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Deciphering ESG Disagreement and Disclosure: Implications for Stock Performance

Unlocking the Effect of ESG Rating Disagreement on Stock Performance in Western Europe:
Exploring the Impact of Sustainable Disclosure

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The views stated in this thesis are those of the author and not necessarily those of the supervisor, second assessor, Erasmus School of Economics or Erasmus University Rotterdam.

Preface and Acknowledgements

Dear reader.

This thesis examines the relationship between Environmental, Social, and Governance (ESG) ratings and stock performance. With growing interest in sustainability and corporate responsibility, understanding how ESG factors influence financial outcomes is becoming increasingly important for investors, policymakers, and academics. This study contributes to the growing body of literature by examining the impact of ESG ratings on stock performance and addressing the challenges posed by varying rating scores from different rating agencies.

The research presented in this thesis is based on data collected over several years and subjected to extensive analysis. It represents an academic and personal journey of growth and learning. I hope this work provides valuable insights and stimulates further research in the field of sustainable finance.

This thesis forms the conclusion of my time at Erasmus University. I would like to extend my gratitude to Onno Steenbeek for his dedicated supervision and valuable feedback throughout the process of writing this thesis. Additionally, I am grateful to all the staff at Erasmus University who have supported me during my master's programme.

On a personal note, I wish to thank my family and friends for their support throughout this process. Their encouragement and belief in my abilities have been a source of motivation.

Meike den Engelse

Abstract

This study examines the impact of disagreement in environmental, social and governance (ESG) ratings on the stock performance of companies, taking into account the role of ESG disclosure. There is a growing focus on sustainable finance, but ESG ratings are facing criticism for their variability and lack of a standardised framework. This research integrates the effects of ESG rating inconsistencies, ESG disclosure and stock returns to provide a comprehensive analysis. The study utilises data sets from Bloomberg, Refinitiv Eikon, RepRisk and Sustainalytics to investigate the relationship between ESG rating (disagreement) and stock returns. The findings indicate a significant negative correlation between the ESG rating disagreement and stock returns, which suggests that investors perceive higher disagreement among ESG raters as a risk, but do not receive a risk premium. However, when ESG disclosure is introduced as an interaction term, the negative impact of rating disagreement on stock returns becomes significantly positive. The study demonstrates that higher levels of disclosure score moderate the effect of rating disagreement on stock returns. The findings highlight the importance of transparency and ESG disclosure in enhancing investor confidence. The introduced EU legislation concerning ESG disclosure may assist in offsetting the adverse consequences of rating discrepancies and enhancing investor confidence.

keywords: Disclosure, ESG Disagreement, ESG ratings, Stock Performance, and Sustainable Finance.

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1 Introduction

For a long time, environmental, social and governance (ESG) concerns were not a prominent aspect within the investment industry. Investors focused primarily on generating profits, with ESG practices viewed as an unnecessary cost. However, in recent decades the industry of sustainable investing has experienced a significant increase, and further growth is expected. It is anticipated that by 2026, the total assets under management (AUM) of asset managers with regard to ESG factors will exceed EUR 30 trillion. This growth is expected to result in ESG assets accounting for 21% of global AUM in 2026. Against this backdrop, the market for ESG data has been exhibiting substantial growth, with providers generating nearly EUR 1 billion in revenue in 2021. It is estimated that publicly-listed companies spend between EUR 200,000 and 450,000 per year on costs related to ESG rating, while institutional investors pay almost EUR 1 million for the collection, analyses, and reporting of ESG metrics. Europe, which is one of the most advanced jurisdictions in the field of sustainable finance, accounts for 60% of global funding on ESG data. The data from ESG rating providers has become a central aspect of the investment decision-making process. ESG ratings and data are employed as inputs for investment decisions involving a total of EUR 3.8 trillion ([Investments, 2024](#)).

The term 'ESG' has recently been subject to scrutiny, with many investors questioning its value as an independent measure for assessing the ESG quality of an organisation. This scepticism stems in part from ongoing political divisions, but also from a growing awareness of the limitations of ESG ratings. The growing number of ESG rating providers and the significant inconsistencies between them further complicates the landscape for sustainable investors. In response to these issues, the European Union (EU) has announced plans to regulate ESG rating activities. This regulatory move aims to increase investor confidence and reduce the risk of greenwashing. The proposed regulation aims to enhance transparency in ESG rating metrics and to reinforce accountability by subjecting rating providers to the oversight of the European Securities and Markets Authority (ESMA). Nevertheless, the study conducted by [Christensen et al. \(2022\)](#) suggests that enhanced transparency may not necessarily lead to a reduction in ESG rating discrepancies within the United States (US). Consequently, it is crucial to examine the impact of these novel regulations in Europe.

Previous research has examined the reasons for disagreement between different ESG rating providers. However, there is limited research on the consequences of the disagreement in ESG ratings. The limited number of studies that have examined the consequences have primarily focused on the implications for investors in financial markets. In particular, there is a lack of research on the moderating role of ESG disclosure on ESG rating inconsistencies and stock returns. While some studies have analysed the impact of ESG disclosure on ESG rating disagreement and the effect of ESG disclosure on stock returns, this paper is the first to examine ESG rating disagreement while accounting for the moderating effect of ESG disclosure on stock performance. By addressing this knowledge gap, the paper aims to provide insights into how the level of disagreement among ESG rating providers, combined with the company's ESG disclosure score, influences stock returns. This novel approach contributes to a more complete understanding of the impact of ESG rating disagreement and the role of disclosure in mitigating or exacerbating its impact on stock performance. The existing literature on ESG disagreement has primarily focused on the United States, with no research conducted in Europe. Therefore, this study examines companies in Western Europe. The study addresses the

following research question:

How does inconsistency in ESG ratings affect the stock performance of companies? And what is the role of sustainable disclosure in this relationship?

This research question is addressed by testing three hypotheses that examine the relationship between average ESG rating scores, ESG rating disagreement, and the interaction of ESG rating disagreement and ESG disclosure scores on a firm's (excess) stock returns. To define ESG disagreement, the datasets of the rating providers Bloomberg, Refinitiv Eikon, RepRisk and Sustainalytics are compared. The disagreement between these providers, together with the ESG disclosure scores obtained from Bloomberg, is the focus of the research. The relationship between ESG rating disagreement and a company's stock returns is expected to be positive, as greater disagreement is likely to act as a risk-return driver (Gibson Brandon et al., 2021; Wang et al., 2024). Furthermore, this positive association is predicted to be moderated by higher levels of ESG disclosure. Increased ESG disclosure is expected to reduce the overall positive relationship between ESG disagreement and stock returns. With more thorough disclosure, investors are likely to rely more on the company's direct disclosure policies rather than on third-party ESG ratings and the resulting inconsistencies as decision criteria.

The study reveals a low correlation between the ESG data providers, underscoring a notable degree of divergence in ESG ratings. This finding aligns with the conclusions of prior research in the same field. Additionally, the analyses demonstrate that the extent of rating inconsistency varies considerably across rating pillars, years, and industries. The initial hypothesis posits a positive correlation between ESG ratings and stock performance, which is substantiated by the findings. This indicates that higher ESG ratings are associated with superior stock performance, which highlights the significance of robust ESG practices. The second hypothesis posits that there would be a positive relationship between ESG rating disagreement and stock performance. However, the results indicate that there is in fact a negative relationship. This suggests that higher levels of ESG rating disagreement are associated with lower stock returns. Nevertheless, when the level of ESG disclosure is introduced as an interaction term with ESG disagreement, the relationship between ESG rating disagreement and stock returns becomes positive. The results also show that ESG disclosure moderates the impact of rating disagreement on stock performance. This may indicate that investors are more inclined to rely on direct ESG disclosure from companies rather than third-party ratings when making investment decisions. Alternatively, it could be that higher disclosure scores lead to a reduction in ESG disagreement when making investment decisions. However, in a scatter plot, it is shown that ESG disagreement and disclosure score are slightly positively correlated.

This paper makes a valuable contribution to the field of sustainable finance by addressing a critical gap in the existing literature. Previous research has typically examined either the isolated effect of ESG rating inconsistency on stock returns or the relationship between ESG disclosure and ESG rating inconsistency on stock returns. However, this study integrates all three variables, thereby providing new insights that bridge these separate areas of research. The research is particularly relevant to investors interested in sustainable

investment practices. Furthermore, the study identifies significant implications for companies by evaluating the role of ESG practices and disclosure in predicting stock performance. By elucidating the influence of rating inconsistencies, this research offers insights into the value of ESG ratings. In light of the current absence of an accurate ESG rating framework, understanding these consequences is crucial for making informed investment decisions.

The remainder of this paper is structured as follows. Section 2 presents a review of the existing literature, provides insights into previous research in this area, and presents the three hypotheses. Section 3 outlines the data used in this study, while Section 4 describes the methodology used. Subsequently, Sections 5 and 4 describe the statistical results. Section 7 provides an in-depth analysis of the statistical results. Finally, Section 8 concludes the study and provides recommendations for future research.

2 Theoretical Framework

The following chapter presents a review of the relevant literature and an understanding of the underlying theories and frameworks. The chapter is divided into six sections. Firstly, Section 2.1, provides an in-depth examination of ESG ratings. Section 2.2, reviews a large body of research on the relationship between ESG performance and stock performance. Next, Section 2.3, examines the apparent divergence in ESG ratings between rating agencies and the reasons for this. Section 2.4 reviews the limited literature on ESG inconsistencies and their impact on stock performance. Section 2.5 analyzes the regulation of ESG disclosure in Europe. Finally, Section 2.6, reviews the literature on the impact of ESG disclosure and ESG inconsistency.

2.1 ESG Ratings

The global financial markets have recently witnessed a surge in sustainable investing, which involves the integration of ESG factors into portfolio selection and management. The United Nations introduced the Principles for Responsible Investing (PRI) in 2006, leading this movement and advocating the inclusion of ESG criteria in investment decision-making processes. The PRI initiative highlights the important role of ESG considerations in promoting a more sustainable global financial ecosystem. The Global Sustainable Investment Alliance (GSIA) reports a substantial increase in sustainable investment assets globally, with a 15% rise from 2018 to 2020. The report also notes the increasing role of sustainability in investment decision-making, with 83% of European investors and 60% of American investors indicating its significance. The growing reliance on ESG objectives in investment management has led to increased demand for ESG-related information, resulting in the emergence of various agencies that assess a company's ESG performance (Pagano et al., 2018). Investors and researchers often use ESG scores to gauge a company's ESG performance. These metrics are used as a tool to assess the impact of ESG initiatives on stock performance (Veenstra and Ellemers, 2020). However, the proliferation of over 600 ESG rating agencies has led to inconsistencies as these agencies differ in their data collection methods, metrics, and weightings (Deloitte, 2024). This discrepancy has prompted investors to utilise a range of data sources in order to obtain a comprehensive understanding of ESG performance.

As investors increasingly prioritise sustainability in their decision-making processes, there is a growing demand for reliable and consistent ESG ratings. Many scholars stress the importance of common ESG standards (Avramov et al., 2020; Billio et al., 2021). However, some scholars also argue that universal ESG scores are not desired because they all have a different focus. For instance, Aliakbari and Globerman (2023) argue that the implementation and enforcement of a global ESG framework is impractical and would be prohibitively expensive. Conversely, (Faccia et al., 2021) asserts that standardising and enhancing disclosures is necessary to facilitate the comparison of ratings. The article shows that combining mandatory ESG reporting with taxonomies would lead to the creation of a value-added disclosure score. This would result in the incorporation of ESG ratings into income statement disclosures through the utilisation of XBRL taxonomies, which are standards that guarantee compliance and consistency across financial statements. The objective is to establish a unified reporting framework that encompasses both financial and non-financial (ESG) data, thereby facilitating enhanced transparency, comparability, and decision-making for stakeholders.

ESG scores are often compared to credit ratings. However, it is observed that ESG scores between different rating agencies exhibit a low correlation. In contrast, credit ratings demonstrate a significantly higher correlation with each other. For example, [Berg et al. \(2020\)](#) demonstrate that credit ratings have a correlation of 99%, while the average correlation among ESG raters is only 54%. This difference highlights the lack of a common reporting framework for ESG ratings. It is important to note that the majority of studies investigating the relationships between different rating providers employ a correlation analysis.

2.2 ESG Performance and Stock Returns

In order to examine ESG disagreement and its impact on stock returns, it is important to first examine the broader literature that examines the relationship between ESG performance and stock returns. Understanding the existing research in this area provides insights into the motivations behind investors' interest in ESG factors and the potential impact of ESG inconsistencies.

A significant number of researchers have attempted to define the relationship between companies' ESG performance and stock performance. However, the results of these studies are inconclusive. While a majority of the studies identify a positive correlation between strong ESG performance and higher stock returns ([Landier and Lovo, 2020](#); [Yin et al., 2023](#); [Broccardo et al., 2024](#)), some research indicates a negative correlation ([Gavrilakis and Floros, 2023](#); [Mănescu, 2011](#)). The stakeholder theory, proposed by [Freeman \(1984\)](#), posits that focusing on the needs and interests of all stakeholders leads to long-term value creation for a company. This theory suggests that the primary reason for the positive relationship observed in many studies is that companies that successfully manage their stakeholder relationships tend to achieve better financial performance, as evidenced by their higher stock returns. Firms with higher ESG scores might expect higher future returns as they are believed to have a better reputation, strong innovation capacity, and a competitive advantage ([Yin et al., 2023](#); [Trisnowati et al., 2022](#); [Serafeim and Yoon, 2022](#)). Additionally, the study by [Vishwanathan et al. \(2019\)](#) argues that companies with strong ESG practices are more likely to have protection against negative outcomes for employees, customers, communities, and the environment. The authors suggest that incorporating ESG factors into business operations can proactively address potential negative impacts, thereby directly minimizing risk. [Kempf and Osthoff \(2007\)](#) find a statistically significant alpha evaluating a long-short ESG strategy that involves simultaneously taking long positions in companies with high ESG scores and short positions in companies with low ESG scores. This finding suggests that companies with stronger ESG initiatives tend to outperform those with weaker ESG practices. However, the results indicate that this significant alpha was only present when applying best-in-class and positive screening approaches, but not with negative screening. Best-in-class involves investing in stocks with strong ESG performance relative to their industry peers, while positive screening refers to investing only in stocks that meet specific positive impact criteria. In contrast, negative screening involves the exclusion of stocks that are associated with ESG-related controversies. [Kempf and Osthoff \(2007\)](#) employed the [Carhart \(1997\)](#) four-factor model and used KLD Research & Analytics data to explore the relationship between ESG investing and stock performance. Their findings are consistent with those of [Statman and Glushkov \(2009\)](#), who also find significant alpha when applying a long-short ESG strategy, using KLD Research & Analytics as well. Furthermore, [Statman and Glushkov \(2009\)](#) extended the analysis by testing the results with various factor

models, including the Capital Asset Pricing Model (CAPM), the Fama-French three-factor model (1992), and the Carhart four-factor model (1997). The positive relationship between ESG-focused strategies and financial performance remains stable across all tested models.

However, within the framework of modern portfolio theory, investors are only compensated for bearing systematic risk (Elton and Gruber, 1997). Accordingly, some scholars show that ESG investing could lead to lower stock performance (Gavrilakis and Floros, 2023; Mănescu, 2011). Gavrilakis and Floros (2023) examine the impact of financial performance indicators and combined ESG scores on stock returns for large-cap stocks, revealing a significant negative correlation between ESG performance and stock returns, particularly among Italian firms. Mănescu (2011) analysed data on seven ESG attributes for US firms between 1992 and 2008 to analyse the relationship between ESG ratings and stock returns. Their findings suggest a negative correlation between human rights and product safety attributes and stock returns, attributed to mispricing. In addition, a body of literature examines the relationship between ESG performance and a company's financial performance. In the 2012 study, Lioui and Sharma (2012) investigate the impact of Environmental Corporate Social Responsibility (ECSR) on financial performance, as measured by Return on Assets (ROA). Using data from KLD Research & Analytics, their analysis shows a significant negative correlation between ROA and ECSR. This suggests that investors perceive companies' ESG efforts as costly, driving the negative relationship. These findings are consistent with those Hirigoyen and Poulain-Rehm (2014), who used linear regression to examine the causal relationship between corporate social responsibility (CSR) and financial performance, and reported a similar negative association. Their data comes from Vigeo Eiris.

In addition, Hill (2020) finds a neutral relationship between ESG investing and stock performance. This is partially aligned with the observations of Humphrey et al. (2012), who note a neutral, but statistically insignificant, relationship between CSR investments and the CAPM, utilising data from Sustainability Asset Management Group GmbH (SAM). These results suggest that CSR investments may not have significant costs or benefits, controlling for various risk factors.

Furthermore, when examining the individual pillars of ESG ratings and their impact on stock returns, the previous literature reveals mixed results. For instance, Giese et al. (2020) find that governance emerges as the dominant pillar affecting financial performance in the short term, while environmental and social indicators gain importance in the long term. Conversely, Luo (2022) demonstrates significant positive alphas in factor models for the social pillar, but not for the environmental or governance pillars. In addition, Nelvik Uthuslien and Andreasson (2023) present positive results for each pillar on abnormal returns, with the governance pillar showing greater statistical significance compared to the others. Although the evidence appears somewhat contradictory, some studies suggest that the social pillar may have the strongest positive correlation with stock returns, while others suggest that the governance pillar has the strongest correlation. In contrast, the environmental pillar seems to have a weaker or less consistent relationship with returns across studies. As indicated by Boffo and Patalano (2020), focusing solely on the environmental score may not be an optimal approach for ESG investors seeking to construct portfolios that include companies engaged in low-carbon activities. The authors posit that the environmental pillar may not represent a sufficient determining factor

for investment decisions.

The studies discussed in this section show that the academic literature reports a variety of relationships between ESG initiatives and financial performance, including positive, negative and neutral outcomes. However, the majority of studies suggest that ESG activities tend to have a positive impact on financial performance. The divergence in findings is likely to be due to researchers' different use of data and methodologies (Giese et al., 2019). The diversity of approaches makes it difficult to draw a definitive conclusion about the impact of ESG on financial outcomes. However, the meta-analysis conducted by Friede et al. (2015), synthesising data from over 2,200 studies find that around 90% of them showed a non-negative correlation between ESG factors and company financial performance, with the majority showing a positive association. Moreover, the evolving landscape of sustainable investing in Europe suggests that the correlation may be shifting. As investors place greater emphasis on sustainability considerations, companies with robust ESG practices may be better positioned to attract investment capital, potentially leading to higher stock returns. Therefore, the first hypothesis of this study is:

Hypothesis 1: There is a positive correlation between ESG performance and stock returns.

