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ASSESSING THE IMPACT OF THE EUROPEAN GREEN DEAL AND ITS CORPORATE SUSTAINABILITY REPORTING DIRECTIVE ON ESG REPORTING AND FINANCIAL PERFORMANCE IN THE EUROPEAN CONSUMER STAPLES SECTOR: A QUANTITATIVE ANALYSIS

NIKLAS TOM JOERG WESTPHALEN

Work project carried out under the supervision of:

Rodrigo Marques Tavares

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Abstract

This study explores the relationship between ESG reporting under the Corporate Sustainability Reporting Directive and financial performance in the European consumer staples sector. Findings show that while sustainability-related data disclosure only accounts for 6,7% of required data points, greater compliance with disclosure requirements leads to a higher standard deviation in market capitalization but has no significant influence on its growth. Additionally, outperforming peers in ESG controversies is more significant than extensive data reporting. This offers valuable insights for companies and investors to prioritizing quality over quantity in their sustainability reporting and focusing on areas where they can demonstrate superior performance.

Keywords

ESG, Green Deal, Corporate Sustainability Reporting Directive, Sustainability Reporting, Financial Performance, ESRS, European Consumer Staples Sector, Linear Regression, STOXX Europe 600 Industry Consumer Staples Index, Compliance, ESG Scores, Refinitiv, Bloomberg, ESG Controversies, Data Disclosure, Risk Management, Standard Deviation, Growth Rate, Market Capitalization, Industry-Specific Analysis, Quantitative Analysis.

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Abbreviations

Abbreviation	**Full name**
CS	Corporate Sustainability
CSRD	Corporate Sustainability Reporting Directive
CMGR	Compounded Monthly Growth Rate
DOC	Degree of Compliance with ESRS
EFRAG	European Financial Reporting Advisory Group
ESG	Environmental, Social, and Governance
ESRS	European Sustainability Reporting Standards
EU	European Union
GHG	Greenhouse Gases
SME	Small- & medium-sized Enterprises
MCap	Market Capitalization
NFDR	Non-Financial Reporting Directive
tCO2e	Tones of CO2-Equivalents
VIF	Variance Inflation Factor

1. Introduction

In recent years, Environmental, Social, and Governance (ESG) factors have become increasingly significant considerations for investors to manage the risks and opportunities associated with sustainability to enhance the overall value of their portfolios (Ahmad, Yaqub, and Lee 2023, 17). Correspondingly, the implementation of the Non-Financial Reporting Directive (NFDR) was initiated to enhance the transparency on sustainability practices of companies operating within the European Union (EU). Following this, the EU's Green Deal initiative introduced the Corporate Sustainability Reporting Directive (CSRD) in January 2023, replacing and expanding the NFDR (European Parliament and European Council 2014).

The European Commission has emphasized that the implementation of the CSRD is expected to have a significant impact on ESG reporting and investing practices (European Parliament and European Council 2022). This study provides valuable insights and tests this hypothesis in the European consumer staples sector, using quantitative data from the STOXX Europe 600 Industry Consumer Staples index between 2017 and 2021. It offers important implications for companies seeking to improve their sustainability reporting practices and enhance their financial performance, as well as for investors looking to understand the value of ESG reporting under the CSRD as a driver of financial performance. Overall, this study provides a compelling argument for the importance of strategic ESG reporting in the consumer staples sector.

The study focuses on three main research questions: (1) What is the level of compliance with the CSRD among European consumer staples companies, and how has it changed over time? (2) What is the relationship between CSRD compliance level and financial performance? (3) How is this relationship influenced by ESG controversies and ESG scores?

The research paper comprises a literature review, methodology, results, discussion, and conclusion, providing recommendations for companies, investors, and researchers.

2. Literature Review

2.1. European Green Deal and Corporate Sustainability Reporting Directive

The European Commission has embarked on a series of policy initiatives aimed at advancing the EU's Green Deal, with the ultimate objective of achieving climate neutrality by 2050 (European Commission 2021; European Council 2023; European Parliament and European Council 2021, 13 OJ L 198). Simultaneously, the financial industry is progressively incorporating ESG factors into its investment decision-making processes (Tsang, Frost, and Cao 2023, 2).

The CSRD is considered pivotal for integrating sustainable finance measures in the EU's Green Deal (Brühl 2021, 7). Hence, understanding the requirements and implications of the CSRD is crucial for investors, policymakers, and business leaders interested in promoting sustainability, as it sets specific requirements for ESG reporting and provides comprehensive and consistent information on non-financial factors. For this to be accomplished, the European Financial Reporting Advisory Group has been tasked with standardizing companies' ESG data disclosure through its European Sustainability Reporting Standards (ESRS) (EFRAG 2022a).

The CSRD was the subject of a provisional agreement between the Council and the European Parliament in June 2022. The legislative measure was ratified subsequent to the Council's endorsement of the European Parliament's stance in November 2022 (European Council 2022). The CSRD applies from January 2023, onwards (European Parliament and European Council 2022 par 1). Companies affected by the CSRD must report following the ESRS enacted as delegated acts by the European Commission. Implementation of the CSRD will be staggered across various segments of companies in the EU, starting with publicly traded and public interest companies with an average workforce exceeding 500 employees from 2024 onwards (European Parliament and European Council 2022 par 17).

Currently, a scrutiny phase is ongoing until June 2023, during which an independent board assesses and evaluates the impact of the policies on sustainability reporting. This evaluation aims to assure the EU Commission's regulations (EFRAG 2022a; European Commission 2017).

2.2. Structure and Rationale of Disclosure Requirements with ESRS and CSRD

Concrete regulatory disclosure requirements that companies are going to be obliged to in the context of the CSRD can be observed in the European Sustainability Reporting Standards (ESRS) developed by the European Financial Reporting Advisory Group (EFRAG) (European Parliament and European Council 2022, 322:42 par. 39). The ESRS are occasionally marked [draft] in this thesis due to the ongoing scrutiny phase of the CSRD and ESRS, which are anticipated to be fully adopted by mid-2023 (EFRAG 2022b, 14).

The ESRS consists of 12 standards that cover ESG issues. Along those three issues, so called "topical standards" are distributed: environment (E1-E9), social (S1-S4) and governance (G1). The standards are designed to provide a structured and comprehensive approach to reporting sustainability information, with a focus on different reporting areas for each standard and ESG pillar, as observable in Appendix 7-10 (p. 50 ff) (EFRAG 2022d).

It should be noted that a disclosure requirement may consist of multiple data points, and the ESRS released in November 2022 encompasses a total of 1.144 data points across both topical and cross-cutting standards. Each data point being classified as either qualitative, quantitative, or both. If a data point is designated as "both" or "qualitative and/or quantitative," it implies that how the disclosure requirement is fulfilled falls within the companies discretion (EFRAG 2022d ESRS E3-3, par. 19). For the purpose of this thesis, the focus is on 951 relevant data points pertaining to concrete topical disclosure requirements in sustainability reporting under the Corporate Sustainability Reporting Directive (CSRD). Cross-cutting standards that report on concepts and principles, following the guidance provided in the ESRS 1 have been excluded

(EFRAG 2022b; 2022c). The rationale behind this selection is predicated on the direct relevance of the chosen data points to the particular sustainability issues and risks that companies articulate in their reporting. The exclusion of cross-cutting standards was intended to obviate duplication and streamline the research methodology with existing reporting landscape. Following paragraph 1.1 (7) of the ESRS 1, the terminology used in the ESRS distinguishes between "shall disclose," indicating mandatory provisions, "shall consider", which requires the undertaking to take relevant factors into account, and "may disclose", which denotes voluntary disclosure for promoting best practices. These distinctions can be observed in Appendix 8 (p. 50).

2.3. Current Corporate Sustainability Reporting Landscape in Europe

ESG reporting integrates environmental, social, and governance factors into an organization's strategy, to create value for all stakeholders (UNEP 2005). It provides stakeholders with a framework to evaluate sustainability-related risks and opportunities of a firm. Investors may use ESG information to assess enterprise value and identify as well as manage material risks (Friedman 1970, 173–78; Jensen 2001, 8–21).

Recent research extends beyond Friedman's (1970) argument that Corporate Sustainability (CS) reporting is not beneficial for profit maximization and is unfavourable for shareholders. These studies emphasize that CS disclosure serves as a crucial conduit through which CS practices can significantly impact a firm's financial performance. Those findings research on the association between CS disclosure and firm value are varied. While some studies find a positive association (Al-Tuwaijri, Christensen, and Hughes 2004; Ashwin Kumar et al. 2016; Dhaliwal et al. 2011; 2012; Matsumura, Prakash, and Vera-Muñoz 2014; Naughton, Wang, and Yeung 2019; Qiu, Shaukat, and Tharyan 2016; Spicer 1978), others find a negative (Hughes 2000; Shane and Spicer 1983) or no relationship (Elliott et al. 2014; Griffin, Lont, and Sun 2017;

Guiral et al. 2020; Khan, Serafeim, and Yoon 2016) between firm value and CS disclosure. An instance of a negative association is evident in the perception of CS disclosure as a hindrance that leads to increased costs, as noted by Shane and Spicer (1983) and Ernst et al. (2022). However, despite the potential positive or negative impacts, financial intermediaries such as financial analysts and lenders still scrutinize firms' CS disclosures, with some studies indicating their preference for such disclosures (Dhaliwal et al. 2012; Elliott et al. 2014).

Some studies also suggest that the relationship between CS and firm value can vary in different contexts (Bartov, Marra, and Momenté 2021; Johnson et al. 2020). EFRAG's cost-benefit analysis identifies three direct benefits of corporate sustainability (CS) disclosure: reduced systemic risk, increased capital flow towards sustainable companies (Willem Pieter de Groen et al. 2022). Additionally, scholarly literature indicates that disclosing sustainability information can influence the behaviour of a company's managers and workers, resulting in reduced misconduct and constraints on earnings management as managers take steps to manage their firms in response to CS reporting (Christensen 2016). Such sustainability disclosures can impact personnel and influence employee behaviour, including increased philanthropy, in response to a company's CS orientation (Dube and Zhu 2021).

2.4. Sector-Specific Assessment of the European Sustainability Reporting Standards

The thesis analyses the consumer staples sector in Europe, as per the Global Industry Classification Standard (GICS), which includes companies producing and distributing essential items such as food, beverages, household and personal care products, and tobacco (Wijekoon, Salunke, and Athaide 2021; Beber, Brandt, and Kavajecz 2010, 18). The sector is composed of six subindustries, namely Food & Staples Retailing, Beverages, Food Products, Tobacco, Household Products, and Personal Products (MSCI and Standards & Poor’s 2020).

A sector-specific approach is crucial in analysing sustainability reporting practices as each sector faces unique sustainability challenges and opportunities (Steve Lydenberg, Jean Rogers, and David Wood 2010, 3). For this reason, this thesis aims to investigate the sustainability reporting practices of the European consumer staples sector, which is known to have a significant impact on global greenhouse gas emissions. Despite comparably low Scope 1 and 2 GHG emissions, the CSRD mandates for the first time the disclosure in Scope 3. Here the consumer staples sector shows the highest pollution globally, marking 1.950 Mio. tCO2e, which are approximately 95% of all emissions in the Cosnumer staples sector (Théo Le Guenedal and Thierry Roncalli 2022, 10; Giulo Berruti, Sabrina Giorgi, and Valérie Morgen 2017, 17). This singular instance serves as an illustration that underscores the significance of well-defined regulations that govern the dissemination of comprehensive sustainability data within various sectors (Brockhoff 2012, 13 ff; Ken Frankel, Manish Shakdwipee, and Laura Nishikawa 2015).

Appendix 1 (p. 39) presents a market analysis indicating a highly competitive industry with numerous established players and new entrants vying for market share. The sector is distributed through various channels, including supermarkets, hypermarkets, convenience stores, and online platforms (Appendix 2, p. 40). Amplified in Appendix 3 (p. 40) the sector faces challenges like changing consumer preferences, regulatory pressures, and increasing competition. Rising input costs and growing demand for sustainable practices are also concerns (Antoine de Riedmatten et al. 2013, 3; European Food Safety Authority 2002; European Commission and CSES 2015).

Furthermore, the Appendix includes Porter's Five Forces analysis (Appendix 4, p. 41 ff.), which contributes to a more comprehensive understanding of the market and its underlying dynamics.

