show mixed and often insignificant effects (models 1,2,4,5), improvements in ESG scores have a significant positive impact, which confirms the hypothesis (models 3,6). Also, sectoral side-analyses help to strenghten this position, as positive impacts on firm value were found as well. On the other hand, $H1_a$, which states a negative association between ESG scores and firm value is also partially supported by the significant negative impacts of lagged ESG and pillar scores in some models (2 and 5) and performed sectoral side-analyses.

Regarding H2, which states that the Environmental pillar score is more positively associated with firm value in environmentally sensitive industries than the Social or Governance pillars, is partially accepted. Improvements in the Environmental pillar demonstrate a significantly more positive association with firm value than in Social pillar. However, Governance improvements also show a significant positive impact, suggesting that governance practices are equally impactful in raising firm value in these sectors as environmental. $H2_a$ which states a more

negative association for the Environmental pillar than others, is rejected, as no evidence supports this position.

Overall, the results of the research align with scholar findings, discussed in part 1, to some extent, and may belong more to the group of researches, that have found mixed results of ESG aggregate and separate scores relationship with firm value.

CONCLUSIONS AND RECOMMENDATIONS

ESG relevance throughout years has developed significantly as societies, governments, and firms tend to contribute not only to profitable businesses development, but also at the same time to environmentally and socially responsible practices. In one of many ways, it also manifests itself in growing amount of studies done by scholars about ESG relationship with firms financial performance measures. This thesis also aims to contribute to the field by conducting a research and analyzing ESG score impact on firm value in developed European economies combining theoretical (literature review) and practical approaches. The research was made by applying panel data regression analyses for companies in developed European economies that have reported their ESG for the period of 2015-2022. The following conclusions are made after the performed research:

After analyzing the literature, it can be concluded that ESG has mixed impact on firms financial performance. Although majority of studies reflect a positive ESG impact (it is especially evident in meta-studies), however there still exists a considerable amount of research that find negative impact whether it be of ESG or separate pillars individually.

Moreover, analyzed literature provides with information, that negative impact of ESG is more evident in developing economies rather than developed. It may be due to several reasons including differing market expectations, unfavourable view of shareholders, lack of well-developed ESG reporting systems, weak capital markets, weak regulatory mechanisms.

Also, based on analyzed literature, positive ESG impact is more common in the long time period rather than a short time period. Companies, that are investing in ESG practices, have higher capital expenditures, short-term operational costs, due to many shifts in operations needed for adaptation for such practices. Usually, it results in lower short-term cash flows which in turn is a downside for shareholders who may be more interested in higher profits.

Finally, the analyzed literature provides with insight that ESG not only contributes to firm value or profitability measures, but also to various types of risks management, cost of capital reduction, increased reputation. ESG can help reducing systematic, regulatory, supply chain, product and technology, litigation risks. It can also increase firms reputation among communities and raise positive image in media. Lastly, many scholars argue that ESG has positive impact when dealing with severe global crises.

The conducted research results show, that ESG scores have a mixed impact on firm value measured by Tobin‘s Q. While contemporaneous and one-year lagged ESG scores show mixed

and often insignificant effects, improvements in ESG aggregate and separate scores have a significant positive impact on firm value.

The conducted sectoral side-analysis shows, that aggregate ESG score impact is significantly negative in real-estate sector with contemporaneous data, real-estate sector with one-year lagged data, and significantly positive in consumer discretionary and industrials sectors with ΔESG_lag. This side-analysis may prove that in some sectors ESG has a more pronounced effect than in others.

Finally, the conducted research shows, that while contemporaneous and one-year lagged scores do not show statistically significant impact, the changes in E and G scores (ΔE_lag, ΔG_lag) demonstrate a significant positive association with firm value in environmentally-sensitive industries. This finding contradicts the opinion of other scholars who argue that the increase in environmental pillar score negatively impacts firm value in environmentally-sensitive industries.

Recommendations

For policy makers: further develop and establish reliable, transparent and simple to follow regulations which would enforce ESG rating agencies to provide with clear ratings that do not contradict each other, and which would encourage firms to step into ESG initiatives without huge considerations about complicated regulatory schemes and potential high costs and inefficiencies. Furthermore, promotion of ESG awareness, long-term value, potential advantages and challenges, risks could be implemented to have more informed investors and businesses especially in those regions or sectors, that are neglecting ESG initiatives or have the worst results for including ESG initiatives in their agenda. Finally, governments could search for opportunities for incentivizing the pioneers of ESG not only through obligatory regulations but also subsidies, especially for those firms which are smaller and have bigger challenges to adapt ESG practices in their operations.