2.3 ESG Rating disagreement

The validity and convergence of ESG ratings have been the subject of considerable debate in the management literature, largely due to the inherent complexity of measuring a firm's ESG performance. For example, Chatterji et al. (2016) document the surprising lack of agreement across different ESG ratings from six well-established raters (MSCI, Asset4 (Refinitiv), Vigeo, EIRIS, Sustainalytics, and CBEE). In recent years, a growing body of literature has corroborated the findings of Chatterji et al. (2016) regarding ESG rating disagreement and has undertaken further investigations to broaden the understanding of this phenomenon. To illustrate, Billio et al. (2021) conducted a comparative analysis of ratings provided by Sustainalytics, RobecoSAM, Refinitiv Eikon and MSCI. Their findings reveal a notable degree of discrepancy among the rating providers with regard to the correlation between ratings. Additional analyses reveal that the observed disagreement typically surpasses a single category on average. Similarly, Gibson Brandon et al. (2021) discover a weak correlation among ratings from seven different providers (Asset4 (Refinitiv), Sustainalytics, Inrate, Bloomberg, FTSE, KLD Research & Analytics, and MSCI), with the lowest correlation observed in the governance dimension and the highest in the environmental dimension. Moreover, recent research by Luo and Farag (2024) reaffirms the presence of ESG disagreement and reveals that firms with high ESG scores tend to exhibit higher exposure to aggregate disagreement compared to those with low ESG scores. This heightened exposure stems from divergent opinions regarding long-term earnings growth. The disparity among ESG rating providers has significant implications. It may result in a reduction in the incentive for companies to enhance their performance in this domain, due to the lack of a standardised classification of potential issues in ESG performance evaluations. Furthermore, differences in ESG assessments reduce the reliability of using ESG performance as an indicator for investment decisions. This hinders the accurate identification of high-performing and low-performing companies (Berg et al., 2020).

2.3.1 Factors of Disagreement

In addition to confirming the significant disagreement among different ESG rating providers, recent studies sought to identify the factors that contribute to the divergence of these ratings. For example, [Berg et al. \(2020\)](#) examine the underlying causes of this discrepancy and identifies three primary sources of ESG rating divergence. Firstly, the authors note that rating agencies utilise different categories, leading to potential disagreement. Secondly, they highlight variations in how identical categories are measured across different agencies. Lastly, they underscore that rating agencies assign different weights to various categories when generating aggregate ESG ratings. Similarly, [Chatterji et al. \(2016\)](#) find that even after adjusting for differences in assumptions among rating providers, the correlations between different ratings remains low, suggesting that rating providers measure similar constructs differently. In their study, [Douglas et al. \(2017\)](#) categorised data providers into three groups: market data providers (i.e., Bloomberg, Refinitiv Eikon), ESG-exclusive data providers (i.e., Sustainalytics, RobecoSAM), and specialised data providers (e.g., CDP, ISS). In line with [Chatterji et al. \(2016\)](#), the authors document that ESG metrics originate from diverse sources and employ varied methodologies. Moreover, [Jackson et al. \(2020\)](#) identify additional factors and demonstrate that firms have the opportunity to review their own profiles, thereby exerting influence over the rating. [Avetisyan and Hockerts \(2017\)](#) note that the provided data follows a heterogeneous pattern and offers a broad range of indicators of ESG risks and opportunities, including industry- or country-specific sustainability ratings and composite ESG rating scores for individual companies. In addition to discrepancies in the measurement of various ESG criteria, there is also considerable variation among data providers regarding which criteria are believed to be essential for evaluation and the degree to which they should be integrated. This lack of transparency among indicators, algorithms, and assessment techniques is partly due to competition between data providers ([Hawn et al., 2018](#)).

While the aforementioned literature analyses rating disagreement based on the underlying data from ESG rating providers, other studies build upon existing research by examining the level of rating disagreement in relation to firm-level characteristics. A number of observable firm-specific attributes, financial data and accounting factors have been identified as influencing the level of disagreement observed in ESG ratings. When firms become more complex, the difficulties associated with evaluating and rating their sustainability initiatives also increase. As evidenced by [Gibson Brandon et al. \(2021\)](#), disagreement is more prevalent in large-cap firms. This may be attributed to the intrinsic complexity of larger firms. The level of complexity also varies across industries, with some sectors exhibiting a greater degree of complexity than others. Furthermore, it is observed that firms lacking credit ratings tend to demonstrate elevated levels of ESG rating disagreement. This is presumably due to the inferior quality of the information provided by these firms in comparison to others. Conversely, more profitable firms tend to exhibit less disagreement in their ESG ratings. [Gibson Brandon et al. \(2021\)](#) suggest that this is because profitable companies are better equipped to allocate resources towards sustainability policies and ESG disclosures, leading to more consistent ESG ratings. [Christensen et al. \(2022\)](#) posit that the level of disclosure is positively correlated with rating disagreement. This relationship will be further elucidated in the subsequent section.

2.3.2 Greenwashing

ESG disagreement has further implications beyond its impact on stock returns. According to [Hu et al. \(2023\)](#) disagreement among the environmental pillar increases the probability of corporate greenwashing. Their study suggests that greenwashing will decrease by introducing environmental rating standards, internal supervision and external monitoring. Furthermore, firms and investors may have an incentive to selectively disclose or highlight the highest ESG score from different raters in order to present themselves as performing well on ESG metrics ([Horan et al., 2022](#); [Eccles et al., 2020](#)). This practice, commonly referred to as “rating shopping” or “ESG rating arbitrage”, has the potential to diminish the credibility and utility of ESG ratings. In their study, [Horan et al. \(2022\)](#) argue that the lack of standardisation and transparency in ESG rating methodologies creates opportunities for firms to engage in greenwashing. The authors suggest that more regulation and standardisation of ESG reporting frameworks could help address these issues. Similarly, [Eccles et al. \(2020\)](#) highlight that firms selectively disclose favourable ratings, which can mislead investors and other stakeholders. In order to mitigate this, the authors recommend that investors and stakeholders should consider multiple ESG ratings and be aware of the potential for rating shopping behaviour. In accordance with the findings of [Horan et al. \(2022\)](#) and [Eccles et al. \(2020\)](#), [Hale \(2023\)](#) demonstrates that firms with higher ESG rating disagreement are more likely to engage in greenwashing activities. That paper argues as well that the lack of consensus among raters creates opportunities for firms to selectively disclose favourable ratings. The findings of these studies indicate that regulatory initiatives aimed at harmonising ESG rating methodologies and enhancing transparency could assist in addressing greenwashing concerns.

2.4 ESG Rating Disagreement and Stock Returns

Building upon the research presented earlier, a few scholars have recently initiated investigations into the potential impact of disagreement in ESG ratings on financial performance. Several theoretical frameworks can be applied to understand the impact of ESG rating disagreement on stock returns. One such framework is the Optimism-Bias hypothesis proposed by [Miller \(1977\)](#), which suggests that diverging opinions lead to stock overvaluation due to short-selling constraints. This theory postulates that when there is disagreement among investors, the more optimistic investors will drive up the stock price, which does not accurately reflect a company’s ESG performance. Consequently, this can result in a decline in stock returns. A complementary perspective is provided by behavioural finance theories, which highlight investor irrationality. When investors encounter a disagreement in ESG ratings, they may be inclined to select the highest rating as an accurate representation of a company’s ESG level. However, this can result in an overestimation of the company’s ESG performance and a failure to recognise potential ESG risks, leading to overvalued stocks and reduced returns ([Hirshleifer and Luo, 2001](#)). Similarly, the study by [Boehme et al. \(2009\)](#) argues that in markets with high short-selling costs, pessimistic investors are effectively excluded from participation. This results in price responses that are primarily reflective of optimistic valuations. Due to the constraints imposed on pessimistic investors by short-selling limitations, current asset prices are influenced predominantly by optimistic investors, who may overestimate a company’s prospects. In a similar context, [Diether et al. \(2002\)](#) observe that stocks with greater dispersion in analysts’ earnings forecasts tend to exhibit lower future returns than similar stocks with lower dispersion. This negative relationship is consistent with the theoretical

predictions of the model proposed by [Miller \(1977\)](#) on the effects of differences in opinions and short-sale constraints.

The concept of investor sentiment plays a pivotal role in understanding the irrational behaviour observed among investors, as postulated by the theories of behavioural finance. This field demonstrates how investors frequently demonstrate psychological biases when processing new information, as evidenced by the literature ([Brown and Cliff, 2004](#); [Baker and Wurgler, 2007](#)). In their research, [Lu et al. \(2021\)](#) find that investors frequently experience emotional states such as anxiety, tension, or panic during periods of significant market volatility. Conversely, stable market conditions tend to promote emotional equilibrium. The existence of ESG disagreement serves to compound the difficulties encountered by investors in evaluating a company's genuine ESG performance and associated risk levels. Uncertainty can give rise to emotional fluctuations among investors, which may result in feelings of doubt and anxiety. The findings by [Brooks et al. \(2023\)](#) and [Chatterji et al. \(2016\)](#) indicate that investors in different emotional states exhibit distinct decision-making patterns. Investors are more likely to take greater risks when they are emotionally aroused and to adopt a more cautious approach when they are emotionally calm. Furthermore, the presence of discrepancies in ESG ratings can increase uncertainty and concern among investors, who may question the accuracy of such ratings. These uncertainties have the potential to undermine investor confidence, which could reduce trading activity in the market. Consequently, this could result in lower future stock returns, as the market prices become detached from the underlying fundamental.

The discrepancies observed in ESG ratings are analogous to those observed in credit ratings and analyst forecasts. Studies examining differences in bond credit ratings and analyst forecasts offer insights that are relevant to this study. [Jiang et al. \(2005\)](#) propose that increased uncertainty in predicting stock returns result in lower future stock returns. Similarly to [Boehme et al. \(2009\)](#), the authors argue that short-sell constraints play a role. The conclusions presented in [Jiang et al. \(2005\)](#) are consistent with the observations made in [Ang et al. \(2006\)](#) and [Sadka and Scherbina \(2007\)](#), who argue that stocks with greater variability in analyst ratings tend to yield lower future returns due to their tendency to be overvalued. Conversely, [Carlin et al. \(2014\)](#) demonstrate that increased disagreement in asset prices is linked with higher expected returns, suggesting a positive risk premium. In line with this, [Atmaz and Basak \(2018\)](#) posit that dispersion in beliefs represents an additional risk for investors and therefore risk premium is demanded. Similarly, in the context of ESG rating disagreement, [Gibson et al. \(2020\)](#) find that information confusion resulting from different rating scores (Asset4 (Refinitiv), Sustainalytics, Inrate, Bloomberg, FTSE, KLD Research & Analytics, and MSCI IVA) increases the market premium and decreases the demand for stocks, consequently increasing stock returns. In a further analysis, [Gibson et al. \(2020\)](#) examine the individual pillars of ESG disagreement and their respective effects on stock returns. The findings reveal that only disagreement in the environmental pillar exhibits a significant impact on stock returns. The analysis employed a number of models, including the CAPM, the Fama & French three-factor model (1992), the Carhart four-factor model (1997), and the Fama & French five-factor model (2015). This was done in order to control for a number of key factors, including size, book-to-market ratio, momentum, profitability, and investment. Moreover, a long-short strategy, which entailed going long on high-disagreement portfolios and short on low-disagreement portfolios, yield positive and significant alphas for total ESG and the individual environmental pillar ratings. However, portfolios

based on the social and governance pillars did not exhibit any notable abnormal returns. This suggests that environmental rating discrepancies are the primary factor responsible for the observed outcomes. The authors attribute the considerable positive alpha in the overall ESG rating and the environmental component to the risk-return trade-off, suggesting that ESG disagreements give rise to uncertainty that must be compensated for with higher returns.

Moreover, employing a comparable methodological approach to that used in [Gibson et al. \(2020\)](#), [Avramov et al. \(2020\)](#) examine the correlation between ESG uncertainty (quantified by standard deviation) and stock performance. This is done by analysing data from six rating providers, namely Asset4 (Refinitiv), MSCI IVA, Bloomberg, Sustainalytics, and S&P Global (RobecoSAM). The analysis demonstrates that ESG rating inconsistency results in a reduction in investor demand for stocks. Furthermore, it illustrates that brown stocks outperform green stocks when the rating inconsistency is low. Additionally, the authors present evidence that green stocks are perceived as riskier when the rating inconsistency is high.

In a different approach to ESG disagreement, [Billio et al. \(2021\)](#) analysed four prominent ESG indexes: Sustainalytics, RobecoSAM (S&P Global), Asset4 (Refinitiv), and MSCI. Using correlation analysis, they identified significant disparities among these ESG rating providers and considered this inconsistency in the context of ESG indexes. The variation in ESG scores contributes to inconsistency in the selection of index constituents. To investigate the impact of these discrepancies, they compared the performance of a portfolio of ESG agreement (defined by the overlap in constituents among the various ESG indexes) with that of a conventional portfolio, utilising the Carhart four-factor model (1997). The findings demonstrate that there was only a 15% overlap, indicating a substantial lack of agreement among the indexes, which resulted in non-significant differences in financial performance. This reinforces the necessity for greater consistency among ESG rating providers and highlights the challenges of utilising ESG indexes with high variability in their constituent components.

Prior research has uncovered a primarily negative relationship between financial disagreement and stock returns, which supports the optimism-bias hypothesis ([Diether et al., 2002](#); [Jiang et al., 2005](#); [Ang et al., 2006](#); [Sadka and Scherbina, 2007](#); [Boehme et al., 2009](#)). However, in the context of ESG-related research, the majority of studies indicate a positive correlation, which aligns with the risk-based hypothesis ([Avramov et al., 2020](#); [Gibson et al., 2020](#)). Accordingly, the hypothesis suggests that there is a positive relationship between ESG disagreement and stock returns in Western Europe.

Hypothesis 2: There is a positive correlation between ESG disagreement and stock returns.

2.5 Disclosure Regulation

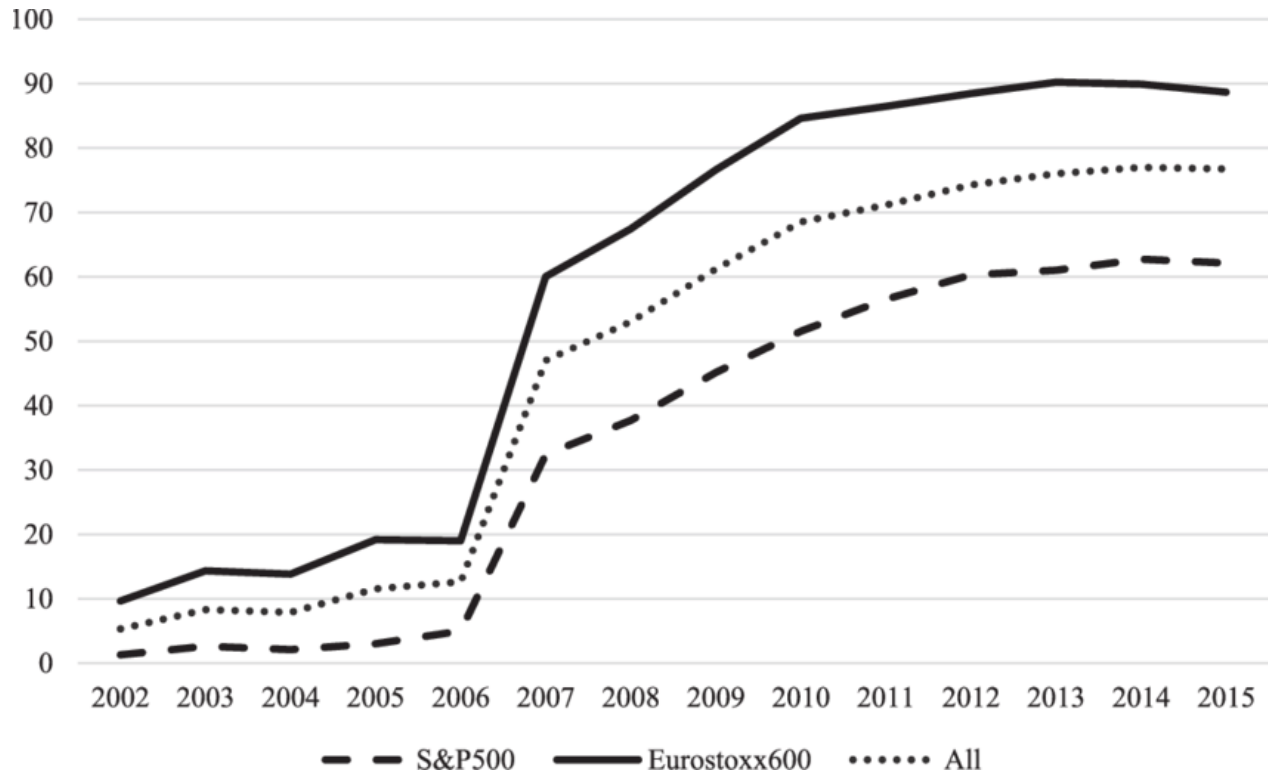
In recent years, there has been a significant rise in the number of companies disclosing non-financial information. A comparison of firms listed in the United States and Europe reveals that a greater proportion of European companies are publishing sustainability reports (see [Figure 1](#)). This upward trend can be attributed to a number of factors, including increased pressure from stakeholders pushing companies to disclose information about the sustainable impact of their operations ([Dye et al., 2021](#); [Tsang et al., 2023](#)). Furthermore,

government regulations pertaining to ESG disclosure influence the amount of disclosure practices (Barth et al., 1997). Similarly, Hazen (2020) show that there has been an increase in sustainable disclosures due to ESG concerns from both investors and regulators. The majority of previous research is based on firms' voluntary disclosure practices. In 2018, the European Commission introduced a series of sustainable finance regulations, including the EU taxonomy. The EU Taxonomy serves as a categorisation framework, establishing standards for economic activities aligned with the objective of achieving net-zero emissions by 2050. The EU Taxonomy encompasses broader environmental targets beyond just climate considerations. It serves to establish uniform definitions of environmentally sustainable economic activities for both financial and non-financial companies. The EU Taxonomy was officially implemented in 2020. The Taxonomy sets out four requirements that economic activities must fulfil to qualify as sustainable. These include the identification of six environmental and climate objectives, including climate change, sustainable water usage, the circular economy, pollution, biodiversity, and ecosystems. In order to ensure that economic activities have a positive impact on the environment, the EU has introduced performance criteria, referred to as technical screening criteria, through non-legislative acts. These criteria are specifically designed for activities that significantly contribute to climate change mitigation and adaptation (European Commission, 2024b).

Furthermore, the Sustainable Finance Disclosure Regulation (SFDR) is designed to enhance transparency within the financial sector. This regulation requires that asset managers and companies disclose information regarding their integration of ESG risks into their investment decision-making processes, as well as their consideration of sustainability factors in their investments. The SFDR introduced classifications for investment funds based on their ESG focus and imposed a 'comply or explain' obligation for large financial market participants, as cited in a report by KPMG (KPMG, 2024).

In 2023, the Corporate Sustainability Reporting Directive (CSRD) was introduced, tightening regulations on ESG information that companies are required to disclose. This new law broadens the reporting requirements for companies to cover sustainability issues. The mandatory reporting template outlines a set of indicators for the Principal Adverse Impact (PAI) statement, with a focus on adverse impacts related to ESG issues (KPMG, 2024). The CSRD will be implemented for the first time in the 2024 financial year, with reports scheduled for publication in 2025. In accordance with the CSRD, companies are required to disclose information that aligns with the European Sustainability Reporting Standards. From 2025 onwards, companies that meet at least two of the following criteria will be required to comply with the reporting requirements: having a workforce of over 250 employees, achieving an annual revenue of 2 million euros, or generating a turnover of 40 million euros. It is expected that the number of reporting companies will continue to expand until 2028 (KPMG, 2024; European Commission, 2024a).

Figure 1: Percentage of firms reporting CSR information from 2002 to 2015



Notes: The figure shows the percentage of CSR information reporting by the S&P 500, Eurostoxx 600, and all listed companies between the years 2002 and 2015. The figure is derived from [Stolowy and Paugam \(2018\)](#).