3. Methodology

The study facilitates a quantitative analysis applying linear regression models to test hypotheses on European consumer staples companies. The hypotheses are informed by a literature review on the regulatory environment and relationships between ESG reporting levels, scores and market capitalization (MCap).

3.1. Target population and sampling process

A deliberate sampling approach was used to achieve this study's objectives. The target population comprises publicly listed companies in the European consumer staples sector, which are the first to be required to report under the newly introduced ESRS. To ensure representativeness and minimize potential biases, the "STOXX® Europe 600 Industry Consumer Staples" index was selected as the sample frame. This index is intended to closely approximate the European consumer staples sector population (Kothari 2004, 15).

The STOXX® Europe 600 Industry Consumer Staples index, which employs the Industry Classification Benchmark, offers a dependable and precise method of classifying companies based on their primary source of revenue (FTSE Russell 2023). As a widely used market standard, it is available for various regions, such as Europe, Eurozone, and Eastern Europe, making it a useful tool in ensuring the representativeness of the sample and providing a comprehensive sampling frame for the European consumer staples sector (Qontigo 2023).

An extensive overview of the sample can be observed in Appendix 6 (p. 49 f.)

3.2. Data sources

In accordance with the approach of quantitative modelling, exemplified by the work of Heurtebize et al. (2022), this thesis has adopted a multifaceted strategy that leverages a multitude of data sources. More specifically, its investigation relies upon two distinct sets of

ESG data retrieved from Bloomberg and Refinitiv, respectively, on an annual basis, for each individual company under examination (Appendix 5, p. 44). Additionally, required data points from the reference set were obtained from the ESRS E1-G1 published by EFRAG (EFRAG 2022d).

3.3. Statistical Methods for Data Analysis

Various research methods were employed to examine the material impact of the November 2022 version of the ESRS. The research and data collection were classified into three scopes:

Scope 1: *ESRS Compliance in Europe's Consumer Staples Sector*

This study assesses the conformity of European consumer staples firms with the ESRS by EFRAG and evaluates their ESG data from 2017-2021. Data for 2022 was unavailable due to incomplete non-financial report publication in March 2023.

As there were only limited regulations on the selection of metrics for sustainability reporting, there are discrepancies in reported information, despite some companies adhering to established frameworks like the Global Reporting Initiative (Delbard 2008, 403; Global Reporting Initiative 2023). To address this issue, the study categorized ESG data points reported by companies based on the ESRS's "targeted state of disclosure". To conduct the data analysis, all available ESG data points from Bloomberg and Refinitiv were meticulously cross-referenced with their corresponding data points from the ESRS, utilizing Microsoft Excel as a data matching tool. This methodology enabled a direct comparison of reporting gaps and provided a compliance score ("Degree of compliance with ESRS") for each company, indicating the proportion of reported data points as a percentage of the targeted state of disclosure. This score facilitates comparability among peers and towards the disclosure requirements proposed by the ESRS, with differentiation between qualitative and quantitative data points and their regulatory urgency (EFRAG 2022c, 7 Article 1.1 Paragraph 7).

Scope 2: *ESRS Compliance and ESG Score's Impact on Financial Performance of European Consumer Staples Companies*

This thesis aims to examine the correlation between "Degree of Compliance with ESRS", introduced in Scope 1, and the financial performance of the sample. A linear regression model was utilized, based on a sample dataset spanning 2017 to 2021. The first regression model (1.1.) employed the logarithm of the standard deviation of MCap (standard deviation$(MCap)_{it}$) as the dependent variable, measured for each corporate (i) over a twelve-month period following the reporting year (t). This variable represents the level of risk associated with the security and was subjected to a logarithmic transformation to downplay the influence of outliers and promote a distribution of data that is symmetrical and bell-shaped (Sauro and Lewis 2016).

A subsequent regression analysis (1.2.) was performed using the compounded monthly growth rate in MCap (CMGR$(MCap)_{it}$) as the dependent variable. This variable measures a company's (i) linear growth in MCap over a twelve-month period following the reporting year (t) and is not influenced by risk preferences like the standard deviation.

Accordingly, the dependent variables can be mathematically represented as follows:

1.1. $\textbf{Standard deviation}(\textbf{market capitalization})_{\textbf{it}} = \ln(\textbf{st. dev.}(\textbf{market capitalization}_{\textbf{it}}))$
1.2. $\textbf{CMGR}(\textbf{market capitalization})_{\textbf{it}}$

The regression model (1.1. and 1.2.) comprises two independent variables: the "Degree of Compliance with ESRS" (DC_{it}), which represents the first introduced metric, and the "ESG Score by Refinitiv" (ESG_{it}). Refinitiv, a reputable data provider owned by the London Stock Exchange Group, calculates ESG Scores for over 11,800 companies using 700 research analysts (Tayan et al. 2022; Financial Times 2021). Its systematic data retrieval from sustainability reports is recognized as superior to self-developed scoring methods, as it provides reliable

information and is more likely to be integrated into investment and corporate decisions (Refinitiv 2023).

$\textbf{1.1. Standard Deviation}(\textbf{market capitalization})_{it} = \beta_0 + \beta_1 DC_{it} + \beta_2 ESG_{it} + \epsilon_i$
Research Question 1.1.: *Standard deviation of market cap is* ***independent (H_0) / dependent (H_1)*** *from the Degree of Compliance with ESRS and ESG Score by Refinitiv.*

$\textbf{1.2. CMGR}(\textbf{market capitalization})_{it} = \beta_0 + \beta_1 DC_{it} + \beta_2 ESG_{it} + \epsilon_i$
Research Question 1.2.: *The monthly growth of market cap is* ***independent (H_0) / dependent (H_1)*** *from the Degree of Compliance with ESRS and ESG Score by Refinitiv.*

In the selection of independent variables for a multiple regression model, a backward elimination approach is frequently employed. The objective of this approach is to identify the most relevant independent variables to include in the model, while at the same time avoiding overfitting. Backward elimination involves initially performing a multiple regression with all independent variables, and then systematically removing each variable in turn to determine its impact on the dependent variable. The decision to eliminate a variable is based on a comparison of the decrease in the coefficient of determination (R-squared) and the significance of its p-value against a predetermined "p-to-leave" threshold ($p<0,05$). The variable with the smallest decrease in R-squared and a p-value greater than the p-to-leave threshold is eliminated. This iterative process continues until the removal of any variable results in a significant decrease in R-squared. The purpose of this approach is to identify the most significant predictors of the dependent variable while eliminating less informative or redundant predictors, ultimately resulting in a more parsimonious and accurate model (Kelley and Maxwell 2003, 305–21). The final model only includes independent variables that have a statistically significant impact on the dependent variable, as determined by their p-values.

Additionally, the model is tested for multicollinearity, which is the correlation between independent variables in a regression model, which can lead to inflated standard errors of

regression coefficients, hindering accurate estimation of the impact of each variable on the dependent variable. To address multicollinearity, the variance inflation factor (VIF) assesses the inflation of regression coefficient variance caused by correlated independent variables. VIF values above 10 indicate significant multicollinearity, undermining the reliability and validity of regression results. Therefore, minimizing or avoiding multicollinearity is critical for accurate and reliable regression analysis (Yoo et al. 2014).

Scope 3: *ESRS Compliance, ESG Scores, and Financial Performance: Examining ESG-Controversies and Pillar-Specific Disclosures in European Consumer Staples Companies*

As a part of Scope 3, this study enhances the original hypotheses stated by regression models 1.1 and 1.2 in Scope 2 by including additional factors in the models. The aim is to enhance the regression analysis by including the compliance levels of ESG pillars for consumer staples companies, thereby expanding the established linear causal relationships of the original models:

$\boldsymbol{2.1.\ Standard\ Deviation(market\ capitalization)_{it} = \beta_0 + \beta_1 DC(E)_{it} + \beta_2 DC(S)_{it} + \beta_2 DC(G)_{it} + \epsilon_i}$
Research Question 2.1.: *Standard deviation of market cap is* ***independent (H_0) / dependent (H_1)*** *from the Degree of Compliance with ESRS E1-E5, Degree of Compliance with ESRS S1-4 and Degree of Compliance with ESRS G1.*

In accordance with Scope 2, the same regression analysis is run with the dependent variable of the CMGR of the MCap.

$\boldsymbol{2.2.\ CMGR(market\ capitalization)_{it} = \beta_0 + \beta_1 DC(E)_{it} + \beta_2 DC(S)_{it} + \beta_2 DC(G)_{it} + \epsilon_i}$
Research Question 2.2.: *The monthly growth of market cap is* ***independent (H_0) / dependent (H_1)*** *from the Degree of Compliance with ESRS E1-E5, Degree of Compliance with ESRS S1-4 and Degree of Compliance with ESRS G1.*

This study constructed two additional models to investigate the determinants of MCap. Model 3.1 examines the relationship between ESG Scores and compliance with ESRS across each ESG Pillar. The model aims to evaluate if disclosing detailed information on individual ESG

Pillars leads to higher ESG Scores or raises concerns about the quality of sustainability initiatives. The model's primary objective is to aid investors and sustainability reporting companies in assessing, categorizing, and prioritizing sustainability information.

3.1. $\boldsymbol{ESG\ Score_{it} = \beta_0 + \beta_1 DC(E)_{it} + \beta_2 DC(S)_{it} + \beta_2 DC(G)_{it} + \epsilon_i}$
Research Question 3.1.: *ESG Score is* ***independent (H₀) / dependent (H₁)*** *from the Degree of Compliance with ESRS E1-E5, Degree of Compliance with ESRS S1-4 and Degree of Compliance with ESRS G1.*

To enhance the understanding of MCap's influencing factors, this study developed two additional regression models, namely Models 3.2. and 3.3.. These models integrated a new metric, the "ESG Controversies," into the original Models 1.1. and 1.2.. The ESG Controversies metric provided an alternative perspective on the relationship between public awareness, sustainability information news coverage, and MCap, compared to the previously used predictive variables of compliance with ESRS and Refinitiv's ESG Score.

Refinitiv generates the ESG Controversies score on a scale of 0-100, based on 23 ESG controversy topics, with recent controversies factored into the most recent complete period. The scoring methodology adjusted for MCap bias and benchmarked controversies against industry groups. A score of 100 was assigned to companies not involved in any controversies. This metric aimed to facilitate a deeper understanding of MCap by accounting for the impact of ESG-related controversies (Refinitiv 2023). Regression models 3.2. and 3.3. are described as:

3.2. $\boldsymbol{Standard\ Deviation(market\ capitalization)_{it} = \beta_0 + \beta_1 DC_{it} + \beta_2 ESG_{it} + \beta_3 Controversies_{it} + \epsilon_i}$
Research Question 3.2.: *Standard deviation of market cap is* ***independent (H₀) / dependent (H₁)*** *from the Degree of Compliance with ESRS, ESG Score by Refinitiv and ESG-Controversies.*

3.3. $\boldsymbol{CMGR(market\ capitalization)_{it} = \beta_0 + \beta_1 DC_{it} + \beta_2 ESG_{it} + \beta_3 Controversies_{it} + \epsilon_i}$
Research Question 3.3.: *The monthly growth of market cap is* ***independent (H₀) / dependent (H₁)*** *from the Degree of Compliance with ESRS, ESG Score by Refinitiv and ESG-Controversies.*

4. Results

4.1. Scope 1: ESRS Compliance in Europe's Consumer Staples Sector

The draft ESRS by the EFRAG outlines 1,144 quantitative and qualitative data points in their disclosure requirements, with the corporate landscape in the consumer staples sector already disclosing a certain amount of ESG data (EFRAG 2022b). The difference between EFRAG's requirements and actual reported data points is described as the "Degree of Compliance with ESRS".

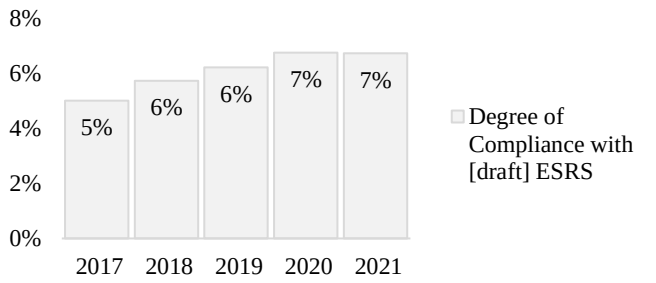

Figure 1: Degree of Compliance with [draft] ESRS of STOXX 600 Consumer Staples Companies in Europe from 2017-2021; as of March 2023

According to Figure 1, as of 2021, a mere 6,7% of the overall data points have been exhibited. However, there is a continuous upward trend in the manifestation of sustainability-related data between the years 2017 and 2021.