For investors: Firstly, prioritize firms that are not only reporting ESG issues, but also are improving their metrics as well as doing it consistently, because it may bring more value than the reporting itself. Secondly, investigate sector- or region-specific differences which might be substantial as ESG has not the same impact across all sectors or regions. Lastly, consider the long-term value creation of ESG initiatives rather than short-term, as those initiatives rarely positively impact short-term value of a firm.

For firms: aspire for clear communication and reporting about ESG initiatives conducted in a firm and use common indicators that are measuring those initiatives, so that those measures

are understandable and transparent. Also, address sector-specific ESG challenges and concentrate on those which bring most value on each sector – governance or environmental initiatives in environmentally-sensitive industries for example being more cost-effective than social initiatives. Finally, focus on consistent, measurable improvements in ESG scores, as improvements bring more value than the score itself.

Limitations of the Work

Limited access to data, especially of ESG scores in a time horizon and sample size sense, is a factor, that might have influenced the results of the research. Also, only one measure of firm value, Tobin's Q, was selected and included in the regression models, however it is possible to search for several other firm value indicators and test ESG impacts on them as well.

Directions for further research

This Thesis can be supplemented by future research by additionally increasing a sample size both in terms of time horizon and firm count. Also, relationships with other firm value measures could be tested. Moreover, impact of specific ESG components like carbon emissions or board compositions on firm value could be researched. Finally, further narrowing of data could be conducted in terms of taking into account only specific regions (Eastern Europe), or sectors like European Real-estate or similar.

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ESG VEIKSNIŲ POVEIKIS ĮMONĖS VERTEI EUROPOS ŠALIŲ PAVYZDŽIU

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SANTRAUKA LIETUVIŲ KALBA

41 puslapis, 11 lentelių, 84 literatūros nuorodos

Pagrindinis šio magistro darbo tikslas – nustatyti ESG balo įtaką įmonių vertei išsivysčiusių Europos ekonomikų pavyzdžiu

Magistro darbas susideda iš trijų pagrindinių dalių: literatūros analizės, tyrimo ir jo rezultatų, išvadų ir rekomendacijų.

Literatūros analizėje apžvelgiamas ESG konceptas, jo sudėtinės dalys. Apžvelgiami susiję moksliniai šaltiniai, kuriuose buvo tiriama ESG įtaka įmonės vertei ir kitiems finansiniams rodikliams, pristatomi kitų autorių gauti rezultatai. Taip pat supažindinama su kitomis naudomis bei iššūkiais susijusiais su ESG rodiklių tobulinimu ar viešinimu. Galiausiai apžvelgiami su ESG susiję klausimai ir problematika Europoje bei aprašoma, kokios yra reitingavimo agentūros, su kokiais didžiausiais iššūkiais susiduria įmonės ar investuotojai besirenkantys tokias agentūras.

Atlikus literatūros analizę, iškeltos hipotezės bei sudaryti modeliai skirti atlikti regresijos analizę siekiant apskaičiuoti ESG bendro bei atskirų E,S,G balų įtaką Tobin's Q įmonės vertės rodikliui, įtraukiant kontrolinius kintamuosius įmonės dydį bei svertą. Taip pat aprašyti duomenys, gauti iš Bloomberg platformos bei nurodyti statistiniai patikimumo testai tyrimo teisingumui užtikrinti.

Atliktas tyrimas atskleidė, jog ESG balai turi nevienareikšmišką įtaką įmonės vertės rodikliui. ESG įverčio padidėjimas turi teigiamą ir statistiškai reikšmingą įtaką įmonės vertei, kai tuo tarpu patys ESG balai dažniausiai turi neigiamą ir statistiškai nereikšmingą įtaką įmonės vertei tų pačių ir po vienerių metų matuojamiems įmonės finansiniams rodikliams.

Išvados ir rekomendacijos apibendrina pagrindinius rezultatus analizuojant literatūrą bei atliktą tyrimą. ESG balai turi nevienareikšmišką įtaką įmonės vertei, priklausomai nuo regiono, sektoriaus, laiko imties. Labiau teigiami rezultatai aptinkami išsivysčiusiose ekonomikose bei ilguoju laikotarpiu. Atlikto tyrimo rezultatai gali būti naudingi politikos formuotojams, investuotojams bei įmonėms, priimant sprendimus susijusius su investicijomis į ESG.