2.6 Disclosure and ESG disagreement

In examining the potential association between discrepancies in ESG ratings and stock returns, it is imperative to consider the moderating influence of ESG disclosure. This is particularly the case in the context of the heightened regulatory requirements currently in place in Europe. Prior research has identified a predominantly positive correlation between ESG disclosure and firm value ([Fatemi et al., 2018](#)). However, existing research has conflicting results regarding the relationship between ESG disclosure and the extent of divergence in ESG ratings ([Christensen et al., 2022](#); [Liu, 2022](#); [Kim and Koo, 2023](#)).

Theoretical frameworks in financial economics posit that disparities within financial markets frequently originate from differences in available information and divergent interpretations ([Cookson et al., 2021](#)). Consequently, it can be hypothesised that ESG disclosure may be a factor that influences ESG rating disagreement. Previous literature has highlighted the importance of disclosure as a means of enhancing a firm’s information environment and reducing uncertainties. For instance, [Lang and Lundholm \(1996\)](#) demonstrate that robust disclosure policies correlate with more accurate forecasts and reduced dispersion among analysts. Furthermore, [Hope \(2003\)](#) reveals that that transparent disclosure of accounting policies diminishes forecast uncertainty regarding earnings, thereby minimising dispersion. Similarly, in the context of debt markets, disclosure plays a pivotal role in reducing discrepancies among credit rating analysts with regard to their assessments of a firm’s credit risk. [Bonsall et al. \(2017\)](#) assert that firms with more comprehensible

disclosures are less likely to have split credit ratings. Similarly, [Akins \(2012\)](#) identifies a negative correlation between financial reporting quality and the probability of a firm having split credit ratings. These findings suggest that disclosure can help to reduce rating discrepancies and improve market efficiency. In the context of ESG disclosure, [Christensen et al. \(2022\)](#) document an increase in ESG disagreement among rating agencies following ESG disclosures. The authors posit that there is no consensus regarding the metrics that should be employed to assess a firm's ESG performance or the manner in which these metrics should be interpreted and evaluated. Conversely, [Liu \(2022\)](#) demonstrates that firms that provide comprehensive information on their ESG practices tend to exhibit a lower degree of ESG rating discrepancies. Building upon this discourse, [Kimbrough et al. \(2024\)](#) introduce the distinction between mandatory and voluntary ESG reporting. Their findings suggest that voluntary disclosure initiatives tend to mitigate discord among ESG rating agencies, indicating that proactive disclosure beyond regulatory requirements fosters greater alignment in assessment. Regarding the impact on financial performance, the majority of scholars have identified a significant positive correlation between ESG disclosure and firm value ([Li et al., 2018](#); [Wen et al., 2022](#)). The third hypothesis introduces a new perspective, as no previous research has examined the moderating effect of ESG disclosure on the relationship between ESG rating discrepancies and stock returns. Based on these insights, the following hypothesis is formulated.

Hypothesis 3: The relationship between ESG rating disagreement and stock returns will be less pronounced for firms with higher levels of ESG disclosure.

3 Data

In this chapter, the data utilised for the objective of the study is introduced. First, the data sample that is subjected to empirical analysis will be presented and described in Section 3.1. Following, Section 3.2 outlines a description of the different ESG scores used in the analysis. Furthermore, descriptive statistics regarding the disagreement among raters in the collected sample in Section 3.3.

3.1 Sample construction

This study examines the relationship between disagreement in ESG ratings and stock returns, while considering the moderating influence of ESG disclosure. The research focuses on a subset of publicly traded companies in the Western Europe. Ideally, a sample with the longest possible period of available ESG scores would be used. However, access to ESG data is limited, which leads to challenges in data availability. In the end, the final sample period spans from 2009 to 2019. By limiting the timeframe to these years, the study can reduce the influence of extreme values resulting from financial crises, such as the 2008 financial crisis and the global pandemic caused by the COVID-19 pandemic.

The countries included in the study of Western Europe are Austria, Belgium, France, Germany, Liechtenstein, Luxembourg, Monaco, the Netherlands, Switzerland, and the United Kingdom (UK). Although the UK is not traditionally considered part of Western Europe geographically, it has been included in this study due to its similar cultural standards and business practices to those observed in Western Europe. Moreover, the inclusion of the UK is considered essential for increasing the sample size, thereby enhancing the study's validity. Western Europe was selected as the regional focus due to the distinctive regulatory frameworks, cultural attitudes and business practices exhibited by this region in comparison to other global regions. Moreover, previous studies examining ESG disagreement have primarily focused on the United States (Avramov et al., 2020; Gibson Brandon et al., 2021). However, European investors generally place a higher priority on ESG factors than their American counterparts (Tan and Pan, 2023; Gatzert and Reichel, 2024). Thereby, making it valuable to investigate ESG disagreement and its impact on stock prices within a European framework. To date, no studies have explored this topic in the context of Western Europe. Furthermore, Europe tends to be more proactive in the enforcement of regulations pertaining to ESG disclosure and reporting in comparison to the United States. As observed by Morot (2024), Europe's early adoption of sustainable regulation has led to nearly five times as many ESG-inclusive reporting instruments compared to the US. The use of a sample of Western European firms allows for the enhancement of comparability in ESG ratings and ensures greater consistency in the analysis. This is due to the fact that these companies function within similar market conditions, regulatory frameworks, and stakeholder expectations. Table 1 outlines the sample construction procedure. In order to be included in the study's sample, each firm-year observation must be covered by at least three rating providers, in accordance with the methodology employed by Christensen et al. (2022). The requirement of a minimum of three providers ensures the capture of a broader range of perspectives. Furthermore, each firm is provided with complete data on disclosure, accounting, and financial metrics. Consequently, the final sample comprises 3,305 firm-year observations and 304 unique firms.

Table 1: Sample Construction Procedure

Steps in the sample construction procedure	Firm-years	Unique firms
Firms ESG ratings from 3+ rating providers	4892	481
Less observations missing disclosure data	4278	428
Less observations missing accounting and financial market data	3305	304

Notes: The table presents a summary of the sample construction. The sample covers the period from 2009 to 2019 for firms-years with at least three ESG ratings from Bloomberg, RepRisk, Refinitiv Eikon, and Sustainalytics.

3.2 Data sources

Accessing ESG score data presents challenges due to the limited availability over time and the restricted access provided by rating agencies. The ESG datasets employed in this research are derived from four well-known rating providers: Bloomberg, Refinitiv Eikon, RepRisk, and Sustainalytics, as identified by the 'Rate the Raters' study (Sustainability, 2023). These sources are extensively utilised by investors and corporations. The data are accessed via the Bloomberg, Eikon DataStream services, and Wharton Research Data Services (WRDS). To evaluate the financial performance of firms, investment returns data is collected from Refinitiv Eikon, which also provided the accounting data.

3.3 ESG data providers

It is important for investors and researchers to be aware of the distinctive methodologies employed by each ESG data provider, as these directly influence the interpretation and comparability of ESG scores across different companies and industries. The four rating providers included in this study offer a combined ESG rating, as well as separate ratings for the environmental, social, and governance pillars, except for RepRisk. Each provider evaluates ESG ratings by assigning qualitative and quantitative scores to assist investors in gauging overall risk. Nevertheless, there are some differences in the coverage and methodologies employed by these providers. The following paragraph provides a brief overview of the four providers, with a summary included in Table 2.

Bloomberg

Bloomberg's ESG data provides metrics and disclosure scores for over 11,800 companies in more than 100 countries, representing approximately 88% of the global equity market capitalisation with 410,000 active securities. The historical data coverage dates back to 2006. The Bloomberg Terminal evaluates over 2000 ESG fields that cover key sustainability topics. Bloomberg collects ESG data from different sources including company reports, websites, NGO publications, news reports and other publicly available sources. Their analysts then review and standardise this data across various ESG metrics and disclosure scores (?).

Refinitiv Eikon

Refinitiv Eikon (formerly Asset4) provides ESG scores for over 10,000 companies in 76 countries, with coverage expanding continuously due to the inclusion of more indices. The ESG information disclosed by Refinitiv Eikon covers 80% of the global market capitalisation. Of the four providers evaluated in this study, Refinitiv Eikon offers the most extensive data sample, with historical coverage dating back to 2002. The company's ESG score is derived from publicly reported data, encompassing more than 450 ESG measures evaluated at the company level. These measures are categorised into ten distinct groups, which are employed to compute the individual ESG scores and the aggregated scores ([LSEG, 2024](#)).

RepRisk

RepRisk provides the world's largest platform for the assessment of ESG risks, which covers over 195,000 public and private companies. The scores are based on publicly reported data, thereby ensuring objectivity, rather than relying on company self-disclosures, which may be unreliable. The ESG scores incorporate 101 ESG risk factors, including 28 ESG issues and 73 ESG topics. RepRisk offers ESG risk data for companies of any size, sector, and listing status, regardless of their country of origin. However, its historical coverage is limited to 2007, which is less extensive than that of Bloomberg and Refinitiv Eikon. In contrast to other rating agencies that utilise a rating scale ranging from 0 to 100, RepRisk employs a letter rating system (AAA to D). Moreover, RepRisk does not provide ESG pillar scores; only combined scores are available ([RepRisk, 2024](#)).

Sustainalytics

Sustainalytics, a subsidiary of Morningstar, provides ESG scores for more than 16,000 companies in 172 countries, including the majority of global indices. The scoring framework is based on 20 material ESG issues, which is supported by more than 300 indicators and 1,300 data points. Sustainalytics has been providing ESG data for over 25 years. The ESG Ratings produced by Sustainalytics evaluate a company's exposure to industry-specific material ESG risks and its management of those risks. The severity of ESG risk is classified into five categories that could affect a company's enterprise value. The score assesses the extent to which a company effectively manages its ESG-related risks and opportunities in comparison to its industry counterparts. A higher score is indicative of better ESG risk management ([Sustainalytics, 2024](#)).

Table 2: Characteristics of ESG Rating Providers

Provider	Origin	Pillars	Rating Scale	Rating Style	Stocks
Bloomberg	US	Total, E, S, G	0-10	Disclosure oriented	302
Refinitiv Eikon	CH	Total, E, S, G	0-100	Best in Class	298
Sustainalytics	NL	Total, E, S, G	0-100	Best in Class	302
RepRisk	CH	Total	AAA-D	Risk oriented	294

Notes: Origin refers to the country where each ESG rating provider is headquartered. Pillars indicate the categories of ESG factors considered, including Environmental (E), Social (S), and Governance (G). Rating Scale denotes the range or scale used by each provider to assign ESG ratings. Rating Style describes the methodology or approach employed by each provider. The stocks' column indicates the number of stocks or companies included in the dataset for analysis.

4 Methodology

This section presents the methodologies employed to achieve the objectives of this study. Firstly, the chapter describes the process of cleaning and standardising the data in Section 4.1. Following this, Section 4.2 elucidates the methodologies used to address the three hypotheses. Section 4.3 provides definitions of the variables utilised in the study, while the final section, Section 4.4, presents the descriptive statistics of these variables.

4.1 Preparation and Data Cleaning

The study is based on a number of different datasets, which makes it difficult to create a single, unified dataset. In order to integrate the ESG datasets from the four providers, it was necessary to align two key identifiers: the International Securities Identification Number (ISIN) and the company name. This was achieved by applying manual corrections where necessary to ensure consistency across the datasets. Furthermore, the stock and accounting datasets were merged using ISIN, linking stock prices to ESG scores from the corresponding year -1 . This approach treats ESG scores as signals. By incorporating the lagged ESG score at $t-1$, delayed effects are considered in the analysis. The study employs data with a yearly frequency for its sample, in accordance with the fact that the majority of ESG data providers only offer information on an annual basis.

4.2 Method

In order to assess the hypotheses presented in Section 2, regarding ESG inconsistency, disclosure policies, and stock returns, the Ordinary Least Squares (OLS) panel regression method will be employed. As proposed by Gibson Brandon et al. (2021), uncertainty about ESG data is reflected into stock returns across firms and is not fully explained by conventional risk factors. Similarly, in consideration of ESG disclosure as a firm characteristic that may influence this relationship, a characteristic-based approach is adopted for the regression analysis. The same set of control variables, detailed in Table 16, is used for the three hypotheses. In addition, industry and year fixed effects are introduced to account for industry-specific variation in ESG rating discrepancies and to remove insignificant temporal variation (Gibson Brandon et al., 2021). Standard errors are double-clustered at the industry and year levels to address potential heteroscedasticity and autocorrelation concerns.

Having established the regression framework, the initial hypothesis concerning the impact of ESG performance on stock returns is examined. This analysis is further broken down into the individual environment, social, and governance scores, which are incorporated into the second equation presented below:

$$\text{Stock Return}_{i,t} = \beta_0 + \beta_1 \text{ESG_Rating} + \sum_{i,t} \beta_{\text{Controls}} X_{i,t} + \epsilon_{i,t} + FE \quad (1)$$

$$\text{Stock Return}_{i,t} = \beta_0 + \beta_1 E_Rating_{i,t} + \beta_2 S_Rating_{i,t} + \beta_3 G_Rating_{i,t} + \sum_{i,t} \beta_{\text{Controls}} X_{i,t} + \epsilon_{i,t} + FE \quad (2)$$

Where $Stock\ Return_{i,t}$ denotes the yearly stock returns and excess returns for robustness checks of firm (i) at time (t), while $ESG_Rating_{i,t}$ reflects the level ESG performance of a company, taken by the average of the providers. Additionally, the variables $E_Rating_{i,t}$, $S_Rating_{i,t}$, and $G_Rating_{i,t}$ assess the individual relationship across pillars of the ESG score component. To control for influencing variables, the control variable, $ControlsX_{i,t}$, error term, $\epsilon_{i,t}$, and fixed effects, FE , are included.

In order to test the second hypothesis, the influence of ESG score disagreement on stock return, the following regressions will be performed. In the third regression, the combined ESG score will be taken as the dependent variable, while in the fourth regression, the effect of each individual pillar will be examined.

$$Stock\ Return_{i,t} = \beta_0 + \beta_1 ESG_Rating_Disagreement + \sum_{i,t} \beta_{Controls} X_{i,t} + \epsilon_{i,t} + FE \quad (3)$$

$$Stock\ Return_{i,t} = \beta_0 + \beta_1 E_disagreement_{i,t} + \beta_2 S_disagreement_{i,t} + \beta_3 G_disagreement_{i,t} + \sum_{i,t} \beta_{Controls} X_{i,t} + \epsilon_{i,t} + FE \quad (4)$$

Where again $Stock\ Return_{i,t}$ represents the (excess) stock returns of the firm. $ESG_disagreement_{i,t}$ reflects the ESG disagreement, measured by the standard deviation of the four rating providers. In the fourth regression, the $E_disagreement_{i,t}$, $S_disagreement_{i,t}$, and $G_disagreement_{i,t}$ represent the individual ESG pillar disagreement. Again, control variables, fixed effects, and the error term are defined as $ControlsX_{i,t}$, $\epsilon_{i,t}$, and FE .

The third hypothesis examines the influence of the moderating variable, ESG disclosure, on the relationship between ESG rating disagreement and stock returns under different levels of ESG disclosure. The regression equation for this analysis is as follows:

$$Stock\ Return_{i,t} = \beta_0 + \beta_1 ESG_disclosure_{i,t} + \beta_2 ESG_disagreement_{i,t} + \beta_3 ESG_disclosure_{i,t} * ESG_disagreement_{i,t} + \sum_{i,t} \beta_{Controls} X_{i,t} + \epsilon_{i,t} + FE \quad (5)$$

Here again $Stock\ Return_{i,t}$ signifies the (excess) stock returns of the firm and $ESG_disclosure_{i,t}$ is the extent to which a company discloses ESG-related information. The $ESG_disagreement_{i,t}$ variable is separately included, but is also captured in the interaction term together with $ESG_disclosure_{i,t}$. As in the previous regressions, control variables, fixed effects, and the error term are designated as $ControlsX_{i,t}$, $\epsilon_{i,t}$, and FE respectively.

4.3 Variable Definition

4.3.1 Dependent Variable: Stock Returns

The dependent variable in this study is yearly stock returns, which is a widely accepted metric in academic research regarding stock performance (Christensen et al., 2022; Gibson Brandon et al., 2021; Wang et al.,

2024). Stock returns play a critical role in investment decision-making, company performance evaluation, and market analysis. By tracking stock returns, investors can better understand and manage financial market risks and volatility (Wang et al., 2024). In accordance with Gibson Brandon et al. (2021), this research employs stock returns as the main dependent variable to investigate the influence of ESG rating discrepancies on the capital market, thereby providing deeper insights into the role of ESG factors in financial markets. In order to test the robustness of this effect and to explore whether it persists with excess returns, an additional variable is introduced: excess returns, calculated by subtracting the risk-free rate from stock returns, as outlined in studies such as (Chang et al., 2021). The most appropriate proxy for the risk-free rate in Europe is the 10-year German government bond yield, given that Germany has a strong credit rating and the bonds are highly liquid, rendering them an appropriate benchmark for a risk-free rate (ECB, 2014). The variable stock return and the German government bond rate are derived from Refintiv Eikon. The stock returns are calculated using the following formula:

$$\left(\frac{\text{MarketPrice}_{YE} + \text{Dividends}_{PS} + \text{SpecialDividends}_{PS}}{\text{MarketPrice}_{LY}} \right) \times 100$$

Where MarketPrice_{YE} is the market price at the end of the corresponding year. Dividends_{PS} are the dividends per share, and $\text{SpecialDividends}_{PS}$ are the special dividends per share. Lastly, MarketPrice_{LY} is the market price at the end of the prior year.

4.3.2 Independent Variable: ESG Scores and Disagreement

The independent variables in this study are the average ESG scores of firms and the degree of ESG disagreement between the raters. The variables are analysed collectively and individually for each ESG pillar, allowing for the determination of which pillar exerts the most significant influence on stock performance. However, as the four rating agencies employ disparate rating scales, rendering the ESG ratings incomparable, adjustments are necessary. While, the study of Christensen et al. (2022) proposes an arithmetic rescaling method to achieve comparability, it is not fully effective due to the uneven distribution of ratings along the scale. consequently, in order to ensure comparability across rating providers, the methodology suggested by Gibson et al. (2020) is employed in this study.

Initially, the RepRisk scores are rescaled. There is no consensus in the literature on the optimal weighting of the ESG pillars. A number of rescaling methods have been proposed by various authors, including Avramov et al. (2020), Billio et al. (2021), and Gibson Brandon et al. (2021). The following rescaling method is employed in this study: an AAA rating is assigned a score of 100, while a D rating is assigned a score of 0. The eight intermediate grades are then linearly assigned scores between 0 and 100. Furthermore, the Bloomberg scores, which are based on a scale of 1 to 10, are multiplied by 10. Given the absence of consensus on the optimal weighting of RepRisk, two models are developed for each hypothesis: one incorporating RepRisk in the ESG rating and disagreement variable, and one without. Furthermore, the Bloomberg score is multiplied by 10, as it is based on a scale of 1 to 10. This conversion of scores ensures that the ratings from all four providers are comparable for both investors and the purposes of this study. For

further details, please refer to Table 15.