Additionally, as indicated in Figure 1 and Appendix 10 on page 51, a time-series analysis spanning from 2020 to 2021 exposes a stationary or declining pattern in the revelation of sustainability data points in accordance with ESRS along Environmental (-2% year-on-year growth) as well as Governance pillar (-2% year-on-year growth). Only the Social pillar demonstrated a growth of 2% comparing 2021 to 2020.

As stated in Appendix 7 on page 46 of this thesis, there appears to be a scarcity of qualitative, quantitative, and mixed data points in the CS Landscape furnished by firms compared to required data points by the CSRD. This inadequacy is highlighted by a comparative analysis of existing data points in Bloomberg and Refinitiv databases with the CSRD, which reveals that corporations supply only 21% (for qualitative data), 15% (for mixed data), and a mere 30% (for quantitative data) of the available data points.

As delineated in the literature review (p. 3-7) and shown in Appendix 8 (p. 50), the ESRS draft adopts a threefold classification of data points: prescribed, expected, and condition-based. It can be observed that reporting companies are given a large leeway in disclosing sustainability data, as most of the datapoints within the ESRS are rather expected than mandatory.

Akin to the prior scenario, the reporting obligations in diverse exposure fields exhibit a disproportionate distribution, wherein the requirement for data points pertaining to the environment (452 data points) and social issues (438 data points) surpasses that of governance (61 data points). As seen in Figure 2, this is mirrored by the corporations reporting more on environmental and social indicators.

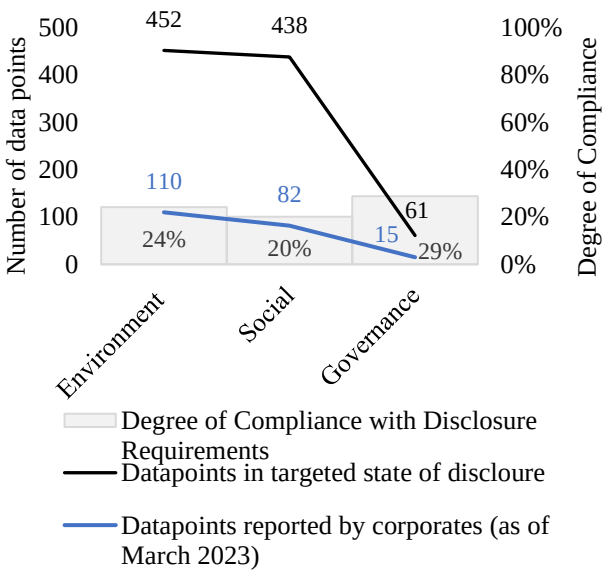

Figure 2: Data points segmented by characteristics in ESRS E1-G1 from 2017-2021

Current environmental and social data reported by these companies only capture a mere 24% and 20% of the necessary data, respectively, as outlined in the ESRS. One may also differentiate disclosure compliance of each exposure field, as done in Appendix 9 on page 51. Reporting compliance also differs across exposure fields, with reporting on climate change (28%), pollution (34%), and resource use and circular economy (27%) standing out in the environmental exposure field, while in the social domain reporting on the impact on affected communities (7%), consumers and end-users (8%), and workers in the value chain (9%) exhibit lower degrees of compliance.

4.2. Scope 2: ESRS Compliance and ESG Score's Impact on Financial Performance of European Consumer Staples Companies

The empirical analysis of linear relationships between predictor variables and dependent variables standard deviation (1.1.) and CMGR (1.2.) of MCap were conducted using two distinct regression models, obtained from Scope 2 of the methodology section (p. 10-12).

The first regression model (1.1.) utilized two predictor variables, namely "Degree of Compliance with ESRS" and "ESG Score by Refinitiv," both of which were included as no independent variable was excluded through backward selection (Appendix 11, p. 52).

The analysis revealed significant results, indicating that both independent variables were predictors of MCap standard deviation. The regression model accounted for 27% of the observed variance of the standard deviation of MCap, as indicated by the R square value. The ANOVA analysis also confirmed that the model was significant ($F(2,212)=39.233$, $p<0,001$). These findings are documented in Appendix 11-18 on pages 51-55.

The standardized beta provides a means of evaluating the impact of each independent variable on the dependent variable. In this study, the "Degree of Compliance with ESRS" had a stronger effect on the dependent variable, with a standardized beta of 0,358, compared to the "ESG Score by Refinitiv", which had a standardized beta of 0,193 and can be observed in Appendix 14 (p. 53) The unstandardized beta for the "Degree of Compliance with ESRS" was 0,161, indicating a robust correlation with the dependent variable. “ESG Score by Refinitiv”, however, also showed a weaker correlation of beta equal

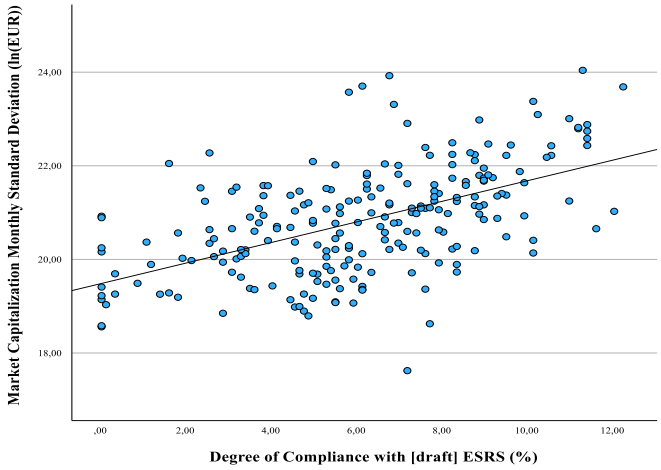

Figure 3: Regression Model 1.1. - Degree of Compliance with ESRS as predictor variable for Monthly Standard Deviation of Market Capitalization (Time Scope: 2017-2021)

to 0,015. The unstandardized betas can be observed in Appendix 16 (p. 54). Diagnostic results indicated some multicollinearity between the predictor variables, with a VIF value of 2,368 for both variables, which falls below its cut-off values.

These findings suggest that both the "Degree of Compliance with ESRS" and "ESG Score by Refinitiv" are significant predictors of the standard deviation of MCap (Appendix 15, p. 53). For those reasons, the results indicate that the null hypothesis can be rejected, and the alternative hypothesis can be accepted, suggesting a significant association between the two predictor variables and the standard deviation of MCap from 2017 to 2021.

The second regression model (1.2.) investigated the relationship between the CMGR of MCap and two predictor variables: "Degree of Compliance with ESRS" and "ESG Score by Refinitiv". The backward selection process excluded "Degree of Compliance with ESRS" from the analysis. The results showed that the "ESG Score by Refinitiv" was a significant predictor of MCap growth, with an R-squared value of 0,014 indicating low explanatory power. The low R-squared value suggests that the model may not incorporate enough relevant predictors or may include extraneous ones. Thus, it can be inferred that the "ESG Score by Refinitiv" variable may have a negligible impact on MCap growth, and other unaccounted variables may have a more substantial influence. The ANOVA showed that the model (1.2.) with a p-value of 0,087 was not significant, indicating that the null hypothesis (H_0) must be accepted. This suggests that the CMGR in MCap from 2017 to 2021 is independent of the two predictor variables. These findings are presented in Appendix 17-22 on pages 55-57.

4.3. Scope 3: ESRS Compliance, ESG Scores, and Financial Performance: Examining ESG-Controversies and Pillar-Specific Disclosures in European Consumer Staples Companies

New variables, including compliance degrees for each ESG pillar and the "ESG-Controversies" Score by Refinitiv, were introduced while the dependent variables of MCap's monthly standard deviation and CMGR remained unchanged.

Analysis of the impact of the new factors on the standard deviation of MCap (2.1.) indicated that information disclosure pertaining to social exposure had the most significant impact with a beta coefficient (β_{social}) of 0,117. This effect was stronger than beta coefficients observed for information disclosure in environment ($\beta_{environment}$ = 0,055) and governance ($\beta_{governance}$ = 0,096) areas (Appendix 25, p. 59 ff.). However, the model was statistically significant with a p-value of less than 0,001, but the R-squared value of 32,4% was low, and the independent variable of disclosure compliance on the environmental pillar was not significant. For this reason, the alternative hypothesis must be accepted and stated that the disclosure compliance on the social and governance pillar have a significant influence on the monthly standard deviation of MCap of companies in the European consumer staples sector.

Altering the dependent variable to the CMGR did not produce any noteworthy insights, as the resulting model (2.2.) was statistically insignificant (Appendix 28, p. 63).

An additional investigation (3.1.) was conducted to examine the impact of publishing information on environmental, social, and governance topics on the ESG Score. The dissemination of information can serve as a pedagogical tool and may not be evenly distributed across all three pillars. The prioritization of these pillars may be associated with synergies or correlations between the dissemination of information and the enhancement of the ESG Score. In Appendix 31 (p. 66) the analysis revealed a significant model with an R-squared value of

0,645, and environmental and governance information emerged as significant predictor variables for the ESG Score, while social information did not have a significant impact. The beta coefficients for environment and governance were 0,538 ($\beta_{environment}$) and 0,385 ($\beta_{governance}$), respectively (Appendix 34, p. 68). The findings suggest that prioritizing the disclosure of information related to environmental exposure, followed by governance, may result in a greater benefit in improving the ESG Score. No multicollinearity issues were found.

Lastly, the study tested the hypothesis if external factors, including controversies related to ESG exposure fields, impact the variance in standard deviation (3.2.) and CMGR of MCap (3.3.).

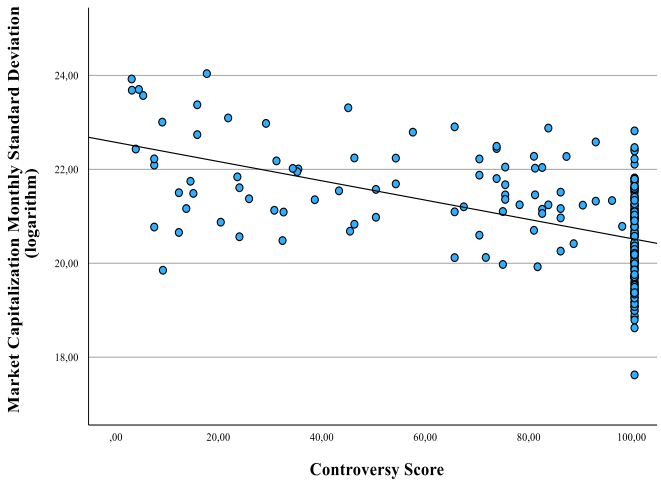

Figure 4: Regression Model 3.2. - Controversy-Score by Refinitiv as predictor variable for Monthly Standard Deviation of Market Capitalization (Time Scope: 2017-2021)

The model (3.2.) included predictor variables such as "Degree of Compliance with ESRS", "ESG Score", and "ESG-Controversies", with standard deviation of MCap as the dependent variable. The results showed that DC and ESG-Controversies had a significant relationship with standard deviation, but ESG Score did not, with an R-squared of 0,431. While β_{DC} was 0,120 the unstandardized beta for ESG-Controversies was -0,016. The findings suggest that a higher ESG-Controversy Score reduces the standard deviation of MCap to a greater extent than solely disclosing ESG information (Appendix 36, p. 72).

However, altering the dependent variable to the CMGR did not yield significant results. The study's Appendix provides further details on the statistical significance of these findings (Appendix 42, p. 74 f.).

5. Discussion

European publicly listed consumer staples companies have exhibited a growing trend in disclosing sustainability-related data between 2017 and 2021. However, in 2021 only 6,7% of the total expected or mandated data points as per the ESRS were disclosed, indicating that investors and reporting companies may rely on a limited selection of ESG data for evaluating enterprise value and assessing material risks. For this reason, this study addressed the issue, whether more extensive and dedicated ESG data under the ESRS would lead to better financial decision-making regarding the financial performance of assets (Chapter: Results, p. 14 ff.).

Financial performance was measured by the monthly standard deviation and CMGR in MCap. Regression models were constructed to assess the influence of "Degree of Compliance with ESRS" and "ESG Score by Refinitiv" on the standard deviation of consumer staples corporations. The model had a low explanatory power (R-squared = 0,27), but both independent variables were found to have a significant positive impact on the variation of standard deviation, as indicated by their p-values ($p < 0,05$) (Appendix 12, p. 52).

The model (1.1.) found that a higher level of compliance with the ESRS was associated with an increase in the standard deviation of MCap. Specifically, an increase of one percent in compliance was found to result in a logarithmic standard deviation of 0,161 EUR in MCap. Therefore, reversing $e^{\ln(\text{st.dev.})} = e^{0,161} = 1,75$ EUR, a change of one percentage point in compliance degree increases the standard deviation by 1,75 EUR. Eventually, the overall impact of compliance on the standard deviation was small, as the mean annual standard deviation from 2017 to 2021 was 2 billion EUR.

Similarly, the impact of the ESG Score by Refinitiv on the standard deviation was found to be minimal, with a one percentage point increase resulting in an increase of only 1,02 EUR. This suggests that companies may choose to disclose less information to appear more appealing to

risk-averse investors who may prefer lower standard deviations in MCap (Appendix 14, p. 53). The analysis did not reveal any statistically significant outcomes when using the CMGR in MCap as the dependent variable (Appendix 17, p. 55). This finding implies that the increase in variance of standard deviation observed in the first model does not correspond with an increase in growth.

The observed phenomenon of elevated risk metrics but not growth metrics with greater sustainability transparency may be explained by a trade-off between sustainability efforts and financial outcomes that arises due to the perception of ESG reporting as a time-consuming and resource-intensive undertaking. This finding aligns with the assertions of Ernst et al. (2022), who contend that investors tend to perceive companies that disclose greater transparency in their sustainability practices as riskier, resulting in an increased level of volatility and risk in MCap, as discussed in the literature review. Consequently, achieving a balance between transparency and risk management is crucial for companies seeking to enhance their sustainability practices while avoiding the perception of excessive risk. Companies facing this dilemma may pursue one of two strategies: improving their ESG scores or allocating resources to specific pillars.

Firstly, based on the premise, that ESG scores may provide a useful tool, the present study identified a positive correlation between the "Degree of Compliance with ESRS" and the "ESG Score by Refinitiv". In summary, the model (3.1.) suggests that companies disclosing more ESG data tend to receive higher ESG scores (Appendix 34, p. 68). Greater ESG Scores, however, are positively associated with an increase in the standard deviation of their market capitalization, as pointed out by the regression model 1.1. (Chapter: Results, p. 14).

The proposition suggests that in addition to augmenting the extent of data disclosure, there is a potential for greater utility in the disclosure of data that is specifically tailored to the needs and

objectives of a specific ESG Pillar. A closer examination of the findings reveals that the ESRS reporting framework currently points out a gap of qualitative and descriptive data points, particularly in the governance pillar, where only 61 data points are required compared to 452 and 438 data points for environment and social aspects, respectively (Appendix 7-9, p.50 f.). Besides this great amount of datapoints for each pillar, most data points in the ESRS are "expected" rather than "prescribed", presenting companies a significant leeway to strategically prioritize reporting on certain pillars or data points over others (Appendix 7, p. 50). Notwithstanding the recognition of this asymmetry in regulatory data points, it is imperative to scrutinize whether there exists a commensurate discrepancy in the efficacy of disclosing data points across individual ESG pillars. This endeavour seeks to assist reporting companies in comprehending the optimal prioritization of data disclosures as per the ESRS guidelines (Appendix 11-16, p. 52 ff.). Disparities in compliance with the ESRS standards exist among corporations, particularly concerning the three sustainability pillars. Notably, the consumer staples sector exhibits more extensive reporting on environmental and social indicators than on governance indicators. Time-series analysis reveals that sustainability data disclosure has either remained static or decreased between 2020 and 2021, except for the social pillar which demonstrated an increase. Conversely, both the environment and governance pillars experienced a decline during this period. However, an overall upward trend across all three pillars has been observed over the five-year period from 2017 to 2021 (Appendix 10, p. 51).

To further test this approach of favouring certain ESG pillars in disclosure efforts another regression model was run. Model 2.1. yielded a significant outcome, with an R-squared value of 0,324, in investigating the relationship between compliance degree on individual ESG pillars on the standard deviation of its reporting companies MCap (Appendix 24, p. 58). The research revealed that the social pillar exhibited the highest correlation of standard deviation with compliance degree, followed by the governance pillar, in contrast to the CSRD's stipulated

hierarchy of mandating the most data points for the environment and the least for governance (Appendix 25, p. 59). This leads to the deduction that attempting to equally disclose sustainability information across all three pillars may lead to a higher standard deviation, potentially indicating higher risk depending. This is mainly due to the disclosure of social information because model 2.1. in this study found that disclosing information, particularly social information, was associated with a higher variance in MCaps' standard deviation.

This relationship was observed to a lesser extent for ESG Scores, as evidenced by Model 3.1. (R-squared=0,646, Appendix 32, p. 67). Interestingly, the disclosure of social information did not exhibit any significant correlation with the ESG Score, suggesting that investors who rely on the ESRS to make risk-averse decisions should be cautious. The quantity of social information data points appears to be more insightful than their quality, as they have a greater impact on the variance in standard deviation of MCap but not on the ESG Score, as shown in Appendix 34 (p. 68). The outcomes hold significant implications for reporting entities, especially in the domain of social exposure. To minimize variance in MCap, companies are advised to restrict their sustainability reporting to metrics that demonstrate comparable or superior performance relative to industry peers. This suggests that companies must exercise selectivity in their sustainability reporting, focusing on areas where they have a competitive advantage or can exhibit superior performance against industry benchmarks.

This proposition finds support in Model 3.2., which underscores the influence of external determinants, particularly ESG Controversies, on the nexus between sustainability reporting and value generation. The study reveals that a higher ESG-Controversy Score is associated fewer ESG-negative media reports, leading to a reduction in the variance in standard deviation of MCap (Appendix 39, p. 72). The effect of ESG Controversies on the variance in standard deviation of MCap is more significant than the compliance degree with the ESRS in absolute terms, as indicated by standardized betas. An increase of one percentage point in the ESG-

Controversy Score results in a reduction of 1,02 EUR in its standard deviation. Although ESG-Controversies are outside of the control of the reporting entity, they provide an opportunity for investors and reporting companies. Outperforming industry peers in ESG Controversies performance may hold more significance than reporting extensive data. Therefore, companies should prioritize quality and public goodwill over quantity in their sustainability reporting.

The identified paradox of the ESRS compliance and rise in MCaps' standard deviation may present a notable opportunity for EFRAG to address and potentially mitigate the challenges faced by reporting companies. Considering the risk implications associated with increased sustainability transparency, EFRAG could consider adopting a more sector-specific framework to facilitate more effective reporting practices. Failure to address this paradox may lead to reduced reporting by companies, ultimately undermining the overarching objective of the CSRD. Therefore, EFRAG could play a critical role in advancing the sustainability agenda by exploring and implementing measures to enhance sustainability reporting practices.

This thesis is subject to several limitations that must be acknowledged. These include the low explanatory power (R-squared) of the regression models, indicating that there may be other factors influencing ESG performance that were not captured. It also must be stated that the results of this work are based on correlations, rather than causal relationship.

Additionally, the preliminary nature of the ESRS also requires caution in interpreting the results. Future research should consider incorporating an updated ESRS framework.

Despite these limitations, this study provides valuable insights into the relationship between ESG performance and financial performance in a specific sector and under the new ESRS framework, advancing scientific understanding and informing policy discussions. However, as stated before, changes to the CSRD may require revisiting the methodology and results in the future.

6. Conclusion

This study aimed to investigate the relationship between ESG reporting and the financial performance of European consumer staples companies, focusing on the compliance level with the ESRS (Scope 1) and the impact of ESG disclosure and scores on financial performance (Scope 2) and ESG controversies (Scope 3).

This study employed a quantitative approach to analyse data from the STOXX Europe 600 Industry Consumer Staples index, using linear regression models. Results showed that sustainability-related data disclosure by European consumer staples companies had increased between 2017 and 2021 but only represented a small percentage (6.7%) of the total expected or mandated data points under the ESRS in 2021. The study revealed that higher compliance with the ESRS is associated with a higher standard deviation of MCap, while no significant connection was found between CMGR and sustainability reporting.

The study suggests that companies should aim to balance risk management and transparency to optimize sustainability and financial outcomes, prioritizing reporting on areas where they outperform industry benchmarks. Furthermore, the study highlights that outperforming peers in ESG controversies may be more crucial than extensive reporting, as it is associated with reduced MCap variability.

The study's findings are particularly relevant to companies and investors in the context of the newly introduced CSRD under the EU's Green Deal initiative, emphasizing the importance of informed decision-making on ESG data disclosure in line with CSRD requirements and its potential impact on financial outcomes. The research adds valuable insights into the evolving landscape of ESG disclosure in the European consumer staples industry and underscores the need for further sector-specific analyses of the impact of CSRD on financial performance, highlighting a research gap in this area.

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Appendix 1 – Industry analysis: Market Description and key players

Market Description

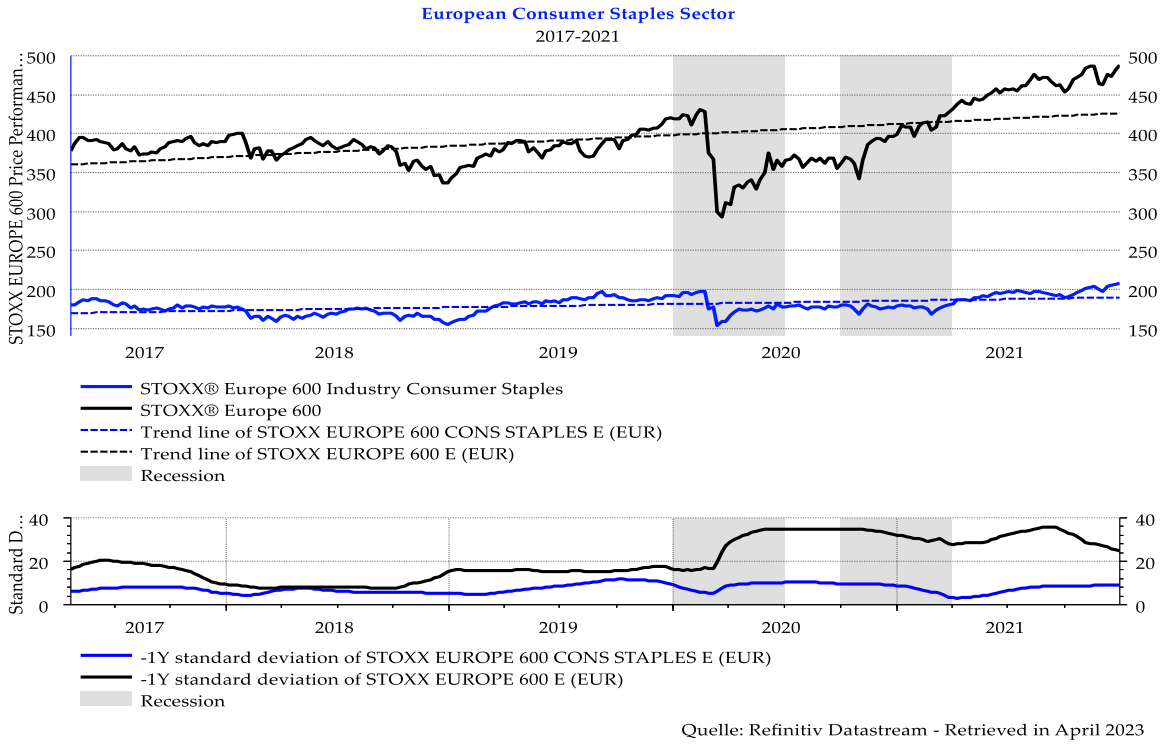


Figure 5: STOXX 600 European Consumer Staples Price Development. own illustration, Source: Refinitiv Datastream, retrieved on 24th of April 2023

The provided chart displays a consistent upward trend in the European consumer staples market from 2017 to 2022, with a compounded daily growth rate of 0.017%, lower than the benchmark index STOXX Europe 600 E's growth rate of 0.023%. In 2021, the consumer staples index exhibited a growth rate of 0.055%, while the benchmark index had a growth rate of 0.076%, indicating a lag in comparison. Nonetheless, the consumer staples market has shown resilience and stability, consistently demonstrating growth despite fluctuations in the broader economy and external pressures. The lower standard deviation of price performance in the consumer staples market compared to its macroeconomic benchmark supports this assertion, indicating that it is relatively less vulnerable to economic downturns and has the potential to generate favourable returns for investors over an extended period (Brezina et al. 2016; Refinitiv 2023). Approximately 71% of the total market capitalization

within the STOXX 600 Europe Consumer Staples is represented by the top 10 companies, resulting in a Herfindahl-Hirschman Index (HHI) of 914.3, indicating an industry with intense competition and potential price rivalries and innovation pressure (Hovhannisyan and Bozic 2016, 1).