Subsequently, the numerical ESG ratings are transformed into ranked percentile scores and standardised in order to achieve a mean of 0 and a standard deviation of 1. The average ESG score is computed by determining the mean of the normalised scores. Furthermore, the variable ESG rating disagreement is determined by calculating the standard deviation of the normalized ESG scores. This method, which employs standard deviation as an indicator of ESG rating disagreements, is a commonly employed approach in the literature (Gibson Brandon et al., 2021; Christensen et al., 2022; Wang et al., 2024). The calculation of the average ESG score and ESG disagreement using the normalised scores is an accurate method, as it ensures that each firm's contribution to the average is weighted equally in terms of standard deviation from the mean.

4.3.3 Moderating Variable: ESG Disclosure Score

The third hypothesis introduces the ESG disclosure variable, which is defined as the extent to which firms disclose ESG information. Bloomberg is the sole entity that provides ESG disclosure scores. This practice has been in place since 2006. These scores range from 0 to 100, with a score of 100 indicating the highest level of ESG transparency exhibited by companies. The mean disclosure score is 43.2, with a minimum of 4.05 and a maximum of 97.23. Bloomberg's methodology for calculating the ESG disclosure score involves analysing a range of sources of information, including company reports, websites, NGO publications, news reports, and other publicly available sources. The data is subjected to a review and standardisation process by Bloomberg analysts, who apply their expertise to derive a comprehensive score for each company. This process involves the analysis of over 800 ESG metrics (Bloomberg, 2024).

4.3.4 Control Variables

This study incorporates a number of control variables, including the Leverage Ratio, Asset Tangibility, Size, Book-Market Ratio, Gross Profit, Return on Assets (ROA), and Current Ratio. These have been identified in relevant literature (Gibson Brandon et al., 2021; Christensen et al., 2022). aforementioned variables influence the relationship between ESG disagreement and stock return. The control variables were obtained for the period between 2009 and 2019, using the ISIN codes.

The variable 'size', which is calculated as the natural logarithm of total assets, is a significant factor in the examination of stock returns. It is frequently observed that smaller firms demonstrate elevated asset returns, which can be attributed to their growth expectations Fama and French (1992). Conversely, it may be posited that larger firms may yield higher stock returns, due to the stability of their cash flows and the economies of scale that they are able to achieve (Withisuphakorn and Jiraporn, 2016). Moreover, it is anticipated that the correlation between 'asset tangibility' and stock returns will be positive. This is because companies with a higher proportion of tangible assets can use them as collateral during economic downturns or financial instability (İltas and Demirgunes, 2020). In addition, both the gross profit and the ROA measures are expected to have a positive correlation with stock returns, indicating that financially robust firms are likely to have higher stock returns (Nadyayani and Suarjaya, 2021). Moreover, a higher market-to-book ratio frequently signifies that a company is overvalued by the market, which may prompt investors to divest their shares and

consequently result in a decline in stock prices. However, the direction of this relationship is contingent upon other variables, such as the level of debt. Typically, a company's leverage level is anticipated to have an inverse relationship with stock prices, suggesting an elevated risk of financial instability (Christensen et al., 2022).

4.4 Descriptive Statistics

In this section, the descriptive statistics is examined. Table 3 presents the descriptive statistics for the variables employed in this study. As illustrated, the variables stock returns, excess returns, and all control variables were subjected to winsorization at the 2.5% level in order to control for outliers. Further details on the control variables and their calculations can be found in Appendix A, Table 16. It is important to note that the main explanatory variables were not subjected to winsorization. The ESG scores are reported as percentile ranks, with values ranging from 0 to 1. The disclosure variable is presented as simple scores, with values ranging from 0 to 100. Consequently, it was not necessary to apply winsorization to these variables. The level of ESG disagreement is notably high, with a mean of 0.635 across the four rating agencies. Furthermore, the environmental pillar exhibits the lowest level of ESG disagreement, in accordance with previous research findings (Christensen et al., 2022; Gibson Brandon et al., 2021; Wang et al., 2024). In contrast, the social pillar, however, appears to have the highest level of disagreement among the rating agencies.

Table 4 presents the composition of countries in the sample. A total of eight countries are included, with the United Kingdom accounting for 40,71%, followed by France at 16,67%, Germany and Switzerland both at 15,06%, and the Netherlands with 7,05%. Belgium and Austria represent smaller shares with 1,92% and 1,28%. Table 5 shows the industry affiliations across the firms in the sample. Most firms in our sample operate in Financials, Manufacturing, or Business Equipment.

Table 3: Summary Statistics for Various Variables

Variable	Min.	1st Qu.	Median	Mean	3rd Qu.	Max.
<i>Descriptive Statistics of Dependent Variable → winsorized at 2.5%</i>						
Stock Return	-42.240	-0.310	13.680	15.619	28.210	92.030
Excess Return	-44.940	-0.336	13.598	17.450	26.963	94.087
<i>Descriptive Statistics of Explanatory Variables</i>						
Average ESG Score	0.004	0.239	0.438	0.439	0.701	1.000
Average Environment Score	0.000	0.298	0.205	0.207	0.719	1.000
Average Social Score	0.000	0.378	0.526	0.499	0.632	1.000
Average Governance Score	0.004	0.439	0.583	0.621	0.719	1.000
ESG Disagreement	0.013	0.309	0.633	0.635	0.916	0.981
Disagreement Environment	0.001	0.425	0.722	0.760	1.064	2.201
Disagreement Social	0.005	0.391	0.582	0.563	0.691	1.438
Disagreement Governance	0.000	0.306	0.647	0.715	1.043	2.453
ESG Disclosure score	4.054	34.916	43.648	43.206	52.641	79.237
<i>Descriptive Statistics of Control Variables → winsorized at 2.5%</i>						
Asset Tangibility	0.000	0.168	0.222	0.255	0.483	0.838
Current Ratio	0.300	1.000	1.390	1.759	2.000	7.600
Leverage Ratio	0.000	0.0892	0.215	0.231	0.335	0.673
Market-to-book Value	0.450	1.270	1.650	2.329	2.720	9.210
ROA	5.260	3.290	6.660	6.661	8.200	26.660
Size	12.59	14.294	15.423	15.223	15.986	17.849

Notes: This table presents a summary of the statistical data for all variables employed in this research.

Table 4: Country-wise Frequency of Companies and Observations

Country	Freq. Comp.	Pct. Comp.	Freq. Obs.	Pct. Obs.
Austria	3	1.28%	37	1.34%
Belgium	5	1.92%	59	1.99%
France	51	16.67%	567	17.07%
Germany	46	15.06%	486	14.66%
Luxembourg	6	2.24%	75	2.46%
Netherlands	21	7.05%	230	7.06%
Switzerland	46	15.06%	472	14.25%
United Kingdom	126	40.71%	1379	41.17%
Total	304	100.00%	3305	100.00%

Notes: The table provides a breakdown of companies and observations by country, highlighting the representation and data volume for each country.

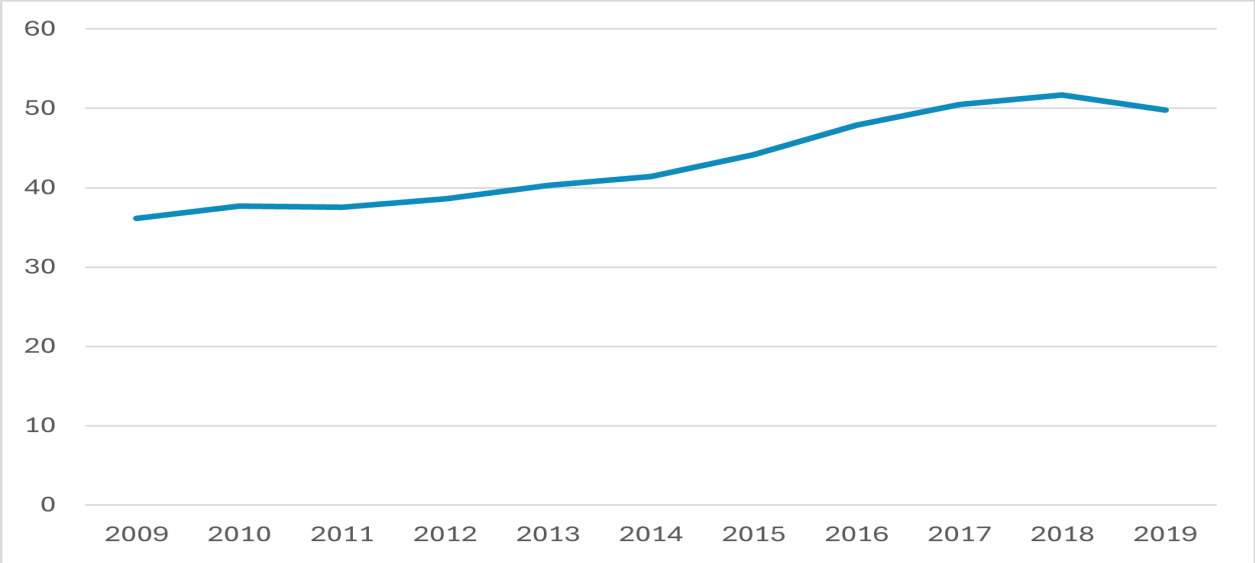
Table 5: Industry-wise Frequency of Companies and Observations

Industry	Freq. Comp.	Pct. Comp.	Freq. Obs.	Pct. Obs.
Business Equipment	29	9.53%	301	9.10%
Chemicals	9	2.96%	106	3.21%
Consumer Durables	15	4.93%	162	4.90%
Consumer NonDurables	23	7.57%	259	7.83%
Energy	3	0.99%	27	0.82%
Finance	65	21.38%	696	21.04%
Healthcare	11	3.62%	128	3.87%
Manufacturing	42	13.82%	465	14.08%
Telecommunications	21	6.91%	236	7.14%
Utilities	13	4.28%	139	4.20%
Wholesale, Retail	17	5.59%	193	5.84%
Other	56	18.43%	579	16.51%
Total/Average	304	100.00%	3305	100.00%

Notes: The table categorises the 12 Fama-French industry classification sectors and provides a breakdown of company and observation frequencies within each industry. The table highlights the representation and data volume for each sector.

Lastly, Figure 2 illustrates the trend of ESG disclosure scores from Bloomberg over time in the study's sample. The data reveals a gradual increase from 37 in 2009 to 50 in 2019. This upward trajectory aligns with the findings presented in Section 2.6. The observed rise in disclosure scores may be attributed to the strengthened regulatory framework in Europe concerning ESG disclosures.

Figure 2: ESG Disclosure Over Time



Notes: This figure employs Bloomberg's disclosure scores from 2009 to 2019.

5 Analysis ESG disagreement

Prior to undertaking empirical testing of the hypotheses, it is important to verify a foundational assumption: the existence of disagreement among ESG rating agencies in the sample. An examination is conducted within the sample to determine the degree of ESG rating inconsistency. Additionally, an exploration is undertaken to assess potential variations in the level of ESG rating disagreement over time and across different countries and industries.

Table 6 presents the pairwise Pearson correlations among the ESG ratings from four rating providers included in this study. The table displays the correlations for the total ESG ratings and separately for the Environmental, Social, Governance pillars in distinct panels. RepRisk does not issue ratings for individual pillars, therefore it is excluded from these sections. The average pairwise correlation among providers is displayed at the bottom of each panel, derived from the mean of their respective pairwise cross-correlations. A correlation of 1 implies complete agreement among the various ESG raters, while a correlation of 0 indicates significant disagreement.

The average pairwise correlation for the overall ESG rating is 0.3205, which is substantially lower than the average correlations among credit ratings, which are reported to be 0.99, according to [Berg et al. \(2020\)](#). Furthermore, the sample in this study shows lower correlations than those reported by [Gibson Brandon et al. \(2021\)](#), who find an overall correlation of 0.45. An intriguing observation from the table is that Bloomberg and Refinitiv exhibit the highest correlation at 0.5986, followed by Refinitiv and Sustainalytics with a correlation of 0.4632. In contrast, RepRisk exhibits the lowest correlation with other rating agencies, which could be attributed to differing rating methodologies. This is discussed in detail in Table 1 and is also reflected in the rescaling method that was necessary to compare the ratings, as explained in Section 4.3.2.

Panels B through D of Table 6 present a breakdown of the pairwise correlations across the three different pillars of ESG. The environmental pillar exhibits the highest level of agreement, with an average correlation of 0.3097. In contrast, the social pillar has the lowest average correlation, at 0.2484. The governance pillar falls in between, with an average correlation of 0.2851. Several factors may explain these results. Environmental metrics, such as greenhouse gas emissions and water usage, are generally easier to measure and quantify, leading to greater consistency among rating providers. However, social and governance issues tend to be more subjective, often requiring value judgments. Consequently, these pillars are prone to differing interpretations and methodologies, resulting in lower agreement among raters. Additionally, environmental ratings are frequently influenced by systematic regulatory requirements and firm-level efforts to quantify environmental impact, further contributing to their relatively higher agreement [Gibson Brandon et al. \(2021\)](#).

Table 6: Pearson correlations of ESG raters

	Obs.	Bloomberg	Refinitiv	Sustainalytics	RepRisk
<i>Panel A: Total pillar</i>					
Bloomberg	2391	1	0.3732	0.4632	0.3492
Refinitiv	2408		1	0.5986	0.2542
Sustainalytics	2703			1	0.2241
RepRisk	2109				1
Average correlation					0.3770
<i>Panel B: Environmental pillar</i>					
Bloomberg	2391	1	0.2231	0.3001	
Refinitiv	2408		1	0.4060	
Sustainalytics	2703			1	
Average correlation					0.3097
<i>Panel C: Social pillar</i>					
Bloomberg	2391	1	0.1722	0.2350	
Refinitiv	2408		1	0.3381	
Sustainalytics	2703			1	
Average correlation					0.2484
<i>Panel D: Governance pillar</i>					
Bloomberg	2391	1	0.2935	0.1512	
Refinitiv	2408		1	0.4108	
Sustainalytics	2703			1	
Average correlation					0.2851

Figure 3 examines whether ESG rating disagreement varies across different industries. It displays the average standard deviation among rating providers for each of the twelve Fama and French industries, suggesting a degree of industry-level heterogeneity in ESG disagreements among raters. ESG rating agreement is most consistent in the Financials and Consumer Durables industries, while the Utilities and Engineering & Maintenance industries exhibit the lowest agreement (as shown in Panel A). A noteworthy observation is that the Engineering & Maintenance sector experiences a higher degree of disagreement among ESG raters concerning environmental and governance factors (see Panels B and C), whereas there is a relatively high level of agreement regarding the social pillar (as seen in Panel C). These results indicate that disagreement patterns may vary significantly by industry and type of ESG consideration. This result contrasts with the findings of [Gibson Brandon et al. \(2021\)](#), who reports that Business Equipment shows the highest level of agreement among ESG raters, while Telecommunications exhibits the lowest. The discrepancy could be attributed to differences in focus and methodology. The study of [Gibson Brandon et al. \(2021\)](#) focuses on the S&P 500 index, and the authors employ a different set of ESG rating providers, which might lead to variations in reported outcomes.

Figure 3: ESG Disagreement Across Different Sectors

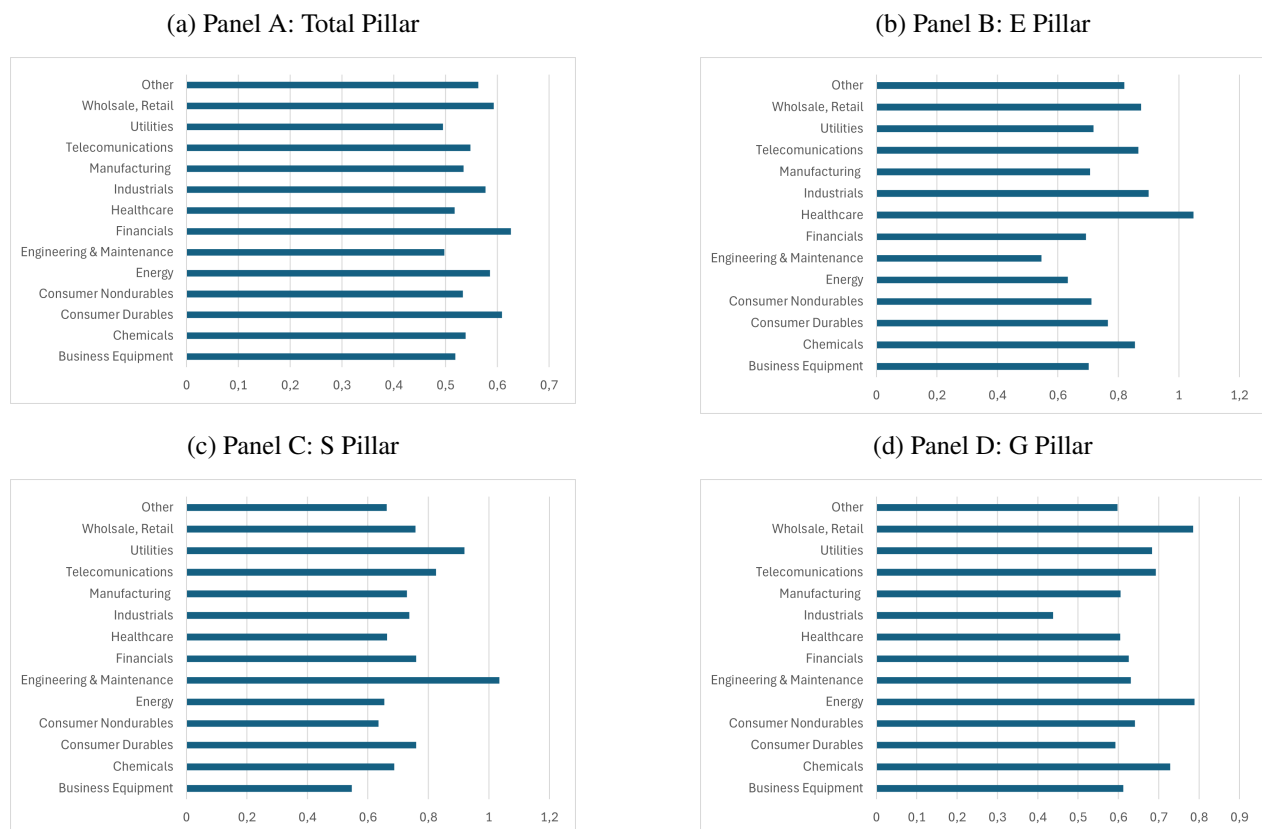


Figure 4 presents the level of ESG disagreement across eight countries. Austria exhibits the highest level of ESG disagreement among rating providers, while the UK appears to have the least disagreement. However, it should be noted that some countries have relatively few observations, which makes it challenging to derive definitive conclusions. Additionally, it is noteworthy that Belgium has almost no disagreement in the environmental pillar, yet scores the lowest in the social pillar. This indicates the existence of potential variations in the manner in which ESG criteria are applied across different countries and pillars.