Appendix 2 – Industry analysis: Distribution Channels

Distribution Channels

The consumer staples sector in Europe is sold through various distribution channels. Supermarkets and hypermarkets are the most popular channels, accounting for the majority of sales. Online channels are also growing in popularity, particularly in light of the COVID-19 pandemic and the increased demand for online shopping (Bill Aull et al. 2022).

Statista (2023) has estimated a growth of online sales in the food and beverages industry of approximately 20% in the years from 2017-2022. Hence does it predict 8% in the beverages and 17% in the food and retailing industry from 2022 until 2027 (Statista 2023a; 2023b).

Appendix 3 – Industry analysis: Challenges & Opportunities

Challenges and Opportunities

The European consumer staples sector confronts various challenges, including changing consumer preferences (Regmi and Gehlhar 2001), regulatory pressures pressures (Rodriguez, Cotran, and Stewart 2017), rising input costs (Antoine de Riedmatten et al. 2013), and increasing competition (Kristen Colella, Claudia Pardo, and Brain Hindo 2022). Companies must adapt to evolving consumer habits, such as the rising demand for plant-based and organic products, and adopt sustainable practices. The regulatory environment in the European Union is particularly stringent, which can be expensive and time-consuming

for companies (European Food Safety Authority 2002; European Commission and CSES 2015).

Furthermore, a considerable level of competition exists, with a multitude of established entities and emerging market participants striving to capture a significant market share. In such an environment, it becomes imperative for companies to distinguish themselves from their competitors by providing distinctive products and demonstrating their commitment to sustainable practices (Emons 1998; Regmi and Gehlhar 2001). Those who can differentiate and adapt to changing consumer preferences may succeed. Furthermore, integrating sustainability into business models is increasingly crucial, as consumers increasingly demand eco-friendly and socially responsible products. The growth of e-commerce provides an opportunity for companies to gain a competitive advantage by offering a seamless online shopping experience (Statista 2023a; 2023b; Kristen Colella, Claudia Pardo, and Brain Hindo 2022).

Appendix 4 – Porters' 5 Forces on Consumer Staples Sector in Europe

Threat of new entrants: Moderate to High

Consumer staples market in Europe is not very concentrated, displayed in a HHI of 914. Still, the top10 companies represent approximately 71% of market value of the EURO STOXX 600 Consumer Staples in 2021 (Refintiv Inc. 2023).

Recent developments show that even though consumer staples companies have traditionally benefited from economies of scale in managing manufacturing, distribution, and marketing, new technologies have enabled capital-light startups to enter the market and respond quickly to customer preferences. Direct-to-consumer brands have leveraged outsourcing and data analytics to identify and target customer needs. This has disrupted the traditional advantages

of larger companies and created more competition in the industry (Kristen Colella, Claudia Pardo, and Brain Hindo 2022).

Additionally, there is a certain pressure to differentiate on market and a development towards online sales, opening room for new entrants (Emons 1998).

On the other hand, the consumer staples market is highly regulated implying significant costs and time spendings (European Commission and CSES 2015).

Bargaining power of suppliers: Moderate

The bargaining power of suppliers in the consumer staples sector in Europe is moderate. The sector relies heavily on raw materials such as agricultural products, which are subject to price fluctuations and supply chain disruptions. Suppliers may have significant bargaining power if they hold a dominant market position or if the raw material is scarce. Scarcity could also occur if sustainability becomes a more important factor and suppliers of sustainably-sourced raw materials may have increased bargaining power due to their limited availability. On the other hand, there are substantial economies of scales and therefore dependencies from suppliers towards the larger corporations (Antoine de Riedmatten et al. 2013).

Bargaining power of buyers: High

Buyers in the consumer staples sector in Europe have high bargaining power. The sector is highly competitive, with many brands offering similar products (Brezina et al. 2016). Buyers have a wide range of options to choose from and can easily switch between brands based on price, quality, and sustainability factors. Furthermore, retailers have significant bargaining power over manufacturers due to their ability to negotiate prices and influence product placement and promotion (Kristen Colella, Claudia Pardo, and Brain Hindo 2022)

Threat of substitutes: High

The threat of substitutes in the consumer staples sector in Europe is high. Consumers have a wide range of options to choose from, including private label brands, local brands, and imported brands. Additionally, sustainability concerns are driving consumers to seek out alternatives to traditional products, such as plant-based foods and reusable packaging. As sustainability becomes an increasingly important factor in purchasing decisions, the threat of substitutes is likely to increase (Kristen Colella, Claudia Pardo, and Brain Hindo 2022).

Competitive rivalry: High

The consumer staples sector in Europe is highly competitive, with many brands vying for market share (Brezina et al. 2016).. The sector is dominated by a few large players, such as Nestle, Unilever, and Danone, but there are also many smaller brands and private label products. Competition is fierce, with brands competing on price, quality, and sustainability factors. Additionally, retailers have significant power over manufacturers, further intensifying competition. As sustainability becomes an increasingly important factor in the industry, competition is likely to intensify further as brands compete to differentiate themselves based on sustainability performance (Brezina et al. 2016; Refinitiv 2023).

Appendix 5 – Data set and sources

Exposure Field within ESRS	ESG Data point	Datasource
General, Strategy, Governance and Materiality	Climate Change Commercial Risks Opportunities	Refinitiv
General, Strategy, Governance and Materiality	Policy Environmental Supply Chain	Refinitiv
General, Strategy, Governance and Materiality	CMDTY_SRCNG_ESG_RISKS_DISCSD	Bloomberg
General, Strategy, Governance and Materiality	Env Supply Chain Partnership Termination	Refinitiv
General, Strategy, Governance and Materiality	CLIMATE_SCENARIO_ANALYSIS	Bloomberg
General, Strategy, Governance and Materiality	Trade Union Representation	Refinitiv
General, Strategy, Governance and Materiality	Toxic Chemicals Reduction	Refinitiv
General, Strategy, Governance and Materiality	Policy Responsible Marketing	Refinitiv
General, Strategy, Governance and Materiality	Product Impact Minimization	Refinitiv
General, Strategy, Governance and Materiality	Board Structure Policy	Refinitiv
General, Strategy, Governance and Materiality	Policy Board Size	Refinitiv
General, Strategy, Governance and Materiality	Policy Board Independence	Refinitiv
Climate Change	BASELINE_YR_GHG_EMISSIONS_TGT	Bloomberg
Climate Change	TGT_YR_GHG_EMISSIONS_TGT	Bloomberg
Climate Change	EMISSION_REDUCTION	Bloomberg
Climate Change	Targets Emissions	Refinitiv
Climate Change	GHG_EMISSIONS_REDUCT_TGT_ABS	Bloomberg
Climate Change	CLIMATE_CHG_POLICY	Bloomberg
Climate Change	GHG_EMISSIONS_REDUCTION_POLICY	Bloomberg
Climate Change	Policy Energy Efficiency	Refinitiv
Climate Change	RENEWABLE_ELECTRICITY_TARGET_POL	Bloomberg
Climate Change	Environmental Expenditures Investments	Refinitiv
Climate Change	Environmental Expenditures	Refinitiv
Climate Change	Resource Reduction Targets	Refinitiv
Climate Change	Resource Reduction Policy	Refinitiv
Climate Change	Policy Emissions	Refinitiv
Climate Change	Targets Energy Efficiency	Refinitiv
Climate Change	SCOPE_1_GHG_TGT_BASELINE_YR	Bloomberg
Climate Change	SCOPE_1_GHG_TGT_TGT_YR	Bloomberg
Climate Change	SCOPE_1_EMISS_REDUCT_TGT_ABS	Bloomberg
Climate Change	ENERGY_CONSUMPTION	Bloomberg
Climate Change	Energy Use Total	Refinitiv
Climate Change	Total Energy Use To Revenues USD in million	Refinitiv
Climate Change	Energy Purchased Direct	Refinitiv
Climate Change	Total Renewable Energy	Refinitiv
Climate Change	Renewable Energy Use Ratio	Refinitiv

Climate Change	RENEWABLE_ENERGY_CERTIFICATES	Bloomberg
Climate Change	CO2 Equivalent Emissions Direct, Scope 1	Refinitiv
Climate Change	CO2 Equivalent Emissions Indirect, Scope 2	Refinitiv
Climate Change	CO2 Equivalent Emissions Indirect, Scope 3	Refinitiv
Climate Change	CO2 Equivalent Emissions Total	Refinitiv
Climate Change	Emissions Trading	Refinitiv
Climate Change	Total CO2 Equivalent Emissions To Revenues USD in million	Refinitiv
Climate Change	SCOPE_3_PURCH_GOODS_SRVCS	Bloomberg
Climate Change	SCOPE_3_CAPITAL_GOODS	Bloomberg
Climate Change	SCOPE_3_WASTE_GENRTD_IN_OP	Bloomberg
Climate Change	SCOPE_3_EMPLOYEE_COMMUTING	Bloomberg
Climate Change	SCOPE_3_PRCSS_OF_SOLD_PRODS	Bloomberg
Climate Change	SCOPE_3_DWNSTRM_LEASE_ASSTS	Bloomberg
Climate Change	SCOPE_3_FRANCHISES	Bloomberg
Climate Change	SCOPE_3_EMISSIONS_OTHER	Bloomberg
Climate Change	PCT_GHG_EM_CVRD_UND_REG_PROG	Bloomberg
Climate Change	Carbon Offsets/Credits	Refinitiv
Climate Change	Internal Carbon Pricing	Refinitiv
Climate Change	Internal Carbon Price per Tonne	Refinitiv
Climate Change	CLIMATE_RISKS	Bloomberg
Climate Change	CLIMATE_CHG_OPPORTUNITIES	Bloomberg
Pollution	AIR_POLLUTION_REDUCTION_POL	Bloomberg
Pollution	NOx and SOx Emissions Reduction	Refinitiv
Pollution	NOX_EMISSIONS	Bloomberg
Pollution	SO2_EMISSIONS	Bloomberg
Pollution	VOC_EMISSIONS	Bloomberg
Pollution	HAZARDOUS_WASTE_MGMT_POL	Bloomberg
Pollution	Organic Products Initiatives	Refinitiv
Pollution	Ozone-Depleting Substances	Refinitiv
Pollution	COM_TO_ELIMINATE_CHEM_CONCERN	Bloomberg
Pollution	DISCHARGE_TO_WATER	Bloomberg
Pollution	Accidental Spills	Refinitiv
Pollution	CARBON_PER_UNIT_OF_PROD	Bloomberg
Pollution	NUMBER_SPILLS	Bloomberg
Pollution	AMOUNT_OF_SPILLS	Bloomberg
Pollution	AMOUNT_SIGNIF_SPILLS	Bloomberg
Pollution	Self-Reported Environmental Fines	Refinitiv
Pollution	NUM_ENVIRON_FINES	Bloomberg
Pollution	ENVIRON_FINES_AMT	Bloomberg
Water and Marine Ressources	Policy Water Efficiency	Refinitiv
Water and Marine Ressources	Water Withdrawal Total	Refinitiv
Water and Marine Ressources	WATER_POLICY	Bloomberg
Water and Marine Ressources	WATER_STRESS_EXPOSURE_PCT	Bloomberg
Water and Marine Ressources	SALT_WATER_WITHDRAWALS	Bloomberg
Water and Marine Ressources	FRESHWATER_WITHDRAWALS	Bloomberg
Water and Marine Ressources	TOTAL_WATER_USE	Bloomberg

Water and Marine Ressources	WASTEWATER_MANAGEMENT_POLICY	Bloomberg
Water and Marine Ressources	WASTEWATER_TREATED	Bloomberg
Water and Marine Ressources	Water Recycled	Refinitiv
Water and Marine Ressources	Water Use To Revenues USD in million	Refinitiv
Water and Marine Ressources	WASTE_DIVERTED_LANDFILL	Bloomberg
Water and Marine Ressources	TOTAL_WATER_RECYCLED	Bloomberg
Biodiversity and Ecosystems	Biodiversity Impact Reduction	Refinitiv
Biodiversity and Ecosystems	Environmental Restoration Initiatives	Refinitiv
Biodiversity and Ecosystems	BIODIVERSITY_POLICY	Bloomberg
Biodiversity and Ecosystems	Environmental Materials Sourcing	Refinitiv
Biodiversity and Ecosystems	Environmental Supply Chain Monitoring	Refinitiv
Biodiversity and Ecosystems	HAS_FRSTY_STD_SUSP_TERMIN	Bloomberg
Biodiversity and Ecosystems	Env Supply Chain Partnership Termination	Refinitiv
Biodiversity and Ecosystems	CLIMATE_ADP_SOLUTIONS_IMPL	Bloomberg
Resource Use and Circular Economy	HAZARDOUS_WASTE	Bloomberg
Resource Use and Circular Economy	HAZARDOUS_WASTE_RECYCLED	Bloomberg
Resource Use and Circular Economy	PACKGNG_FROM_RECYCLED_MATERIALS	Bloomberg
Resource Use and Circular Economy	PACK_RECYCLABLE_COMPSTBL_MAT	Bloomberg
Resource Use and Circular Economy	PAPER_RECYCLED	Bloomberg
Resource Use and Circular Economy	ENVIRON_SUPPLY_MGT	Bloomberg
Resource Use and Circular Economy	PRODUCT_LIFECYCLE_DESIGN	Bloomberg
Resource Use and Circular Economy	Policy Sustainable Packaging	Refinitiv
Resource Use and Circular Economy	PROD_TRCBLTY_CNTRFT_PRV_PLCY	Bloomberg
Resource Use and Circular Economy	PCT_RAW_MATERIAL_SUSTAIN_SRC	Bloomberg
Resource Use and Circular Economy	TOTAL_WEIGHT_PACKAGING	Bloomberg
Resource Use and Circular Economy	SUSTAIN_PACKAGING	Bloomberg
Resource Use and Circular Economy	Waste Recycled To Total Waste	Refinitiv
Resource Use and Circular Economy	Waste Reduction Initiatives	Refinitiv
Resource Use and Circular Economy	Take-back and Recycling Initiatives	Refinitiv
Resource Use and Circular Economy	Waste Total	Refinitiv
Resource Use and Circular Economy	WASTE_RECYCLED	Bloomberg
Resource Use and Circular Economy	AMT_WASTE_COMPOSTED	Bloomberg
Resource Use and Circular Economy	AMT_WASTE_INCINERATED	Bloomberg
Resource Use and Circular Economy	WASTE_SENT_TO_LANDFILLS	Bloomberg
Resource Use and Circular Economy	PCT_WASTE_RECYCLED	Bloomberg
Own Workforce	OECD Guidelines for Multinational Enterprises	Refinitiv
Own Workforce	Human Rights Policy	Refinitiv
Own Workforce	EMPLYEE_ENGGMNT_RESLTS_GENDR	Bloomberg
Own Workforce	Whistleblower Protection	Refinitiv
Own Workforce	Policy Freedom of Association	Refinitiv
Own Workforce	Policy Child Labor	Refinitiv
Own Workforce	Policy Forced Labor	Refinitiv
Own Workforce	HEALTH_SAFETY_POLICY	Bloomberg
Own Workforce	EDGE_CERTIFIED	Bloomberg
Own Workforce	EQUAL_OPPORTUNITY_POLICY	Bloomberg
Own Workforce	Training and Development Policy	Refinitiv

Own Workforce	Health & Safety Training	Refinitiv
Own Workforce	Targets Diversity and Opportunity	Refinitiv
Own Workforce	Policy Skills Training	Refinitiv
Own Workforce	TRAINING_POLICY	Bloomberg
Own Workforce	MANAGER_DI_GOALS_PERF_REVIEWS	Bloomberg
Own Workforce	EMPLOYEE_CSR_TRAINING	Bloomberg
Own Workforce	Women Employees	Refinitiv
Own Workforce	EMPLOYEE_AVERAGE_AGE	Bloomberg
Own Workforce	PCT_WOMEN_IT_ENGINEERING	Bloomberg
Own Workforce	PCT_ENTRY_LEVL_POSITNS_FEMLE	Bloomberg
Own Workforce	NUMBER_OF_TEMPORARY_EMPLOYEES	Bloomberg
Own Workforce	NUMBER_OF_PART_TIME_EMPLOYEES	Bloomberg
Own Workforce	PCT_CONTRACTORS_TOT_WORKFORCE	Bloomberg
Own Workforce	Policy Career Development	Refinitiv
Own Workforce	Average Training Hours	Refinitiv
Own Workforce	Training Costs Per Employee	Refinitiv
Own Workforce	Environment Management Training	Refinitiv
Own Workforce	TOT_HRS_SPENT_BY_FIRM_EMP_TRAIN	Bloomberg
Own Workforce	AVERAGE_EMPLOYEE_TRAINING_HOURS	Bloomberg
Own Workforce	TRAINING_SPEND_PER_EMPLOYEE	Bloomberg
Own Workforce	EMPLOYEE_TRAINING_COST	Bloomberg
Own Workforce	CSR_SUSTAINABILITY_COMMITTEE	Bloomberg
Own Workforce	Employee Fatalities	Refinitiv
Own Workforce	Lost Working Days	Refinitiv
Own Workforce	FATALITIES_EMPLOYEES	Bloomberg
Own Workforce	FATALITIES_TOTAL	Bloomberg
Own Workforce	FATALITIES_CONTRACTORS	Bloomberg
Own Workforce	NMFR_EMPLOYEES	Bloomberg
Own Workforce	LOST_TIME_INCIDENT_RATE	Bloomberg
Own Workforce	LOST_TIME_ACCIDENTS	Bloomberg
Own Workforce	GLOBAL_MIN_WEEKS_PAID_PATERNITY	Bloomberg
Own Workforce	GLOBAL_MIN_WEEKS_PAID_MATERNITY	Bloomberg
Own Workforce	PARNTL_LEAVE_RETNTN_RATE	Bloomberg
Own Workforce	FAIR_REMUNERATION_POLICY	Bloomberg
Own Workforce	Gender Pay Gap Percentage	Refinitiv
Own Workforce	GENDER_PAY_GAP_BREAKOUT	Bloomberg
Own Workforce	PCT_GNDR_PAY_GAP_EMPL_INCL_MGMT	Bloomberg
Own Workforce	GENDR_PAY_GAP_ACTN_PLAN	Bloomberg
Own Workforce	INVESTIGATOR_SEX_HARASSMENT	Bloomberg
Own Workforce	PUB_SEXL_HRSSMNT_PLCY	Bloomberg
Own Workforce	ANNL_SEXL_HARSSMNT_TRAINNG	Bloomberg
Own Workforce	TOT_RECORDABLE_INCID_RT_CNTRCTR	Bloomberg
Own Workforce	Employees With Disabilities	Refinitiv
Own Workforce	CHG_OF_CTRL_BFIT_GOLD_CHUTE_AGR	Bloomberg
Own Workforce	OFFERS_PRODUCTS_WOMEN	Bloomberg
Own Workforce	PROV_SPPRT_SRVCS_COVID_19	Bloomberg

Own Workforce	PCT_EMPLOYEES_UNIONIZED	Bloomberg
Own Workforce	LOST_TIME_PER_EMPLOYEE	Bloomberg
Own Workforce	LOST_TIME_INCIDENT_RT_CNTRCTR	Bloomberg
Own Workforce	NUM_EMP_REPRESENTATIVES_BRD	Bloomberg
Own Workforce	NUM_FINES_HEALTH_AND_SAFETY	Bloomberg
Own Workforce	ONSTE_LACTTN_ROOMS	Bloomberg
Workers in the Value Chain	SPPLY_CHN_MODRN_SLVRY_ASSMNT	Bloomberg
Workers in the Value Chain	EMPLYEE_ENGGMNT_SURVY	Bloomberg
Workers in the Value Chain	Environment Management Team	Refinitiv
Workers in the Value Chain	SUPPLIER_FACILITIES_AUDITED	Bloomberg
Workers in the Value Chain	CRITICAL_MATERIALS_POLICY	Bloomberg
Workers in the Value Chain	SUPPLIERS_AUDITED	Bloomberg
Workers in the Value Chain	SHORT_SERVICE_EMPLOYEE_PROG	Bloomberg
Workers in the Value Chain	SOCIAL_SUPPLY_CHAIN_MGMT	Bloomberg
Affected Communities	Policy Community Involvement	Refinitiv
Affected Communities	INDIGENOUS_RIGHTS_POLICY	Bloomberg
Affected Communities	COMMUNITY_ENGAGEMENT_POLICY	Bloomberg
Affected Communities	COMMUNITY_SPENDING	Bloomberg
Consumer and End-Users	Policy Customer Health & Safety	Refinitiv
Consumer and End-Users	CUSTOMER_COMPLAINTS	Bloomberg
Consumer and End-Users	NUM_CSTM_AFFECTED_BY_BREACH	Bloomberg
Consumer and End-Users	CUST_SATISFACTION_BY_GENDER	Bloomberg
Business Conduct	External Consultants	Refinitiv
Business Conduct	Audit Committee Independence	Refinitiv
Business Conduct	Animal Testing	Refinitiv
Business Conduct	ETHICS_POLICY	Bloomberg
Business Conduct	Policy Fair Trade	Refinitiv
Business Conduct	Policy Executive Compensation ESG Performance	Refinitiv
Business Conduct	NUMBER_SUPPLIERS_NON_COMPL	Bloomberg
Business Conduct	Corporate Governance Board Committee	Refinitiv
Business Conduct	ANTI_BRIBERY_ETHICS_POLICY	Bloomberg
Business Conduct	Donations Total	Refinitiv
Business Conduct	POLITICAL_INVOLVEMENT_POLICY	Bloomberg
Business Conduct	POLITICAL_DONATIONS	Bloomberg

Financial indicators	**Data point**	**Datasource**
Monthly market capitalization	Monthly_Market_cap	Bloomberg

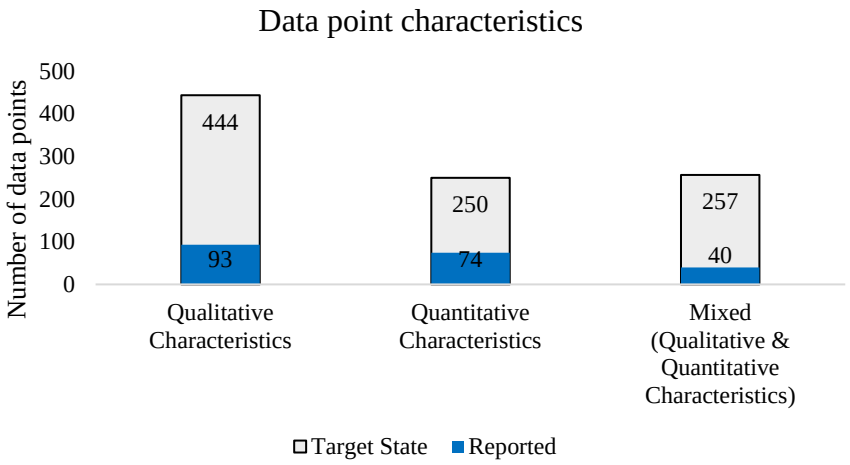
Table 1: List of ESG indicators and datapoints retrieved from Bloomberg and Refinitiv in March 2023