Figure 4: ESG Disagreement Across Different Countries

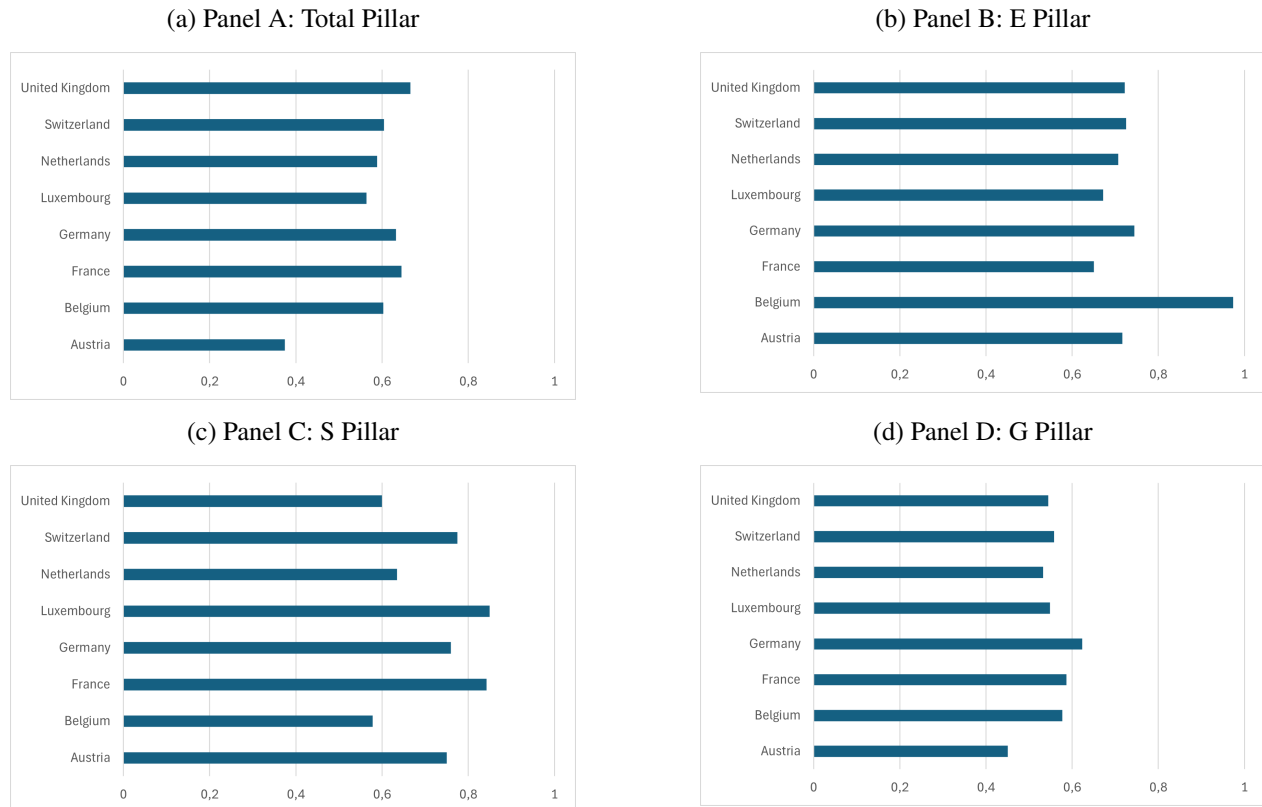
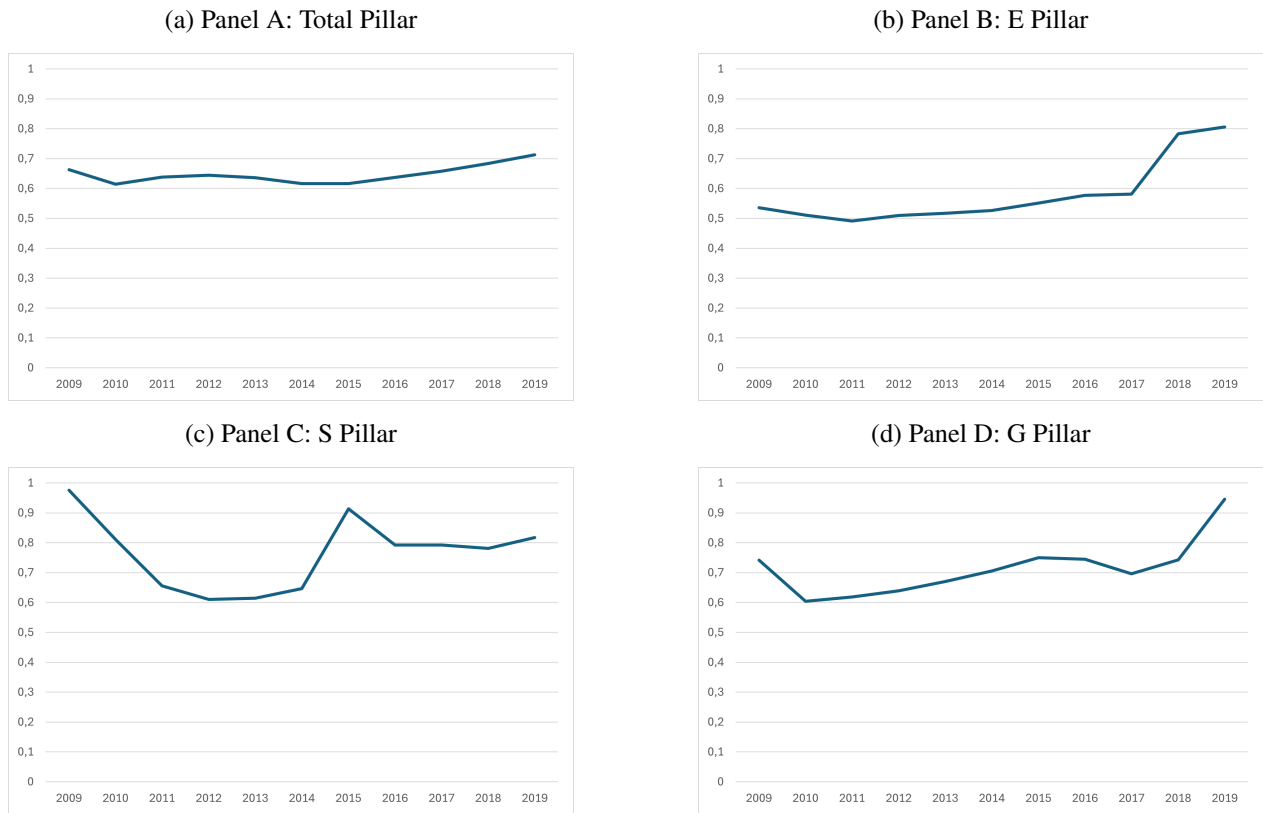


Figure 5 presents a visual representation of the evolution of ESG disagreement over time. The data indicates that ESG disagreement has declined over time, as evidenced by a reduction in the standard deviation among rating providers. This reduction in disagreement may be attributed to a rise in regulatory pressure for disclosure practices, as well as the implementation of more efficient analytical techniques for ESG measurements. The Social pillar has exhibited the least increase in agreement among raters, while the Environmental and Governance pillars have shown a similar rate of increase in agreement. These trends indicate that certain components of ESG may be more straightforward to quantify and standardise, while others may remain subject to differing interpretations.

Figure 5: ESG disagreement Over Time



In summary, the results from my analysis indicate that the correlation between the ESG ratings of various providers is relatively low within my sample. This suggests substantial disagreement among rating agencies, to the extent that it becomes challenging to identify clear leaders and laggards in ESG performance. Although the level of disagreement can be influenced by the specific sample selection, my results align with previous studies that have used different sample sets.

Furthermore, the extent of ESG rating disagreement in my data is diversified over time and across different industries. These findings suggest that when examining the ESG ratings a firm receives, or when comparing them with other firms, managers, investors, and researchers should account for the year the ratings were given as well as the specific industry in which the firm operates. These considerations are crucial for interpreting ESG ratings accurately and for making well-informed decisions.

6 Empirical analysis

The following chapter presents the empirical findings from this study. Prior to the analysis, tests are conducted in order to ascertain the validity and reliability of the regression model. The results of these tests are presented in Section 6.1. Following this, in Section 6.2 the results of the hypotheses that investigate the relationship between ESG scores, ESG disagreement, ESG disclosure, and stock returns are presented. The three hypotheses are analysed using four distinct models. Two of these incorporate RepRisk, while the other two exclude RepRisk for the variables pertaining to the ESG rating and ESG disagreement. This approach is justified by the fact that RepRisk employs a letter-based rating system, in contrast to the numeric scale employed by other ESG raters. The discrepancy in scaling methods could potentially lead to inaccurate results if not accounted for. In addition, two models exclude a set of control variables in order to test the robustness of the results. The difference in scaling methods could potentially lead to inaccurate results if not accounted for. To ensure further robustness of the findings, additional analyses are performed by changing the dependent variable to excess stock returns and by using an alternative method to calculate ESG rating (disagreement). This re-evaluation is intended to confirm the validity and reliability of the results, offering a more comprehensive understanding of the relationships between the key variables, which is shown in Section 6.3.

6.1 Model Tests

It is important to validate a number of pivotal assumptions in order to refine the regression model and guarantee the accuracy of the results. This consists of testing for linearity, heteroscedasticity, autocorrelation, and multicollinearity. The following analysis outlines the steps and tests conducted to address these issues in the regression model.

Firstly, the Ramsey RESET test was conducted to examine the presence of linearity in the model. The test yielded a p-value of 0.0028, indicating that linearity was present between the dependent and independent variables. Secondly, the Breusch–Pagan/Cook–Weisberg test was performed to assess heteroscedasticity. The p-value for this test was 0.0004, indicating the presence of heteroscedasticity in the regression residuals. Consequently, the model incorporates robust standard errors, double clustered by industry and time, in order to account for heteroscedasticity within these clusters. Additionally, the Hausman test reveals systematic differences in coefficients, which leads to the introduction of fixed effects at both the industry and time levels. Moreover, the Wooldridge test was used to test for autocorrelation, which confirmed the existence of autocorrelation in the dataset. As a result, the model employs double-clustered robust standard errors to address this issue.

6.2 Hypothesis Results

6.2.1 Hypothesis 1: ESG Scores and Stock Returns

The initial hypothesis proposes a positive correlation between the average ESG score across the four rating agencies and the subsequent year's stock return. This hypothesis is supported by the studies conducted by [Landier and Lovo \(2020\)](#), [Yin et al. \(2023\)](#), and [Broccardo et al. \(2024\)](#). The results of the regression analysis testing this hypothesis are presented in Tables 7 and 8. Where, Table 7 shows the impact of average ESG ratings, while Table 8 presents the average individual pillar rating on the stock returns. The initial table comprises four columns, representing four models. The first two columns include RepRisk as an independent variable, along with the average ESG rating. Columns 3 and 4, however, exclude RepRisk from this variable. However, columns 2 and 4 have been excluded to control for certain variables, namely asset tangibility, current ratio, and leverage ratio. These variables have a low to no significant effect on the relationship. The exclusion of non-significant variables can improve the interpretation of regression results. By focusing on variables that are statistically significant, it is possible to more clearly identify and discuss the factors that have a meaningful impact on stock returns. Moreover, including only significant variables can improve the overall fit of the regression model and enhance the interpretation of results. The regression models employ control variables, as well as double-clustered standard errors. The model comprises a total of 3,305 and 3,224 observations.

Table 7: Regression Results: ESG Rating on Stock Returns

	(1)	(2)	(3)	(4)
	Stock Return	Stock Return	Stock Return	Stock Return
Average ESG Rating	0.109*** (3.57)	0.086*** (3.25)	0.0607*** (3.24)	0.0548*** (3.12)
Gross Profit	0.032*** (5.43)	0.031*** (5.45)	0.014*** (5.65)	0.014*** (5.67)
Market-to-book Value	-0.134*** (-5.27)	-0.149*** (-5.01)	-0.144*** (-5.30)	-0.142*** (-5.17)
ROA	0.109*** (6.26)	0.105*** (6.24)	0.126*** (6.15)	0.125*** (6.14)
Size	0.165*** (3.97)	0.113*** (2.85)	0.166** (2.78)	0.129** (2.72)
Asset Tangibility	-0.145* (-2.08)		-0.142* (-1.94)	
Current Ratio	0.111 (0.70)		0.096 (0.40)	
Leverage Ratio	-0.027* (-2.43)		-0.026* (-2.46)	
_cons	-7.854** (-2.36)	-5.984 (1.62)	-12.260** (-3.02)	-10.783 (-2.80)
<i>N</i>	3305	3305	3224	3224
<i>R</i> ²	0.0598	0.0445	0.0558	0.4221
Adjusted <i>R</i> ²	0.0575	0.0434	0.0538	0.4191

t statistics in parentheses

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.001$

Notes: This table presents regression results investigating the relationship between the average ESG rating and stock returns. The first two columns include all four rating providers, whereas the last two columns exclude ReprRisk. In order to test for robustness, some control variables are excluded in columns 2 and 3. The analysis employs fixed effects at the industry and time levels, with standard errors clustered accordingly.

Table 8: Regression Results: Individual ESG Pillar Rating on Stock Returns

	(1)	(2)
	Stock Return	Stock Return
Average Environment Rating	0.008*** (3.25)	0.008*** (3.26)
Average Social Rating	-0.025 (-0.64)	-0.024 (-0.66)
Average Governance Rating	0.135*** (4.79)	0.198*** (5.14)
Gross Profit	0.0122** (2.71)	0.0123** (2.71)
Market-to-book Value	-0.181*** (-4.02)	-0.175*** (-4.47)
ROA	0.168*** (5.41)	0.118*** (5.44)
Size	0.275** (4.42)	0.256** (5.28)
Asset Tangibility	-0.164* (-1.92)	
Current Ratio	0.110 (0.23)	
Leverage Ratio	-0.215* (-1.39)	
_cons	-10.274** (-2.11)	-8.872** (-2.05)
<i>N</i>	3305	3305
<i>R</i> ²	0.0658	0.0620
Adjusted <i>R</i> ²	0.0625	0.0600

t statistics in parentheses

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.001$

Notes: This table presents the results of a regression analysis investigating the relationship between the average individual ESG pillar rating and stock returns. Column 1 includes all control variables, while Column 2 excludes asset tangibility, current ratio, and leverage ratio. RepRisk is not included in the average pillar ratings. The analysis employs fixed effects at the industry and time levels, with standard errors clustered accordingly.

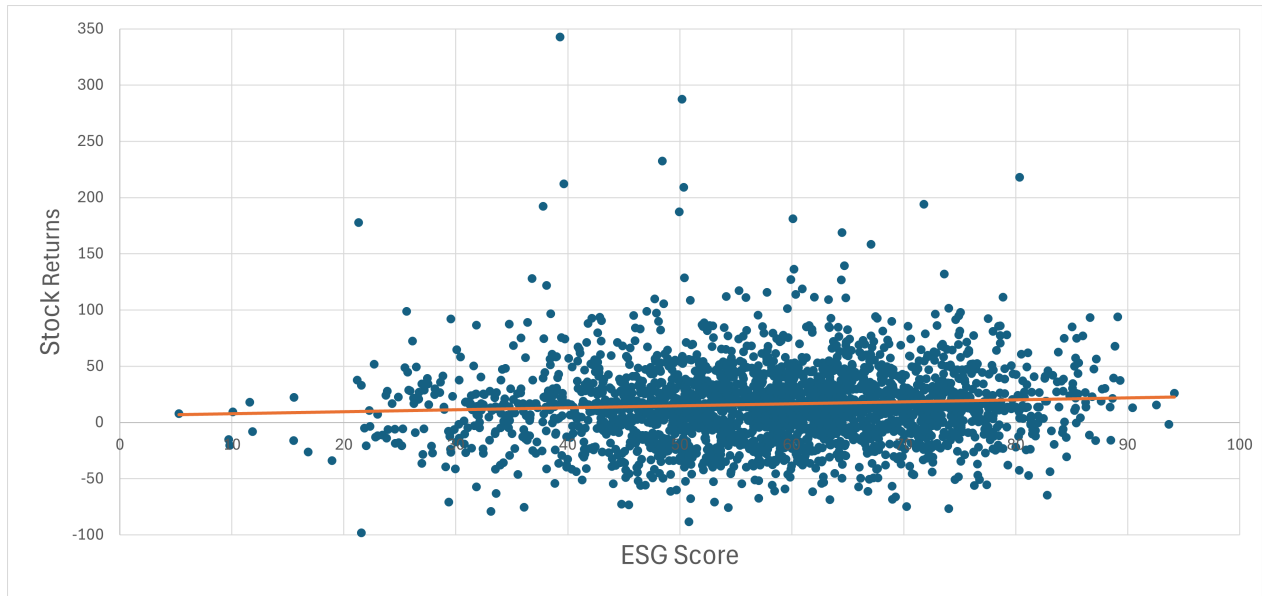
The coefficient for the average ESG rating is positive for all regressions presented in Table 7 and is statistically significant at the 0.1% level. This indicates that a higher average ESG score is associated with higher stock returns. The results provide support for the initial hypothesis, which posits a positive correlation between the combined ESG scores and stock returns. The coefficient of the ESG rating is observed to decrease from 0.109 to 0.0607 when RepRisk is excluded in the analysis. This suggests that the exclusion of RepRisk from the average ESG rating results in a diminished effect of the average ESG score on stock returns.

With regard to the control variables, the regression analysis for models 1 and 2 indicate that the gross profit, return on assets (ROA), and size are each significantly positively associated with stock returns. Conversely, asset tangibility, market-to-book value, and leverage ratio have a significantly negative impact on stock returns.

Table 8 examines the impact of the individual ESG pillars on stock returns. The analysis reveals that the average environment and governance pillar ratings exhibit a statistically significant effect at the 0.1% level. The environmental coefficient is relatively low, 0.008 in both columns, while the governance coefficient is 0.135 and 0.198 in columns 1 and 2. This indicates that both the environment and governance pillar exert a positive influence on stock returns when considered in isolation, but that the governance rating has a stronger effect. The coefficient of the governance rating is even higher than the average combined rating in Table 7. The average social rating is negatively related, yet the coefficient is not statistically significant. This means that when the social rating is considered individually, it has no pronounced impact on stock returns. Further elucidation of the findings pertaining to the initial hypothesis can be found in Section 7.1.

In order to complement the regression analysis and provide a visual representation of the relationship between ESG scores and stock returns, a scatter plot is included in Figure 3. The scatter plot illustrates the distribution and trend between the two variables in question, and allows for the identification of outliers. The y-axis displays the stock returns, while the x-axis presents the ESG scores. As can be observed, the scatter plot also demonstrates a positive correlation between ESG scores and stock returns. This visual tool serves to enhance our understanding by confirming the regression findings and supporting the robustness of the results. A few outliers are present in the data set. However, these are excluded from the regression analyses in order to ensure the conclusions are representative and to avoid any potential bias.

Figure 6: Scatter Plot Stock Returns and ESG Score



Notes: This figure shows a scatter plot with stock returns on the Y-axis and ESG scores on the X-axis. The variable ESG scores represents the average ESG score of all four rating agencies.

6.2.2 Hypothesis 2: ESG Disagreement and Stock Return

The second hypothesis investigates the concept of ESG disagreement, which is the central independent variable in this research. This hypothesis examines the relationship between disagreement in ESG ratings and stock returns. It proposes a positive correlation between ESG rating disagreement and stock returns. Table 9 presents the regression output regarding ESG disagreement. The initial two columns incorporate RepRisk within the ESG disagreement variable, whereas columns three and four exclude RepRisk. Columns 2 and 4 exclude the control variables of current ratio and leverage ratio, as these variables have been found to have a low to non-significant effect on the relationship. Table 10 presents the ESG disagreement on stock performance on the individual pillars. RepRisk is excluded from this analysis because it does not provide individual scores. All regressions include fixed effects and standard errors for the industry and time levels, with a total of 3,305 and 3,224 observations.