Appendix 6 – Sample

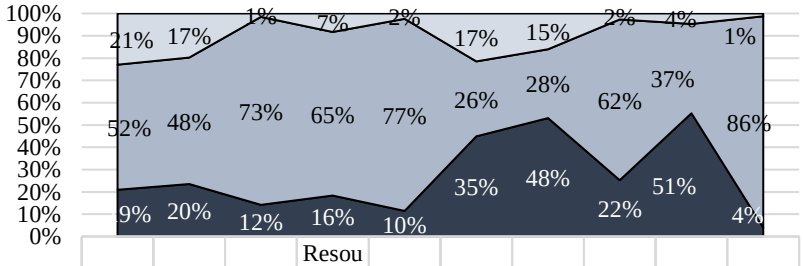
Company Name	Sector	Sector group	MCap in 2021 (as of 31.12.2021) in EUR
Nestle SA	Consumer Staples	Food Products	346,731,570,175
Unilever PLC	Consumer Staples	Personal Products	120,113,827,058
Diageo PLC	Consumer Staples	Beverages	111,626,522,277
Anheuser-Busch InBev SA/NV	Consumer Staples	Beverages	107,363,095,704
British American Tobacco PLC	Consumer Staples	Tobacco	74,564,043,763
Heineken NV	Consumer Staples	Beverages	56,943,618,321
Pernod Ricard SA	Consumer Staples	Beverages	55,386,892,440
Reckitt Benckiser Group PLC	Consumer Staples	Household Products	53,855,987,674
Danone SA	Consumer Staples	Food Products	37,540,587,075
Koninklijke DSM NV	Consumer Staples	Chemicals	34,607,633,742
Koninklijke Ahold Delhaize NV	Consumer Staples	Food & Staples Retailing	31,512,921,639
Chocoladefabriken Lindt & Spruengli AG	Consumer Staples	Food Products	28,936,011,181
Tesco PLC	Consumer Staples	Food & Staples Retailing	26,421,691,182
Heineken Holding NV	Consumer Staples	Beverages	23,373,648,133
Beiersdorf AG	Consumer Staples	Personal Products	22,775,760,000
Carlsberg AS	Consumer Staples	Beverages	22,451,122,242
Kerry Group PLC	Consumer Staples	Food Products	20,027,720,033
Associated British Foods PLC	Consumer Staples	Food Products	18,897,191,827
Imperial Brands PLC	Consumer Staples	Tobacco	18,186,169,674
Essity AB	Consumer Staples	Household Products	15,051,088,459
Davide Campari-Milano NV	Consumer Staples	Beverages	14,932,368,000
Ocado Group PLC	Consumer Staples	Food & Staples Retailing	14,781,424,211
Carrefour SA	Consumer Staples	Food & Staples Retailing	12,693,133,445
Jeronimo Martins SGPS SA	Consumer Staples	Food & Staples Retailing	12,648,793,722
Barry Callebaut AG	Consumer Staples	Food Products	11,756,037,855
Kesko Oyj	Consumer Staples	Food & Staples Retailing	11,460,302,038
Coca-Cola HBC AG	Consumer Staples	Beverages	11,112,393,895
Remy Cointreau SA	Consumer Staples	Beverages	11,095,982,390
Mowi ASA	Consumer Staples	Food Products	10,829,759,590
Orkla ASA	Consumer Staples	Food Products	8,879,514,883
J Sainsbury PLC	Consumer Staples	Food & Staples Retailing	7,647,832,130
Salmar ASA	Consumer Staples	Food Products	7,187,227,305
Dino Polska SA	Consumer Staples	Food & Staples Retailing	7,172,722,098
Axfood AB	Consumer Staples	Food & Staples Retailing	5,333,135,652
AAK AB	Consumer Staples	Food Products	4,926,671,104
Royal Unibrew A/S	Consumer Staples	Beverages	4,837,930,609
Lotus Bakeries NV	Consumer Staples	Food Products	4,561,512,670
Greggs PLC	Consumer Staples	Hotels, Restaurants & Leisure	4,041,985,966
HelloFresh SE	Consumer Staples	Food & Staples Retailing	3,736,649,870
Tate & Lyle PLC	Consumer Staples	Food Products	3,683,464,583
Glanbia PLC	Consumer Staples	Food Products	3,532,182,944
Galenica AG	Consumer Staples	Health Care Providers & Services	3,485,873,392
Bakkafrost P/F	Consumer Staples	Food Products	3,463,627,248
Britvic PLC	Consumer Staples	Beverages	2,924,050,058
Viscofan SA	Consumer Staples	Food Products	2,645,850,000
JDE Peets NV	Consumer Staples	Food Products	Privatized in 2021

Table 2: sample (STOXX® Europe 600 Industry Consumer Staples) n=47 of target population N

Appendix 7 – Data point characteristics

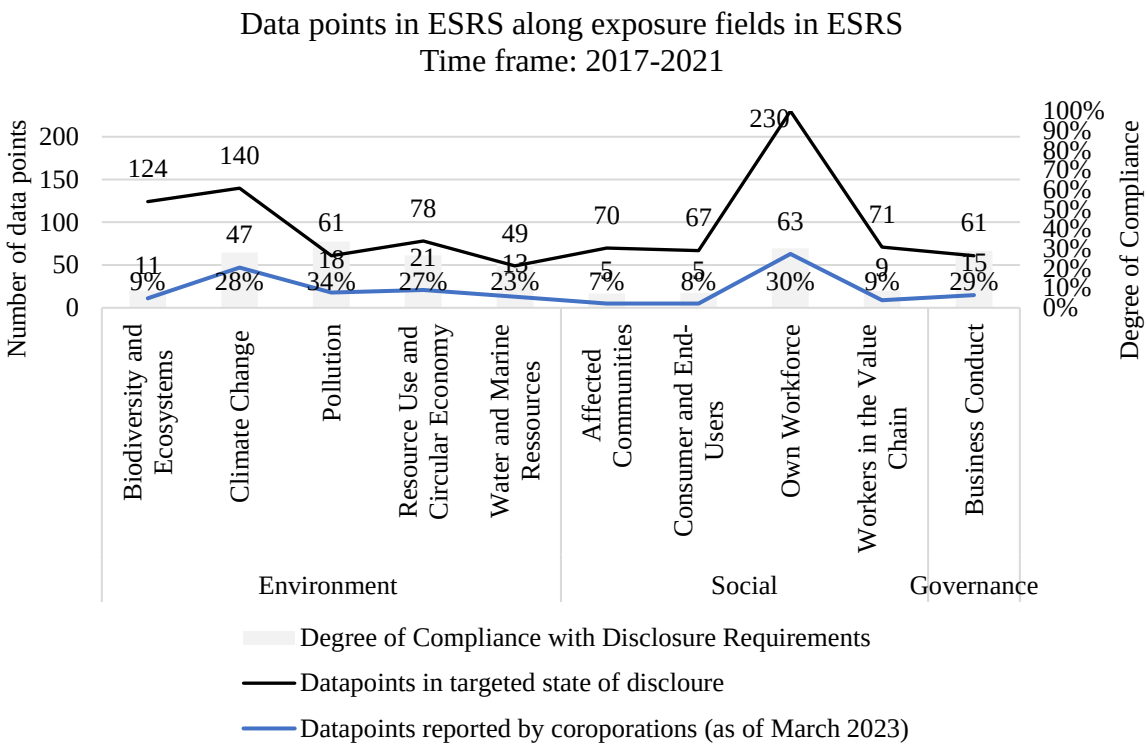


Appendix 8 – Reporting obligations according to ESRS paragraph 1.1 (7)

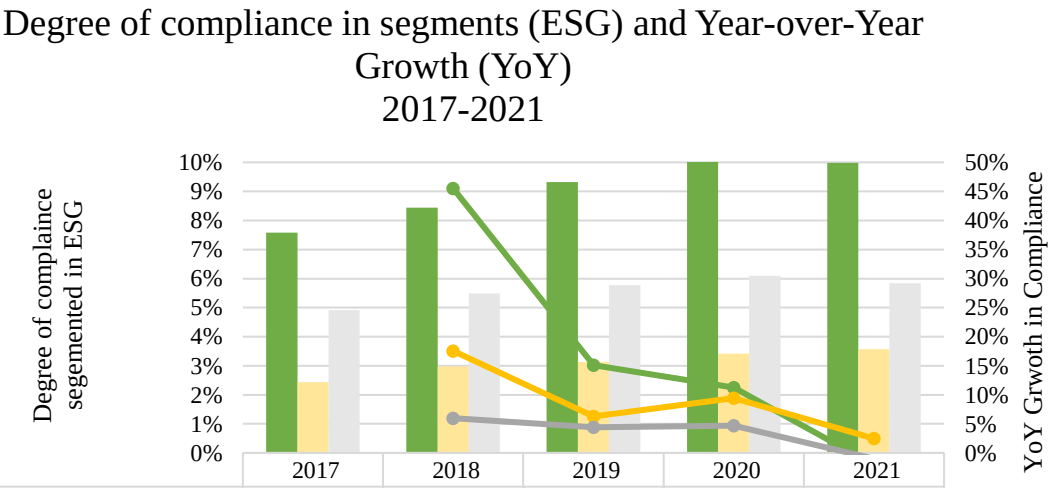


	Biodiversity and Ecosystems	Climate Change	Pollution	Resource Use and Circular Economy	Water and Marine Resources	Affected Communities	Consumer and End-Users	Own Workforce	Workers in the Value Chain	Business Conduct
	Environment					Social				Governance
Share of "condition" based datapoints of total datapoints in disclosure requirement	21%	17%	1%	7%	2%	17%	15%	2%	4%	1%
Share of "expected" datapoints of total datapoints in disclosure requirement	52%	48%	73%	65%	77%	26%	28%	62%	37%	86%
Share of "prescribed" datapoints of total datapoints in disclosure requirement	19%	20%	12%	16%	10%	35%	48%	22%	51%	4%

Appendix 9 – Degree of Compliance with ESRS along exposure fields



Appendix 10 – Degree of Compliance with ESRS in segments (ESG) and Year-over-Year Growth (YoY) from 2017 until 2021



	2017	2018	2019	2020	2021
Environment Pillar (%)	8%	8%	9%	10%	10%
Social Pillar (%)	2%	3%	3%	3%	4%
Governance Pillar (%)	5%	5%	6%	6%	6%
Environment (YoY Growth)		46%	15%	11%	-2%
Social (YoY Growth)		18%	6%	9%	2%
Governance (YoY Growth)		6%	4%	5%	-1%

Appendix 11 – Regression model 1.1. – included/excluded variables

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	ESG Score, Degree of Compliance with [draft] ESRS[b]	.	Enter

a. Dependent Variable: Market Capitalization Monthly Standard Deviation (logarithm)

b. All requested variables entered.