Table 9: Regression Results: ESG Rating Disagreement on Stock Returns

	(1)	(2)	(3)	(4)
	Stock Return	Stock Return	Stock Return	Stock Return
ESG disagreement	-0.158* (-2.24)	-0.152* (-2.26)	-0.586*** (-4.18)	-0.510*** (4.20)
Asset Tangibility	-0.132* (-2.22)	-0.097*** (-3.26)	-0.117* (-2.04)	-0.096*** (-2.15)
Gross Profit	0.039** (2.71)	0.039** (2.67)	0.040** (2.67)	0.039*** (2.66)
Market Value to Book Value	-0.186*** (-2.47)	-0.185*** (-2.54)	-0.185*** (-2.34)	-0.172*** (-2.42)
ROA	0.116*** (5.62)	0.117*** (5.63)	0.111*** (5.63)	0.107*** (6.21)
Size	0.213*** (3.48)	0.211*** (4.10)	0.197*** (3.99)	0.109*** (4.64)
Current Ratio	0.115 (0.24)		0.178 (0.38)	
Leverage Ratio	-0.0439* (-2.40)		-0.0361* (-2.46)	
_cons	-6.46* (-2.21)	-7.12*** (-2.89)	-8.67* (-1.93)	8.72** (-2.03)
<i>N</i>	3305	3305	3224	3224
<i>R</i> ²	0.0531	0.0508	0.0604	0.0579
Adjusted <i>R</i> ²	0.0505	0.0492	0.0581	0.0565

t statistics in parentheses

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.001$

Notes: The table presents the results of regression analyses of ESG disagreement on stock return. The data is organised into four columns. Columns 1 and 3 take into account all four rating providers (Bloomberg, Sustainalytics, Refinitiv, and RepRisk), while Columns 2 and 4 exclude RepRisk from the ESG disagreement variable. Columns 1 and 3 include all control variables, while Columns 2 and 4 exclude the current ratio and leverage ratio in order to test the robustness of the results.

Table 10: Regression Results: Individual Pillar Rating Disagreement on Stock Returns

	(1) Stock Return	(2) Stock Return
Environment Disagreement	-0.201*** (-2.12)	-0.191*** (-2.14)
Social Disagreement	-0.229** (-1.96)	-0.229** (1.48)
Governance Disagreement	-0.159 (-1.24)	-0.159 (-1.44)
Gross Profit	0.036** (2.66)	0.037** (2.66)
Asset Tangibility	-0.140** (-2.22)	-0.139** (-2.21)
Market-to-book Value	-0.262*** (-2.34)	-0.212*** (2.33)
ROA	0.132*** (5.58)	0.133*** (5.69)
Size	0.380*** (4.24)	0.378*** (4.44)
Current Ratio	0.256 (0.45)	
Leverage Ratio	0.035* (-2.20)	
_cons	-7.31*** (-1.68)	-7.43*** (-1.98)
<i>N</i>	3305	3305
<i>R</i> ²	0.0974	0.0980
Adjusted <i>R</i> ²	0.0930	0.0936

t statistics in parentheses

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.001$

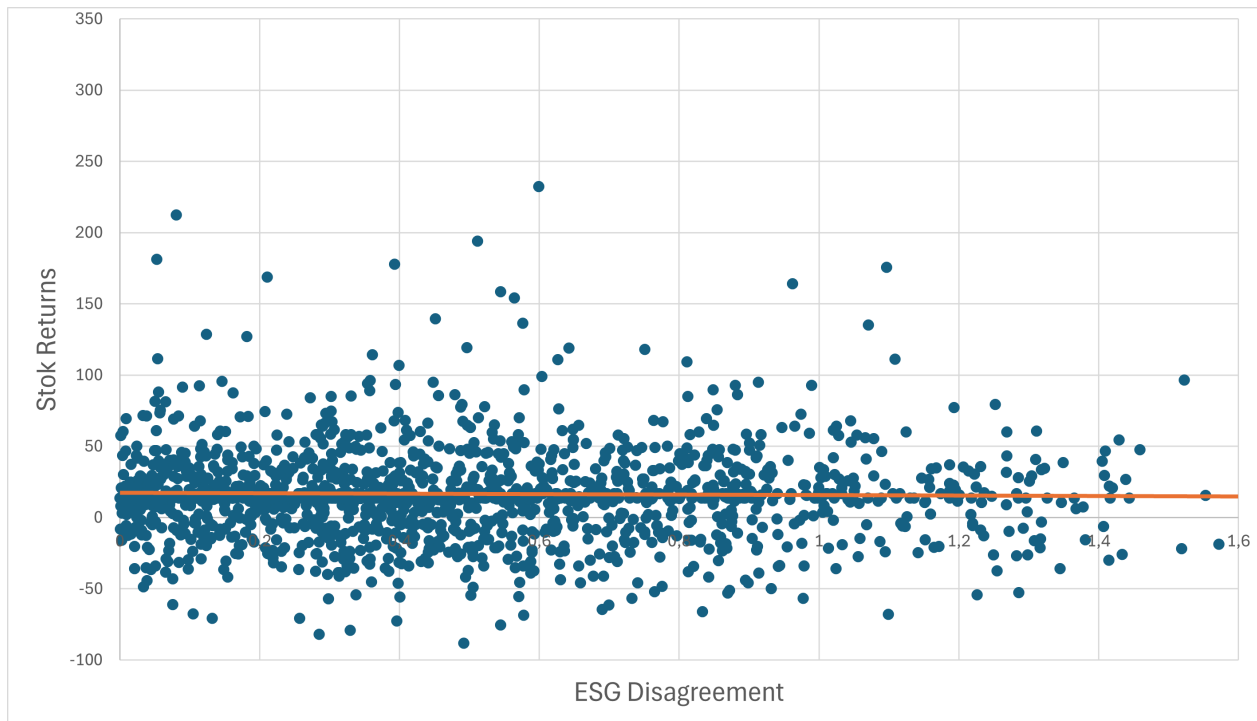
Notes: The table presents the results of a regression analysis of the individual ESG pillars in relation to stock returns. RepRisk is excluded in the independent variable. Column 2 excludes the control variables of the current ratio and leverage ratio.

Upon analysis of the results presented in Table 9, it can be observed that the coefficient for ESG disagreement is significantly negative in all four models. In the first model, the coefficient is -0.158, which is significant at the 10% level. In the third model, the coefficient is -0.586, which is significant at the 0.1% level. This indicates that the third model, which excludes RepRisk due to its unique scaling method, provides a stronger relationship between ESG disagreement and stock returns. Further, when current ratio and leverage ratio are excluded in the regression, the coefficient ESG disagreement slightly decreases, but there are no major changes. The results suggest that increased ESG disagreement is associated with lower stock returns in the following year, contradicting the initial hypothesis that posited a positive relationship. Therefore, the hypothesis is rejected. With regard to the control variables, gross profit, ROA, and size are found to exhibit a positive correlation with stock returns. In contrast, asset tangibility, market-to-book value, and leverage ratio are found to exhibit a significant negative correlation.

Table 10 indicates that among the different ESG pillars, disagreement regarding the environment and social pillar exhibits a significant negative relationship with stock performance when considering individual ESG rating disagreement. The coefficient in the first column for environment is -0.201, which is statistically significant at the 0.1% level, while social disagreement is -0.229, which is statistically significant at the 5% level. The coefficient for governance disagreement is -0.159, but is statistically insignificant. The findings suggest that disagreement in the environmental and social pillars has a notable impact on stock performance. The absence of a significant impact from social disagreement suggests that other factors may be at play in that particular pillar, requiring further investigation to understand the underlying dynamics. The control variables gross profit, ROA and size demonstrate a significant and positive correlation with stock returns. Conversely, other control variables, including asset tangibility, leverage ratio and market-to-book value exhibit significant negative correlations with stock returns, The control variable, current ratio, is insignificant. Further elucidation of the findings of the second hypothesis is provided in Section 7.2

To demonstrate the correlation between ESG disagreement and stock returns, Figure 7 presents a scatter plot. This figure illustrates a negative relationship between ESG divergence and stock returns, which aligns with the regression results. However, it is noteworthy that the trend line has a relatively shallow slope. The scatter plot depicts ESG divergence among the three rating providers, with the exclusion of RepRisk. The exclusion of RepRisk is justified by the regression model, which demonstrates a higher level of significance when RepRisk is omitted than when it is included. It is notable that the scatter plot reveals a few outliers, which are removed in the regression analyses.

Figure 7: Scatter Plot Stock Returns and ESG Disagreement



Notes: Scatter plot with stock returns on the Y-axis and ESG disagreement on the X-axis. The variable ESG disagreement is measured by Bloomberg, Refinitiv, and Sustainalytics.

6.2.3 Hypothesis 3: Moderating Role of ESG Disclosure

The third hypothesis builds on earlier findings by introducing the variable ESG disclosure and its interaction with ESG disagreement. The hypothesis posits that the ESG disclosure component weakens the positive correlation between ESG disagreement and stock returns. However, as previously demonstrated in Table 9, disagreement is negatively related to stock returns. Table 11 displays the results of testing the third hypothesis. The first and second columns present regression analyses based on the ratings provided by Bloomberg, Refinitiv, RepRisk, and Sustainalytics. The third and fourth columns exclude RepRisk in the ESG disagreement variable. In the second and fourth columns, the control variables current ratio and leverage ratio are excluded, as their significant effects are either low or non-significant.

The independent variables employed in these analyses include ESG disclosure, ESG disagreement, and the interaction term. Control variables are incorporated to mitigate the potential for omitted variable bias. Fixed effects and clustered standard errors are employed at both the industry and time levels to enhance the robustness of the analysis. The number of observations for the first two models is 2,353, while the last two models have 2,252 observations.

Table 11: Regression Results: Interaction ESG Rating Disagreement and Disclosure score on Stock Returns

	(1)	(2)	(3)	(4)
	Stock Return	Stock Return	Stock Return	Stock Return
ESG disagreement	0.309* (1.04)	0.299** (2.21)	0.231*** (1.63)	0.587*** (2.32)
ESG Disclosure Score	-0.161 (-1.57)	-0.1416 (-1.60)	-0.311* (-4.82)	-0.276* (-4.77)
ESG Disagreement*ESG Disclosure Score	-0.313** (-2.57)	-0.280** (-2.64)	-0.045 (-1.07)	-0.028 (-0.78)
Asset Tangibility	-0.142* (-1.21)	-0.265** (-2.38)	-0.371** (-2.14)	-0.360*** (-3.20)
Gross Profit	0.034** (2.24)	0.032** (2.24)	0.032** (2.21)	0.031** (2.21)
Market-to-book Value	-0.195*** (-3.39)	-0.195*** (-4.03)	-0.190*** (-4.11)	-0.192*** (-5.53)
ROA	0.125*** (6.24)	0.125*** (6.24)	0.126*** (6.22)	0.125*** (6.21)
Size	0.381*** (5.68)	0.357*** (6.60)	0.330*** (5.63)	0.350*** (6.35)
Current Ratio	0.310 (0.59)		0.306 (0.59)	
Leverage Ratio	-0.015* (-1.24)		-0.020* (-1.14)	
_cons	-7.57*** (-2.44)	-6.98*** (-2.41)	-9.68*** (-2.56)	-8.69*** (-2.55)
<i>N</i>	2353	2353	2252	2252
<i>R</i> ²	0.0820	0.0770	0.0786	0.0791
Adjusted <i>R</i> ²	0.0784	0.0744	0.0750	0.0765

t statistics in parentheses

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.001$

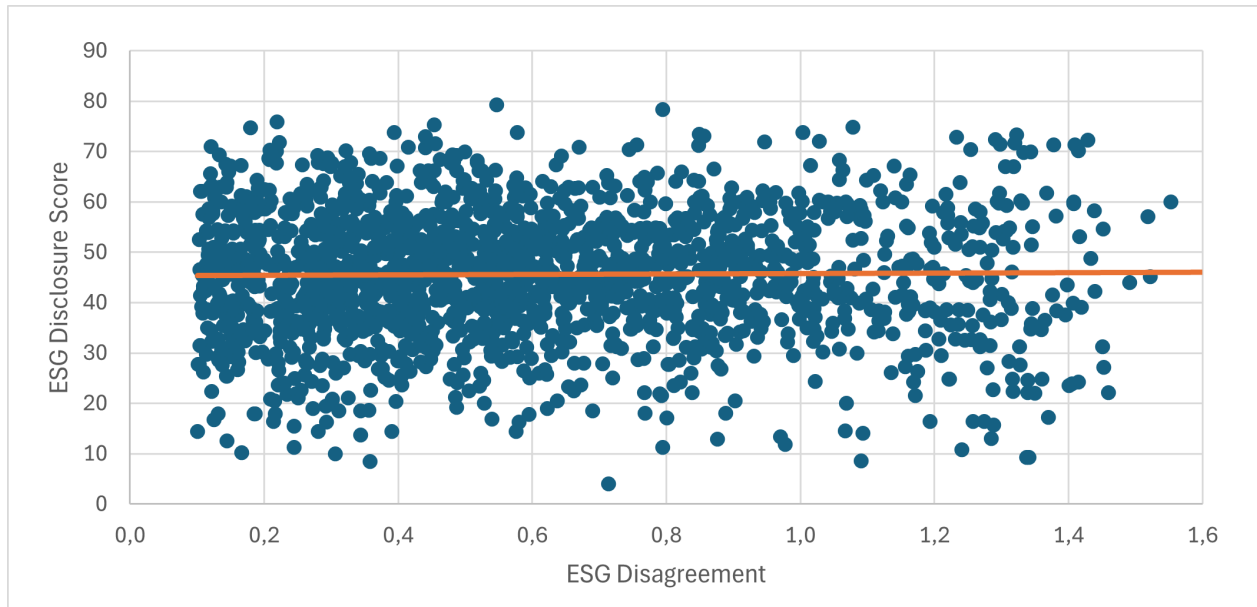
Notes: This table presents regression results investigating the relationship between ESG rating disagreement, its interaction with ESG disclosure scores, and stock returns. Columns 3 and 4 exclude RepRisk from the variable ESG disagreement, while columns 1 and 3 exclude the control variables current ratio and leverage ratio. The analyses employ fixed effects at the industry and time levels, with standard errors clustered accordingly.

Table 11 presents the results of the analysis of the impact of ESG disclosure on the relationship between ESG disagreement and stock returns. The results of the first two models indicate a statistically significant negative interaction term. The negative coefficient is observed to decrease when RepRisk is excluded from the model, and also when the two control variables are excluded. The negative and significant interaction terms indicate that as ESG disclosure scores increase, the effect of ESG disagreement on stock returns becomes less pronounced. This provides support to the hypothesis that elevated levels of ESG disclosure serve to mitigate the impact of ESG rating disagreement on stock returns. Nevertheless, when RepRisk is excluded from the analysis, the interaction term exhibits an insignificant effect. Model 1 indicates a coefficient of -0.313 with a significance level of 5%, while model 3 shows an insignificant coefficient of -0.045

It is noteworthy that the coefficient for ESG disagreement has become positive in these models and has remained significant. The significance level is higher for the models excluding RepRisk regarding ESG disagreement and stock returns. In the third and fourth models, there is a negative relationship between the ESG disclosure score and stock returns, with a coefficient of -0.311 and -0.276, respectively, at a 10% significance level. However, in the first two regression models, no significant effects are presented regarding ESG disclosure. The negative coefficient indicates that higher ESG disclosure scores are associated with lower stock returns. This suggests that, in isolation, more ESG disclosure might be viewed unfavourably by the market, but this effect is significant only at the 10% level. Furthermore, the control variables ROA, gross profit, and size exhibit a statistically positive relationship with stock returns, while assets tangibility, market-to-book value, and leverage ratio have a statistically negative relationship with the dependent variable. The aforementioned control variables have remained consistent in terms of their statistical significance and direction of influence. For further discussion on the results of the third hypothesis, please refer to Section 7.3.

In order to further examine the relationship between ESG disclosure and ESG disagreement, a scatter plot is presented. Figure 8 presents a scatter plot of ESG disclosure score on the y-axis and ESG disagreement on the x-axis. The presented plot illustrates the relationship between ESG disagreement and ESG disclosure score. As illustrated in the figure, a modest positive correlation is evident. This relationship is inconsistent with the findings of the study by Bonsall et al. (2017), which indicates that companies with higher financial reporting quality are less likely to have split ratings. Nevertheless, the relationship is consistent with that identified by Christensen et al. (2022), who also identifies a positive correlation between ESG disclosure and disagreement. The paper posits that ESG disagreement arises due to the differing methodologies employed by rating agencies. The visualisation helps to understand whether there is a link between higher levels of disagreement in ESG ratings and higher ESG disclosure scores. However, the scatter plot alone cannot validate the hypothesis. It serves as an initial visual examination that supplements the statistical analysis presented in Table 11. A scatter plot depicts the relationship between two variables, but it does not imply causation. Moreover, the scatter plot does not indicate the statistical significance level.

Figure 8: Scatter Plot ESG Disclosure Score and ESG Disagreement



Notes: This figure shows a scatter plot with stock returns on the Y-axis and ESG disagreement on the X-axis. The variable ESG disagreement is measured by Bloomberg, Refinitiv, and Sustainalytics.

6.3 Robustness checks

In order to ensure the validity of the findings, a series of robustness checks will be conducted. These checks will subject the relationships identified in the preceding analyses to further scrutiny, thereby providing additional validation of the results.

In the preceding section, the degree of disagreement among ESG ratings was assessed by computing the standard deviation of percentile rankings across various rating agencies. In this subsequent analysis, an alternative approach proposed by [Christensen et al. \(2022\)](#), will be employed to determine the average ESG rating and ESG disagreement variable. This approach involves computing pairwise correlations between the unstandardised raw ESG ratings, after rescaling RepRisk and Bloomberg. In contrast to the preceding method, which focused on the dispersion of percentile rankings, this alternative method directly evaluates the level of agreement between pairs of raters based on their raw rating scales. The use of raw ratings serves to mitigate potential issues associated with standardisation or percentile ranking processes that could impact ESG rating (disagreement) measures derived from ranked data. Table 12, column 1 and 2 show the robust regression results regarding the average ESG rating based on raw ESG scores. The results are in accordance with those of the preceding regression, as illustrated in Table 7, which indicates a significant positive relationship. Table 13, column 1 and 2 present the robust regression outcomes concerning the relationship between ESG disagreement and stock returns. The regression results consistently demonstrate a significant negative association, indicating that higher ESG disagreement is linked to lower stock returns. It is noteworthy that the coefficient magnitude is observed to decrease when RepRisk is excluded from the analysis (Column 2). Moreover, the control variables that are statistically significant in Table 9 retain their statistical significance

in the robust regression analysis, and the direction of the coefficients remains unchanged. Table 14, column 1 and 2 display the robust regression findings concerning the correlation between ESG disagreement and stock returns, with the moderating influence of ESG disclosure score taken into account. Similarly to Table 11, the interaction term remains negative, and there are no significant differences in the levels of significance or the sign of the variables.

As part of the robustness analysis, an additional check will be conducted on the stock return variable by transforming it into excess stock return. This is achieved by subtracting the risk-free rate of return from each stock return. The aim of this robustness check is to determine whether the regression results remain consistent when using excess stock returns in place of stock returns. Tables 12, 13, and 14, columns 3 and 4 present the results of this transformation. Although there are minor alterations in the coefficients, the significance of the variables remains consistent. This confirms the stability of the results across different measures of stock returns, further strengthening the robustness of the analysis.

Table 12: Robustness Regression Results: ESG Rating on Stock Returns/Excess Returns

	Stock Return		Excess Return	
	(1)	(2)	(3)	(4)
Average ESG rating	0.114*** (3.56)	0.0588*** (3.24)	0.0146*** (3.44)	0.0388*** (3.18)
Asset Tangibility	-0.145* (-2.08)	-0.143* (-1.96)	-0.121* (-2.04)	-0.019* (-1.96)
Current Ratio	0.118 (0.48)	0.093 (0.38)	0.022 (0.24)	0.045 (0.33)
Gross Profit	0.019*** (5.21)	0.015*** (5.23)	0.017*** (4.84)	0.016*** (5.01)
Leverage Ratio	-0.025* (-2.44)	-0.027* (-2.46)	-0.011* (-2.42)	-0.016* (-2.45)
Market-to-book Value	-0.138*** (-5.30)	-0.145*** (-5.42)	-0.098*** (-5.12)	-0.113*** (-5.40)
ROA	0.147*** (5.71)	0.128*** (5.72)	0.142*** (5.69)	0.126*** (5.70)
Size	0.129*** (3.51)	0.177*** (3.82)	0.154*** (3.61)	0.156*** (3.79)
_cons	-6.874 (-1.98)	-8.563 (-2.84)	-5.767 (-1.66)	-8.161 (-1.58)
<i>N</i>	3305	3224	3305	3224
<i>R</i> ²	0.0582	0.0545	0.0490	0.0468
Adjusted <i>R</i> ²	0.0547	0.0522	0.0428	0.0445

t statistics in parentheses

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.001$

Notes: The table displays the outcomes of the robustness assessment examining the impact of ESG ratings on (excess) stock returns. It is organized into four columns. Columns 1 and 2 correspond to regressions on stock returns, while columns 3 and 4 pertain to regressions on excess stock returns. Furthermore, columns 1 and 3 encompass all four rating agencies (Bloomberg, Sustainalytics, Refinitiv, and RepRisk), whereas columns 2 and 4 omit RepRisk from the average ESG rating variable.

Table 13: Robustness Regression Results: ESG Rating Disagreement on Stock Returns/Excess Returns

	Stock Return		Excess Return	
	(1)	(2)	(3)	(4)
ESG disagreement	-0.098* (-2.02)	-0.458*** (-4.12)	-0.132** (-2.22)	-0.438*** (-4.16)
Asset Tangibility	-0.123* (-2.12)	-0.122** (-2.202)	-0.122* (-2.18)	-0.118** (-2.14)
Current Ratio	0.325 (0.86)	0.284 (0.76)	0.326 (0.83)	0.286 (0.74)
Gross Profit	0.042** (2.71)	0.041** (2.67)	0.042** (2.75)	0.040** (2.68)
Leverage Ratio	-0.032*** (-2.71)	-0.039*** (-2.66)	-0.034*** (-2.77)	-0.032*** (-2.68)
Market-to-book Value	-0.180 (-1.47)	-0.181 (-1.46)	-0.181 (-1.48)	-0.182 (-1.47)
ROA	0.186*** (5.62)	0.184*** (5.67)	0.144*** (5.64)	0.140*** (5.69)
Size	0.210*** (3.48)	.110*** (3.72)	0.197*** (3.50)	0.140*** (3.73)
_cons	-5.74 (-1.01)	-9.469 (-1.45)	-5.76 (-1.02)	-9.471 (-1.45)
<i>N</i>	3305	3324	3305	3224
<i>R</i> ²	0.0587	0.0625	0.0590	0.0626
Adjusted <i>R</i> ²	0.0502	0.0668	0.0503	0.0669

t statistics in parentheses

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.001$

Notes: The table displays the outcomes of the robustness assessment examining the impact of ESG rating disagreement on (excess) stock returns. It is organised into four columns. Columns 1 and 2 correspond to regressions on stock returns, while columns 3 and 4 pertain to regressions on excess stock returns. Furthermore, columns 1 and 3 encompass all four rating agencies (Bloomberg, Sustainalytics, Refinitiv, and RepRisk), whereas columns 2 and 4 omit RepRisk from the ESG disagreement variable.

Table 14: Robustness Regression Results: Interaction of ESG Disagreement and Disclosure on Stock Returns/Excess Returns

	Stock Return		Excess Return	
	(1)	(2)	(3)	(4)
ESG disagreement	0.312* (1.24)	0.235** (1.59)	0.290* (1.38)	0.117** (1.58)
ESG Disclosure Score	-0.144 (-1.28)	-0.171* (-1.51)	-0.140 (-1.26)	-0.168* (-1.48)
ESG Disagreement*ESG Disclosure Score	-0.301** (-2.54)	-0.188 (-2.34)	-0.292** (-2.56)	-0.179* (-2.22)
Asset Tangibility	-0.137* (-0.94)	-0.136* (-1.44)	-0.121* (-0.96)	-0.119* (-1.42)
Current Ratio	0.303 (0.45)	0.201 (0.44)	0.267 (0.32)	0.198 (0.30)
Gross Profit	0.019* (2.28)	0.017* (2.61)	0.021* (2.42)	0.015* (2.68)
Leverage Ratio	-0.038* (-2.32)	-0.022* (-2.24)	-0.032* (-2.31)	-0.039* (-2.22)
Market-to-book Value	-0.199** (-2.63)	-0.196** (-2.71)	-0.192** (-2.35)	-0.183** (-2.40)
ROA	0.145*** (6.15)	0.147*** (6.03)	0.142*** (6.16)	0.141*** (6.81)
Size	0.368*** (5.20)	0.347*** (5.34)	0.264*** (5.18)	0.240*** (5.31)
_cons	-7.451* (-0.72)	-8.546** (-0.58)	-7.455* (-0.72)	-7.541** (-0.58)
<i>N</i>	2353	2252	2353	2252
<i>R</i> ²	0.0450	0.05226	0.0454	0.0530
Adjusted <i>R</i> ²	0.0411	0.0518	0.0415	0.0511

t statistics in parentheses

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.001$

Notes: The table displays the outcomes of the robustness assessment examining the impact of ESG ratings on (excess) stock returns, with the moderating effect of ESG disclosure. It is organised into four columns. Columns 1 and 2 correspond to regressions on stock returns, while columns 3 and 4 pertain to regressions on excess stock returns. Furthermore, columns 1 and 3 encompass all four rating agencies (Bloomberg, Sustainalytics, Refinitiv, and RepRisk), whereas columns 2 and 4 omit RepRisk from the ESG disagreement variable.

7 Discussion

The central focus of this study is to investigate the impact of ESG rating disagreement on stock returns, with the moderating effect of ESG disclosure. While Chapter 6 outlines the results obtained from the analyses, this chapter discusses these findings. It aims to provide potential explanations for the results and compare them to prior literature and relevant theories. Section 7.1 presents the results of the first hypothesis regarding ESG rating and stock returns. Next, Section 7.2 discusses the results of the second hypothesis. Section 7.3 offers a critical analysis of the hypothesis concerning ESG disagreement and stock returns, considering the moderating effect of ESG disclosure. Finally, Section 7.4 presents the limitations within this study.

7.1 ESG Rating and Stock Return

The initial hypothesis posits that higher ESG scores are positively correlated with stock returns. As previously stated in 6.2.1, the correlation between stock returns and the average ESG rating is significantly positive in this study. The results indicate that higher ESG ratings are associated with enhanced stock performance. The findings are consistent with the argument that investors demand higher compensation for holding portfolios of stocks with higher ESG ratings. This implies that the first hypothesis can be accepted. The results show that excluding RepRisk reduces the regression coefficient. This means that RepRisk affects the strength of the relationship between the variables in the model. Specifically, it appears that RepRisk contributes to a stronger relationship. This reinforces the importance of RepRisk in explaining the relationship between ESG ratings and stock returns.

7.1.1 Total ESG Rating

The findings are in accordance with the most widely accepted theories and existing literature on the subject. The stakeholder theory postulates that organisations which effectively manage their stakeholder relationships tend to achieve superior long-term financial performance, as evidenced by above-average stock returns. This theory suggests that by addressing the needs and interests of all stakeholders, including employees, customers, communities, and the environment, firms can create long-term value (Freeman, 1984). A company with a higher ESG rating may be considered to be more effectively balancing the interests of its stakeholders, which could potentially lead to higher stock returns.

The positive correlation between ESG ratings and stock returns is consistent with the findings of Trisnowati et al. (2022), Serafeim and Yoon (2022), and Yin et al. (2023), which also demonstrate that higher ESG ratings increase stock returns. The aforementioned studies posit that firms with elevated ESG scores are more likely to possess superior reputations, augmented innovation capabilities, and competitive advantages. In addition, the positive correlation may be attributed to the fact that companies with robust ESG practices are more likely to minimise risks related to negative outcomes for employees, customers, communities, and the environment. This indicates that investors may regard firms with elevated ESG ratings as less risky and better positioned to navigate environmental and social challenges, which could result in enhanced stock returns. Conversely, investors require a risk premium for investments with lower ESG scores. This is consistent with Vishwanathan et al. (2019) and Kempf and Osthoff (2007), who identify that a long-short ESG strategy, which

encompasses the purchase of high ESG-rated stocks and the sale of low ESG-rated stocks, is an effective approach. A statistically significant alpha is yielded by a long-short ESG strategy.

However, the findings conflict with the expectations of modern portfolio theory, which posits that investors are primarily compensated for holding systematic risk. Some scholars posit that ESG investing could potentially result in diminished financial performance, as companies' ESG efforts are perceived as cost-incurring by investors. For example, previous studies by [Lioui and Sharma \(2012\)](#) and [Hirigoyen and Poulain-Rehm \(2014\)](#) identify a significant negative correlation between environmental corporate social responsibility (ECSR) and financial performance, as measured by return on assets (ROA). The aforementioned studies, which utilised data from KLD Research & Analytics and Vigeo Eiris, indicate that investors perceive companies' ESG initiatives as a reduction in profits, which translates to a lower financial performance. However, this study focuses on stock performance rather than financial performance, which may explain why the studies by [Lioui and Sharma \(2012\)](#) and [Hirigoyen and Poulain-Rehm \(2014\)](#) reach different conclusions than this research. Moreover, the results are at odds with those of [Gavrilakis and Floros \(2023\)](#) and [Mănescu \(2011\)](#), who reveal a significant negative correlation between ESG performance and stock returns. This discrepancy may be attributed to the fact that the study by [Mănescu \(2011\)](#) focuses on firms traded on the US market, whereas the assertion by [Gavrilakis and Floros \(2023\)](#) indicates that the relationship is particularly pronounced among Italian firms.

The differences between our findings and those of the aforementioned studies point out the complexity and multifaceted nature of the relationship between ESG factors and financial performance. While some scholars have identified negative associations between specific ESG metrics and financial indicators, our study suggests that higher overall ESG ratings are associated with improved stock returns. Variations in methodologies, sample characteristics, and data sources across studies may contribute to disparate findings. Furthermore, the findings of this study align with those of the meta-analysis conducted by [Friede et al. \(2015\)](#), which synthesised data from 2,200 sources, demonstrating that 90% of them exhibited a non-negative correlation between ESG factors and financial performance.

7.1.2 Individual Pillar Rating

The regression model, which incorporates the separate ESG pillars, provides insights into the individual impact of these factors on stock returns. Among the three pillars, only the environment and governance pillars have a statistically significant positive effect on stock returns. This implies that companies with strong environmental and governance practices tend to exhibit higher stock returns. The coefficient for the environmental factor is 0.008, indicating that for each unit increase in the environmental rating, there is an 0.8% increase in stock return. Although this is a positive and significant effect, it suggests that the influence of environmental ratings on stock returns is relatively modest. The governance pillar has a coefficient of 0.135, indicating that for every one-unit increase in the governance rating, the stock return increases by 13.5%. This represents a robust and positive effect, suggesting that enhancements in governance practices exert a considerably more substantial influence on stock returns than environmental ratings. These findings indicate that while investors do value environmental performance, they may not perceive it as a

significant driver of stock returns in comparison to the governance pillar. Consequently, it can be posited that investors regard governance as a foundational factor in a company's success. The implementation of effective governance procedures can serve to mitigate risks, enhance accountability and improve strategic decision-making, thereby leading to a positive impact on stock returns. Furthermore, it is anticipated that investors may view environmental performance as part of a broader ESG strategy, although this is not the primary driver of stock returns. Finally, investors may value environmental improvements as a component of long-term risk management and brand enhancement.

The results among the individual pillars partially confirm the findings of [Nelvik Uthuslien and Andreasson \(2023\)](#), who observe significant positive effects for each of the pillars on abnormal returns. The results indicate that governance is the most statistically significant factor. The results also align with the findings of the study by [Giese et al. \(2019\)](#), who find that the governance score exerts the greatest influence on stock performance in the short term. This study also measures stock performance after one year, which is considered short term. However, the findings contradict the study of [Luo \(2022\)](#), who demonstrate that only the social pillar reveals a significant positive alpha. It should be noted that the testing sample of [Luo \(2022\)](#) comprised UK stocks from 2003 to 2020 and utilised a single ESG score sourced from the Thomson Reuters database. Consequently, the findings may differ from those presented in this study.

The significance of the governance and environmental pillars serves to illustrate the recognition of these factors as determinants of stock performance. Effective governance practices, such as transparent decision-making processes, robust internal controls, and accountability mechanisms, are valued by investors due to their potential to reduce risks and enhance shareholder value. Similarly, strong environmental performance, reflecting a company's commitment to sustainable practices, resource efficiency, and regulatory compliance, is also a significant factor among investors who are increasingly aware of the risks and opportunities associated with environmental factors. Consequently, firms that prioritise governance standards and environmental responsibility tend to exhibit higher stock returns.

It is notable that the social pillar does not exhibit statistically significant effects on stock returns in this sample. The finding suggests that, while social considerations are increasingly important in corporate decision-making, their individual direct impact on stock performance is nuanced in the period of 2009 to 2019. It is possible that the financial implications of social factors are not fully captured by traditional financial metrics, or that their effects manifest over longer time horizons. Nevertheless, the absence of statistical significance does not diminish the importance of social considerations for investors and companies. The influence of social issues, such as diversity and inclusion, employee welfare, and community engagement, on business strategies and market perceptions is becoming increasingly evident. Despite the absence of a direct link between the social pillar and stock returns identified in our analysis, it is crucial for companies to continue integrating these considerations into their operations and reporting practices. It is possible that the time horizon of this study is no longer relevant for the social pillar. The importance of corporate social responsibility has reached a level that is now greater than ever, and therefore the findings may no longer be applicable.

In conclusion, the positive effects of governance and environmental ratings on stock returns demonstrate

the significance of these factors in influencing stock performance and investor confidence. Companies that excel in these areas are better equipped to manage risks and deliver sustainable returns to their shareholders. However, the aggregate ESG rating may be more reliable, because it faces less disagreement compared to the individual pillars as shown in 6. Therefore, combined ESG ratings provide a more reliable and trusted measure of a company's sustainability performance than individual ratings.

7.2 ESG Disagreement and Stock Return

The second hypothesis postulates that greater disagreement in ESG factors is associated with higher stock returns. However, the outcomes regarding ESG disagreement and stock returns, as delineated in Section 6.2.2, indicate a significant, negative effect. These findings are inconsistent by the reviewed, though modest, literature. For instance, [Gibson Brandon et al. \(2021\)](#) observe a positive relationship between stock returns and ESG rating disagreement. Their study posits that heightened disagreement regarding a firm's ESG performance increases uncertainty and risk regarding its future cash flows, thereby leading to higher expected returns. The results of this investigation do not support the notion of a risk premium for firms with elevated ESG rating disagreement across providers. Additionally, these results contradict those of [Avramov et al. \(2020\)](#), who suggest that ESG rating discrepancies elevate investment risk and subsequently diminish investor demand.

7.2.1 Total ESG Rating Disagreement

The disparate findings may be attributed to differences in methodology, sample characteristics, and sample periods. In their study, [Gibson Brandon et al. \(2021\)](#) incorporates a total of seven ESG rating providers (Asset4 (Refinitiv), Sustainalytics, Inrate, Bloomberg, FTSE, KLD Research & Analytics, and MSCI IVA) and employs multiple proxies for stock performance (explained in Section 2). This study utilises only four ESG rating providers (Bloomberg, Reprisk, Refinitiv Eikon, and Sustainalytics) and employs a different proxy for stock performance, namely (excess) stock returns. Furthermore, [Gibson Brandon et al. \(2021\)](#) focus on the S&P 500 in the US, whereas this research concentrates on Western Europe. Additionally, the sample period of [Gibson Brandon et al. \(2021\)](#) is slightly shorter than the period examined in this study, spanning from 2010 to 2017.

A comparison of this study with the research of [Avramov et al. \(2020\)](#) reveals that the 2020 study assesses ESG disagreement using six rating providers (Asset4 (Refinitiv), MSCI IVA, Bloomberg, Sustainalytics, and S&P Global (RobecoSAM)). Their study's analysis is centred on US companies and encompasses a timeframe from 2002 to 2019. Furthermore, [Avramov et al. \(2020\)](#) employ the CAPM alpha as a proxy for stock performance and categorise brown and green stocks in the empirical analysis. Their findings indicate that brown stocks outperform green stocks when rating disagreement is lower, and only green stocks are perceived as riskier when disagreement is high. In contrast, this study does not differentiate between brown and green stocks. The distribution of brown and green stocks in the sample may elucidate the divergent results. If a greater proportion of brown stocks is present in this study, the risk, and demand for the stock may remain unaffected when the level of disagreement fluctuates, as proposed by [Avramov et al. \(2020\)](#).

The findings of this study diverge from those of prior research on ESG-related studies. However, they align with previous research examining financial disagreement on stock returns. For example, [Jiang et al. \(2005\)](#) find that increased uncertainty regarding the prediction of stock returns leads to lower future stock returns. Similarly, the research by [Diether et al. \(2002\)](#) studies dispersion in analysts' earnings forecasts on stock returns. The findings indicate that higher dispersion in forecasts is associated with lower future returns. Moreover, the findings of [Ang et al. \(2006\)](#) and [Sadka and Scherbina \(2007\)](#) reach similar conclusions in their study on the relationship between analyst ratings and stock returns. Their findings suggest that higher levels of disagreement among analysts are associated with lower future stock returns.

One potential explanation for the findings of this study is the Optimism-Bias theory proposed by [Miller \(1977\)](#). The theory suggests that divergent opinions regarding stock information lead to stock overvaluation due to short-selling constraints. This theory may explain the negative relationship found in this study. Furthermore, the investor irrationality theory posits that when investors encounter ESG disagreement, they may be inclined to select the highest rating as an accurate representation of a company's ESG level ([Hirshleifer and Luo, 2001](#)). Consequently, this could result in overvalued stocks and reduced returns. Moreover, the findings of the study are consistent with the theory of irrational behaviour, which posits that uncertainty can precipitate emotional fluctuations among investors, leading to doubt ([Chatterji et al., 2016](#); [Brooks et al., 2023](#)). The presence of discrepancies in ESG ratings can increase uncertainty and concern among investors, which could erode confidence and reduce trading activity in the market, ultimately reducing stock returns. This theory offers an additional potential explanation for the negative results.

7.2.2 Individual Pillar Rating Disagreement

The results indicate that only the environment and social pillars of disagreement on stock returns exhibit significant negative effects on stock return. These findings are inconsistent with those of the study of [Gibson Brandon et al. \(2021\)](#), which indicates that implementing a long-short strategy for portfolios sorted based on disagreement in the environmental pillar yields a positive and significant alpha. The findings of this study and [Gibson Brandon et al. \(2021\)](#) appear to converge on the conclusion that environmental rating disagreement plays a significant role in explaining stock returns. However, this study indicates that higher levels of disagreement in the environmental pillar are associated with lower stock returns. In contrast, [Gibson Brandon et al. \(2021\)](#) suggest that this results in higher stock returns. Some divergence in results may be anticipated due to differences in sample composition, including variations in ESG rating providers, geographical focus, and time horizon. The study by [Gibson Brandon et al. \(2021\)](#) focuses on the US, incorporates a greater number of ESG rating providers, and the study uses data from 2010 to 2017. The findings of this study may not be reliable when tested with different rating providers, across various countries, and over an extended time frame. It is important to note that the dataset used in the pillar analyses does not incorporate RepRisk, which exhibits the lowest correlation with other ESG rating providers. The absence of RepRisk data may introduce a bias into the analysis. Given that RepRisk's ratings diverge to a greater extent from those of other providers, the exclusion of this data could result in a distortion of the results. The findings may be less representative of the full spectrum of ESG ratings.

Furthermore, the results challenge the argument put forth by [Atmaz and Basak \(2018\)](#), who posit that dispersion in beliefs within the stock market represents an additional risk for investors and therefore demand a compensation premium. However, the findings of this study indicate that higher levels of disagreement in the environmental pillar are associated with lower stock returns. Moreover, the results of this study are inconsistent with those of the study by [Boffo and Patalano \(2020\)](#). The authors posit that the environmental score, when considered in isolation, may not effectively guide ESG investors in constructing portfolios that include companies with low-carbon activities. This assertion is based on the difficulty of interpreting the environmental score, which is derived from a variety of metrics, and the low correlation with the overall ESG score. Consequently, in the context of rating disagreement within the environmental pillar, this indicates that the environmental rating receives minimal attention due to its ineffectiveness as an investment tool. As a result, inconsistencies in ratings may not be perceived as a significant risk to investors. Therefore, the uncertainty premium proposed by [Atmaz and Basak \(2018\)](#) may not be justified. Nevertheless, this study demonstrates that discrepancies in the environmental pillar are associated with a decline in stock returns. The findings of the first regression indicate that an increase in the environmental rating is linked to an increase in stock returns. The results of the two regressions regarding the environmental pillar indicate that this is a significant driver of stock returns. Investors should therefore consider the environmental aspect of their investment decisions.

Moreover, the discrepancy in the social rating is shown to have a significant and negative correlation coefficient with stock returns. Once more, the findings are compared with those of [Gibson Brandon et al. \(2021\)](#), who are the sole researchers to explore portfolio disagreement in the pillar scores. Their study also reveals a negative alpha for the long-short strategy in the social pillar. However, the lack of significance indicates that there is no evident performance distinction between the high- and low-disagreement portfolios in the specific sample. Again, discrepancies in outcomes may emerge due to the utilisation of disparate data samples and methodologies. Notably, the average social rating has no significant effect on stock returns, but social disagreement does have a negative impact on stock returns. There are potential reasons for this. Firstly, social performance affects a company's reputation, employee relations and consumer trust. Disagreement in social ratings may reflect underlying issues in these areas, which can have a detrimental effect on a company's long-term performance and investor confidence, resulting in lower stock returns. Secondly, there is an increasing focus on corporate responsibility. Disagreement in social ratings might indicate potential problems in responsibility practices, causing investors to reassess the long-term viability of their investments. Finally, investors may utilise ESG ratings to diversify their portfolios. High levels of disagreement in pillar ratings may indicate a lack of reliable diversification benefits, which could result in reduced stock returns.

The social aspect represents a significant and influential area in ESG, which is increasingly drawing the attention of investors. Despite historical inaccuracies and challenges in standardising social metrics, recent trends indicate that social pillar disagreement does have an impact on stock returns. One possible explanation is that investors are beginning to recognise disagreement in the social score as a risk factor. These findings are not in accordance with the study of [Connor and Labowitz \(2017\)](#). The study does not demonstrate the direct effect of social disagreement on stock returns. The authors posit that investors focus their attention on short-term risks and returns when making investment decisions. This implies that investors typically prioritise

social performance only in situations where short-term costs are readily quantifiable. Given the inherent difficulty in quantifying social issues and the association of effective social issue management with long-term benefits, it is possible that investors do not actively factor in the social performance of companies when constructing their portfolios. However, the results of this study indicate that this is not the case. Investors are aware of the implications of social performance and its management. This heightened awareness of social issues is reflected in the negative impact of social disagreement on stock returns, as investors consider the potential risks and uncertainties associated with inconsistent social performance.

With regard to the findings concerning the disagreement in governance scores and its implications on stock returns, an insignificant negative correlation is observed. Once again, this outcome does not align with the notion of an uncertainty premium demanded by investors. Furthermore, it contradicts the findings of [Gibson Brandon et al. \(2021\)](#), who identify a positive but insignificant alpha in the long-short strategy. The insignificant effect may be attributed to the lack of standardisation between ESG rating agencies. This lack of standardisation may be more pronounced in the governance pillar than in the environmental and social pillar, as it is inherently more challenging to measure. The assessment of governance is generally subjective, with different agencies placing varying emphasis on various aspects, including board composition, executive compensation, and shareholder rights. This subjectivity may result in a dilution of the overall impact of governance disagreement on stock returns. However, it can be argued that the extensive evaluation of governance data results in more standardised definitions. This is corroborated by the correlation matrix in [Section 5](#), where the governance pillar exhibits a stronger correlation among the three raters compared to the social pillar. Furthermore, it is possible that investors may be more tolerant of discrepancies in governance ratings than in environmental or social ratings. Investors may view governance issues as more manageable or less impactful on a company's operations. However, the average governance score has a positive effect on stock returns, indicating that investors do value governance practices. Finally, governance issues may have a more delayed impact on financial performance in comparison to environmental or social issues. Consequently, the immediate impact on stock returns may be less pronounced, resulting in a relatively insignificant effect. The study of [Connor and Labowitz \(2017\)](#) shows that only short-term effects are incorporated in stock returns.

Initially, it was anticipated that ESG disagreement would be interpreted as uncertainty regarding ESG performance, leading to expected positive outcomes. However, the results diverge from the perspectives of scholars such as [Christensen et al. \(2022\)](#), [Gibson Brandon et al. \(2021\)](#), and [Wang et al. \(2024\)](#), who suggest that investors demand an uncertainty premium when for the additional uncertainty. One potential reason for the negative effect may be that ESG disagreement causes market inefficiencies. Disagreement in (individual) ESG ratings may be indicative of disparate approaches to information gathering and evaluation employed by ESG rating agencies. Such inconsistency can give rise to information asymmetry, whereby some investors possess more or superior information than others, resulting in market inefficiencies and diminished stock returns.

7.3 Moderating Role of ESG Disclosure

The final hypothesis of this study postulates that ESG disclosure moderates the positive relationship between ESG disagreement and stock returns. The findings, detailed in Section 6.2.3, confirm this hypothesis. Specifically, the interaction term between ESG disclosure and ESG disagreement is negative and significant when RepRisk is included in the model, indicating that higher levels of ESG disclosure reduce the impact of ESG disagreement on stock returns. Nevertheless, the results obtained from the model should be viewed with caution, as the models excluding RepRisk do not yield significant results. The existing literature has not yet addressed the inclusion of ESG disclosure as an interaction term. Consequently, the theoretical rationale for this is solely grounded on the findings of this study.

There is a notable shift from a negative ESG disagreement effect (Table 9) to a positive effect on stock returns when incorporating disclosure into the regression model (Table 11). The models in Table 9 show that the coefficients for ESG disagreement are significantly negative. This suggests that in the absence of disclosure, higher disagreement among ESG ratings has a negative impact on stock returns. This finding is in contrast to the positive coefficients observed in the models that include ESG disclosure. The negative coefficient of the interaction term indicates that higher ESG disclosure scores mitigate the positive relationship between ESG disagreement and stock returns. This indicates that when the disclosure score is high, there is a weaker positive correlation between ESG disagreement and stock returns. However, when disclosure scores are low, ESG disagreement leads to a risk premium. Greater transparency through increased ESG disclosure exerts a moderating effect. These findings emphasise the significance of ESG disclosure in financial markets, demonstrating its capacity to provide clarity and mitigate the adverse impact of rating disagreements on stock performance. Companies may benefit from enhancing their ESG disclosure practices to reduce the market inefficiencies that result from rating disagreements.

When firms disclose more information, investors may rely less on third-party ESG scores to evaluate financial returns. Therefore, the direction of ESG rating disagreement in influencing stock returns changes. Conversely, when firms do not provide any disclosure, investors rely heavily on ESG scores, which leads to a stronger relationship between disagreement and stock returns. The positive relationship between ESG disagreement and stock returns in the last regression is consistent with Gibson et al. (2020) and suggests that greater ESG uncertainty can be seen as increased risk, which in turn results in higher stock returns. These findings offer valuable insights for investors making decisions about their portfolio compositions. To illustrate, an investor maintaining a portfolio comprising both ESG ratings in alignment and those in disagreement may anticipate that an enhancement in a firm's ESG disclosure policy could result in a reduction in the current performance of the portfolio driven by ESG disagreement.

In the broader context of existing literature, studies emphasise the crucial role of disclosure in improving forecast accuracy and reducing analyst disagreement. For instance, Lang and Lundholm (1996) and Hope (2003) point out that strong disclosure policies correlate with more accurate forecasts and reduced volatility among analysts. Similarly, in the context of credit ratings, Bonsall et al. (2017) and Akins (2012) demonstrate that higher quality and more comprehensible disclosures are associated with less disagreement among credit rating analysts. However, the scatter plot in Figure 8 indicates a positive correlation between the disclosure

score and ESG disagreement. This finding differs from previous research. It is important to note that a scatter plot does not display significance levels, but rather illustrates the direction of the relationship.

The relationship between ESG disclosure and ESG rating disagreement is more complex and nuanced. For example, [Christensen et al. \(2022\)](#) document an increase in ESG disagreement among rating agencies following ESG disclosures, attributing this to the lack of consensus on the metrics and standards for evaluating ESG performance. Conversely, the study of [Liu \(2022\)](#) finds that firms providing extensive ESG information tend to have lower levels of ESG rating discrepancies. The research by [Kimbrough et al. \(2024\)](#) further distinguishes between mandatory and voluntary ESG reporting, indicating that voluntary disclosures tend to reduce disagreements among rating agencies. The scatter plot corroborates the findings of [Christensen et al. \(2022\)](#), but it is not sufficient as evidence on its own.

7.4 Limitations

It should be noted that the study is subject to a number of limitations. First, it should be noted that the study makes use of ESG ratings from four different providers: Bloomberg, RepRisk, Refinitiv Eikon, and Sustainalytics. It is possible that these rating agencies do not fully capture the heterogeneity of all rating agencies available in the market, given that there are more than 600 in total. It is notable that several well-known providers, such as MSCI and S&P 500, have been excluded, which may have an impact on the outcome and the strength of the results. Including a broader range of rating agencies in future studies might provide a more comprehensive assessment of ESG impacts. While RepRisk has a significant impact on the overall ESG ratings, its exclusion from the pillar-specific analyses due to the lack of pillar scores may result in incomplete assessments of the individual environmental, social and governance pillars. The discrepancy in pillar-specific ESG ratings is only measured by three rating agencies, which reduces the accuracy of the results.

Secondly, the study measures stock performance over a one-year period, which does not sufficiently capture the long-term impact of ESG practices. ESG initiatives often deliver significant benefits over longer periods, and a focus on a one-year performance may overlook these long-term effects. Future research could consider longer horizons to capture the full ESG impact on stock performance.

Thirdly, the study's findings diverge from those of other researchers, such as [Gibson Brandon et al. \(2021\)](#) and [Avramov et al. \(2020\)](#), potentially due to methodological differences, varying sample periods, and differences in ESG rating providers. This makes it difficult to accurately compare the study results to those of previous studies.

Finally, it should be pointed out that this research does not distinguish between voluntary and mandatory ESG reporting. However, the findings of [Kimbrough et al. \(2024\)](#) indicate that there is a difference between these in terms of the impact of ESG disagreement, which could affect the study's findings. By understanding the nuances between different types of disclosures, it may be possible to gain deeper insights into their influence on investor behaviour and stock performance. These insights would be of value to policymakers and to corporate entities. They could assist policymakers in the formulation of more effective regulations and in

the enhancement of reporting practices by companies.

8 Conclusion

There has been a notable increase in the attention paid by practitioners and policymakers to the issue of ESG disagreement. This is consistent with the growing interest in sustainable investing, which has resulted in an increase in the number of discussions on ESG disagreement. The issue of ESG rating disagreement presents a significant challenge to the generalisation of academic research findings and complicates the efforts of investors in implementing ESG investment strategies. This study represents a step towards a more comprehensive understanding of the consequences of ESG rating disagreement and the role of ESG disclosure in this relationship.

Previous research has examined the relationship between ESG scores and stock returns. However, the role of ESG disclosure has so far been overlooked. This study aims to address this gap in the literature by providing key insights into how increased ESG disclosure, either due to new regulations or changes in company disclosure policies, influences the relationship between ESG disagreement and stock returns. In order to achieve this objective, panel regressions are employed in which ESG scores, rating disagreement, and their interaction with disclosure are employed as explanatory variables for stock performance.

The results of this study emphasise the importance of ESG ratings in informing investment decisions. A positive correlation is observed between average ESG rating and stock returns. This finding aligns with stakeholder theory, which suggests that companies with higher ESG ratings tend to exhibit better long-term financial performance by effectively managing their stakeholder relationships and mitigating risks associated with environmental, social, and governance factors.

Furthermore, the analysis reveals interesting insights into the role of ESG rating disagreement in shaping stock returns. Contrary to expectations, a significant negative correlation is found between ESG disagreement and stock returns, challenging prevailing expectations of ESG risk compensation in financial markets. These findings suggest that heightened uncertainty regarding a firm's ESG performance is likely to result in diminished returns.

Finally, the findings support the hypothesis that higher levels of ESG disclosure weaken the relationship between ESG disagreement and stock returns. Specifically, the negative and significant interaction term between ESG disagreement and ESG disclosure indicates that enhanced disclosure practices mitigate the impact of ESG rating discrepancies on stock performance. One possible explanation for this is that investors may rely more on disclosure reports directly from companies rather than third-party ESG rating agencies. This emphasises the importance of transparency in ESG reporting and its capacity to offset the detrimental impact of rating discrepancies on financial performance.

The findings of this study contribute to the growing body of literature on sustainable finance by providing empirical evidence on the relationship between ESG factors and stock returns. The study highlights the interest of sustainable investing, the impact of ESG disagreement, and the significance of accurate ESG ratings. The practical implications of this study are considerable. For investors, the findings emphasise the importance of considering ESG ratings and disclosures in their investment strategies. By understanding the impact of ESG factors on stock returns, investors can make better informed decisions that align with

sustainability goals. For policymakers, the results emphasise the significance of fostering transparency and consistency in ESG reporting standards, which can moderate the relationship between ESG disagreement and stock returns. For corporate stakeholders, the study suggests that improving ESG performance can drive stock returns upwards.

As the sustainable investing landscape has expanded considerably in recent years and is expected to continue growing, the results of this research, which covers the period from 2009 to 2019, may differ when applied to more recent years. Furthermore, the recently introduced regulations pertaining to ESG disclosure, as outlined by the IFRS, are not included in this study as they fall outside the research scope. The introduction of these new regulations could have a significant impact on the effect of ESG disagreement. However, due to accessibility issues, it was not possible to research more recent years. Future research could aim to identify more recent datasets and examine the impact of ESG disagreement and ESG disclosure in a more contemporary context. Furthermore, it would be beneficial to investigate the immediate impact of the new regulations in Europe. Future research could concentrate on the direct correlation between ESG (mandatory) disclosure practices and ESG disagreement.

In conclusion, this study contributes to the advancement of academic knowledge and provides practical insights for practitioners, corporate organisations, and policymakers. By addressing the complexities of ESG rating disagreements and highlighting the role of ESG disclosure, it paves the way for more effective and informed strategies in sustainable finance. The findings emphasise the importance of transparency and comprehensive reporting standards in enhancing market efficiencies, which contributes to the development of a more sustainable financial system.

9 Appendix

Appendix A

Table 15: Conversion of RepRisk and Bloomberg Ratings

Refinitiv	Sustainalytics	Bloomberg	RepRisk
100.00	100.00	10.00	AAA
88.89	88.89	8.889	AA
77.78	77.78	7.778	A
66.67	66.67	6.667	BBB
55.56	55.56	5.556	BB
44.44	44.44	4.444	B
33.33	33.33	3.333	CCC
22.22	22.22	2.222	CC
11.11	11.11	1.111	C
0.00	0.00	0.00	D

Appendix B

Table 16: Description of Variables and Their Sources

Variable	Description	Source
Stock Returns	Yearly stock returns.	Refinitiv Eikon
Excess Stock Returns	Stock returns minus the market return.	Refinitiv Eikon
Average ESG Score	The average overall ESG rating score assigned to a company by ESG rating providers.	Bloomberg, Refinitiv Eikon, Sustainalytics, RepRisk
Average E Score	The average environmental rating score assigned to a company by ESG rating providers.	Bloomberg, Refinitiv Eikon, Sustainalytics
Average S Score	The average social rating score assigned to a company by ESG rating providers.	Bloomberg, Refinitiv Eikon, Sustainalytics, RepRisk
Average G Score	The average governance rating score assigned to a company by ESG rating providers.	Bloomberg, Refinitiv Eikon, Sustainalytics
ESG disagreement	The level of disagreement in the overall ESG scores assigned to a company across different ESG rating providers.	Bloomberg, Refinitiv Eikon, Sustainalytics, RepRisk
E disagreement	The disagreement specifically in the Environmental pillar scores across providers.	Bloomberg, Refinitiv Eikon, Sustainalytics
S disagreement	The disagreement in the Social pillar scores across providers.	Bloomberg, Refinitiv Eikon, Sustainalytics
G disagreement	The disagreement in the Governance pillar scores across providers.	Bloomberg, Refinitiv Eikon, Sustainalytics
ESG disclosure score	A score that quantifies how well a company reports its ESG practices.	Bloomberg
Asset Tangibility	The ratio of a company's fixed assets to total assets.	Refinitiv Eikon
Market-to-book value	The ratio of a company's market value to its book value.	Refinitiv Eikon
Current Ratio	A liquidity ratio calculated as current assets divided by current liabilities.	Refinitiv Eikon
Gross Profit	A company's revenue minus its cost of goods sold.	Refinitiv Eikon
Leverage Ratio	The ratio of a company's total debt to assets.	Refinitiv Eikon
ROA	Return on Assets - a measure of profitability calculated as net income divided by total assets.	Refinitiv Eikon
Size	Measured as the natural log of a company's market capitalization.	Refinitiv Eikon

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