Appendix 12 – Regression model 1.1. – Model summary

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,520[a]	,270	,263	,97824

a. Predictors: (Constant), ESG Score, Degree of Compliance with [draft] ESRS

Appendix 13 – Regression model 1.1. – ANOVA

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	75,087	2	37,544	39,233	<,001[b]
	Residual	202,872	212	,957		
	Total	277,960	214			

a. Dependent Variable: Market Capitalization Monthly Standard Deviation (logarithm)

b. Predictors: (Constant), ESG Score, Degree of Compliance with [draft] ESRS

Appendix 14 – Regression model 1.1. – Coefficients

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t
		B	Std. Error	Beta	
1	(Constant)	18,844	,331		56,910
	Degree of Compliance with [draft] ESRS	,161	,041	,358	3,964
	ESG Score	,015	,007	,193	2,134

a. Dependent Variable: Market Capitalization Monthly Standard Deviation (logarithm)

Appendix 15 – Regression model 1.1. – Multicollinearity Test

Coefficients[a]

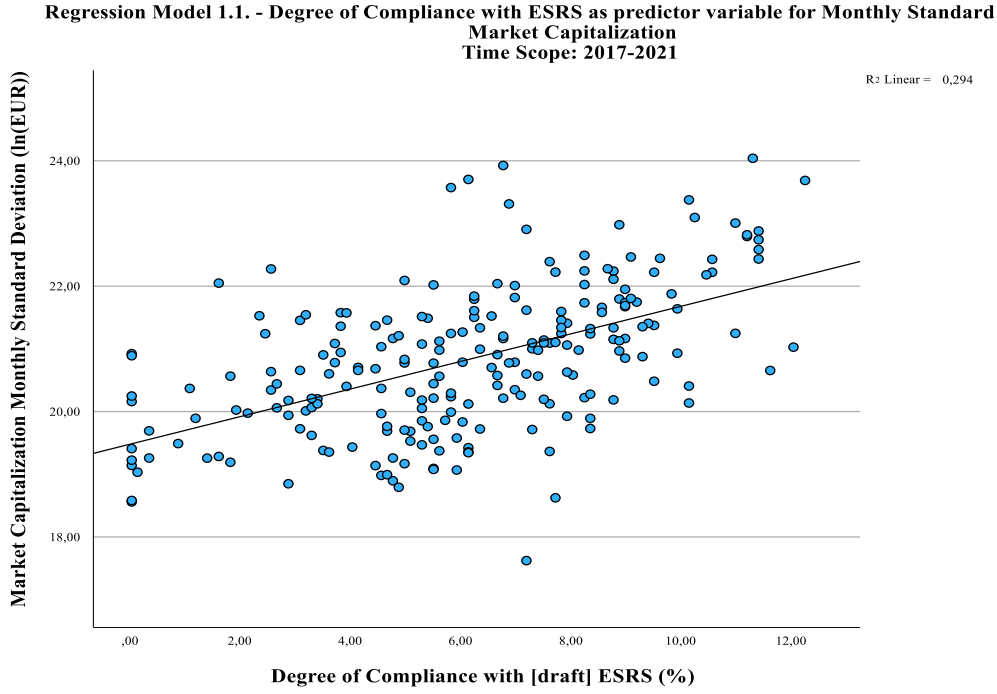
Model		Sig.	95,0% Confidence Interval for B		Collinearity Statistics
			Lower Bound	Upper Bound	Tolerance
1	(Constant)	<,001	18,191	19,496	
	Degree of Compliance with [draft] ESRS	<,001	,081	,242	,422
	ESG Score	,034	,001	,028	,422

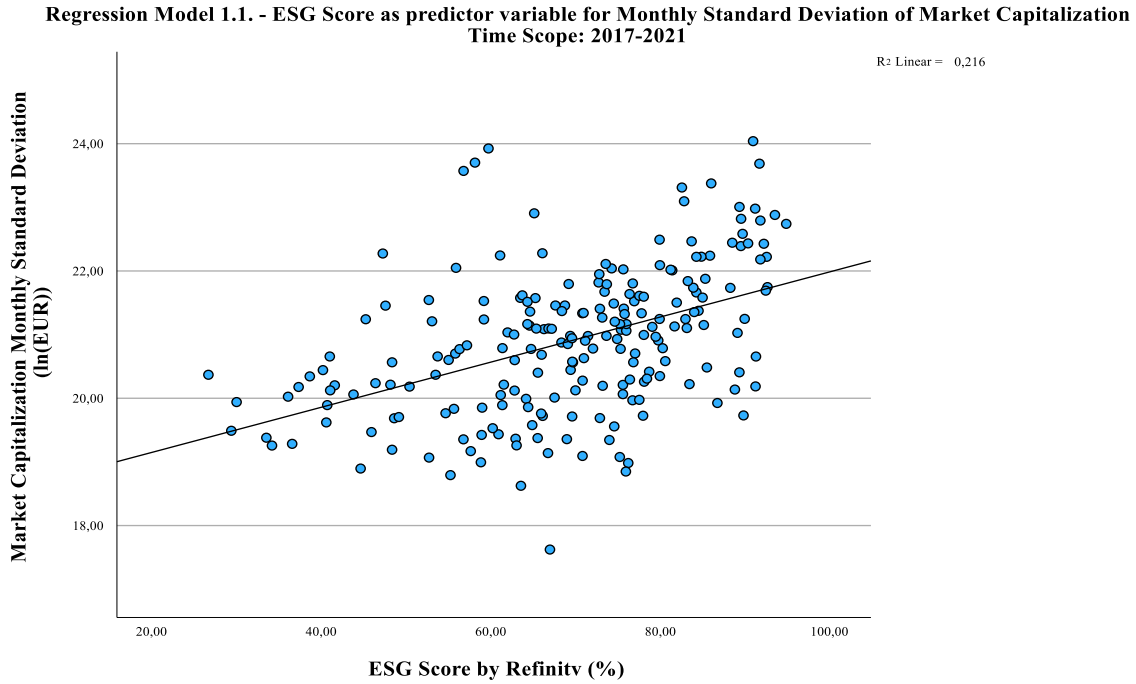
Coefficients[a]

Model		Collinearity Statistics
		VIF
1	(Constant)	
	Degree of Compliance with [draft] ESRS	2,368
	ESG Score	2,368

a. Dependent Variable: Market Capitalization Monthly Standard Deviation (logarithm)

Appendix 16 – Regression model 1.1. – Relationship of predictor variables with dependent variable of standard deviation of market capitalization





Appendix 17 – Regression model 1.2. – included/excluded variables

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1.2.1.	Degree of Compliance with [draft] ESRS, ESG Score by Refinitiv[b]	.	Enter
1.2.2.	.	Degree of Compliance with [draft] ESRS	Backward (criterion: Probability of F-to-remove >= ,100).

a. Dependent Variable: Compounded Monthly Growth Rate of Market Capitalization

b. All requested variables entered.

Appendix 18 – Regression model 1.2. – Model summary

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1.2.1.	,118[a]	,014	,005	,07274
1.2.2.	,117[b]	,014	,009	,07257

a. Predictors: (Constant), ESG Score, Degree of Compliance with [draft] ESRS

b. Predictors: (Constant), ESG Score

Appendix 19 – Regression model 1.2. – ANOVA

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1.2.1.	Regression	,016	2	,008	1,487	,228[b]
	Residual	1,122	212	,005		
	Total	1,137	214			
1.2.2.	Regression	,016	1	,016	2,960	,087[c]
	Residual	1,122	213	,005		
	Total	1,137	214			

a. Dependent Variable: Compounded Monthly Growth Rate of Market Capitalization

b. Predictors: (Constant), Degree of Compliance with [draft] ESRS, ESG Score by Refinitiv

c. Predictors: (Constant), ESG Score by Refinitiv

Appendix 20 – Regression model 1.2. – Coefficients

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t
		B	Std. Error	Beta	
1	(Constant)	-,044	,025		-1,780
	Degree of Compliance with [draft] ESRS	,000	,003	-,017	-,165
	ESG Score	,001	,001	,130	1,241
2	(Constant)	-,043	,023		-1,817
	ESG Score	,001	,000	,117	1,720

a. Dependent Variable: Compounded Monthly Growth Rate of Market Capitalization

Appendix 21 – Regression model 1.2. – Multicollinearity Test

Coefficients[a]

Model		Sig.	95,0% Confidence Interval for B		Collinearity Statistics
			Lower Bound	Upper Bound	Tolerance
1.2.1.	(Constant)	,074	-,091	,004	
	ESG Score by Refinitiv	,216	,000	,002	,422
	Degree of Compliance with [draft] ESRS	,869	-,650	,550	,422
1.2.2.	(Constant)	,071	-,089	,004	
	ESG Score by Refinitiv	,087	,000	,001	1,000

Coefficients[a]

Model		Collinearity Statistics
		VIF
1.2.1.	(Constant)	
	ESG Score by Refinitiv	2,368
	Degree of Compliance with [draft] ESRS	2,368
1.2.2.	(Constant)	
	ESG Score by Refinitiv	1,000

a. Dependent Variable: Compounded Monthly Growth Rate of Market Capitalization

Appendix 22 – Regression model 2.1. – included/excluded variables

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	Degree of Compliance with [draft] ESRS - Governance Pillar, Degree of Compliance with [draft] ESRS - Social Pillar, Degree of Compliance with [draft] ESRS - Environmental Pillar[b]	.	Enter

a. Dependent Variable: Market Capitalization Monthly Standard Deviation (logarithm)

b. All requested variables entered.

Appendix 23 – Regression model 2.1. – Model summary

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,569[a]	,324	,315	,95860

a. Predictors: (Constant), Degree of Compliance with [draft] ESRS - Governance Pillar, Degree of Compliance with [draft] ESRS - Social Pillar, Degree of Compliance with [draft] ESRS - Environmental Pillar

Appendix 24 – Regression model 2.1. – ANOVA

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	98,592	3	32,864	35,764	<,001[b]
	Residual	205,837	224	,919		
	Total	304,428	227			

a. Dependent Variable: Market Capitalization Monthly Standard Deviation (logarithm)

b. Predictors: (Constant), Degree of Compliance with [draft] ESRS - Governance Pillar, Degree of Compliance with [draft] ESRS - Social Pillar, Degree of Compliance with [draft] ESRS - Environmental Pillar

Appendix 25 – Regression model 2.1. – Coefficients

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t
		B	Std. Error	Beta	
1	(Constant)	19,420	,169		115,152
	Degree of Compliance with [draft] ESRS - Environmental Pillar	,055	,029	,190	1,924
	Degree of Compliance with [draft] ESRS - Social Pillar	,117	,057	,202	2,053
	Degree of Compliance with [draft] ESRS - Governance Pillar	,096	,028	,250	3,454

Appendix 26 – Regression model 2.1. – Multicollinearity Test

Coefficients[a]

Model		Sig.	95,0% Confidence Interval for B		Collinearity Statistics
			Lower Bound	Upper Bound	Tolerance
1	(Constant)	<,001	19,088	19,752	
	Degree of Compliance with [draft] ESRS - Environmental Pillar	,056	-,001	,112	,311
	Degree of Compliance with [draft] ESRS - Social Pillar	,041	,005	,230	,312
	Degree of Compliance with [draft] ESRS - Governance Pillar	<,001	,041	,150	,575

Coefficients[a]

Model		Collinearity Statistics
		VIF
1	(Constant)	
	Degree of Compliance with [draft] ESRS - Environmental Pillar	3,219
	Degree of Compliance with [draft] ESRS - Social Pillar	3,208
	Degree of Compliance with [draft] ESRS - Governance Pillar	1,738

Collinearity Diagnostics[a]

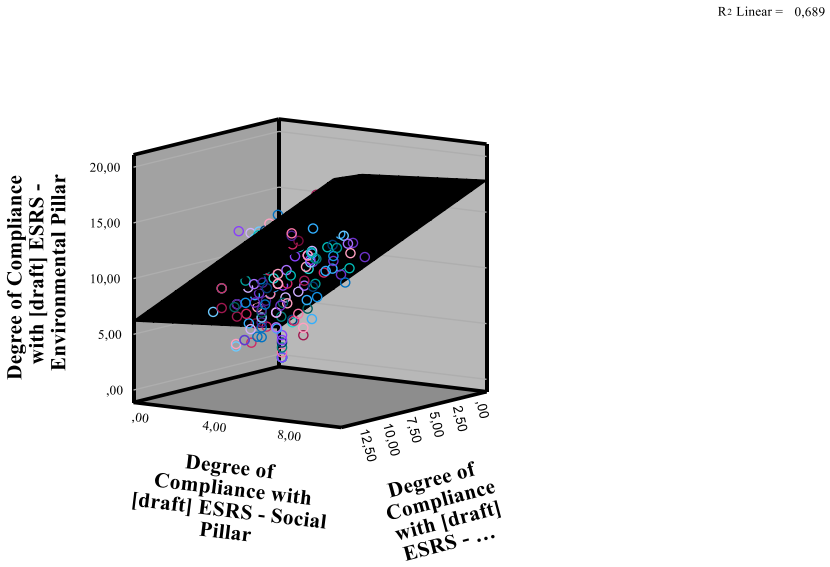
Model	Dimension	Eigenvalue	Condition Index	Variance Proportions		
				(Constant)	Degree of Compliance with [draft] ESRS - Environmental Pillar	Degree of Compliance with [draft] ESRS - Social Pillar
1	1	3,708	1,000	,01	,00	,01
	2	,161	4,801	,54	,00	,21
	3	,097	6,194	,08	,04	,12
	4	,034	10,401	,37	,96	,66

a. Dependent Variable: Market Capitalization Monthly Standard Deviation (logarithm)

Appendix 27 – Regression model 2.1. – Relationship of predictor variables with dependent variable of standard deviation of market capitalization

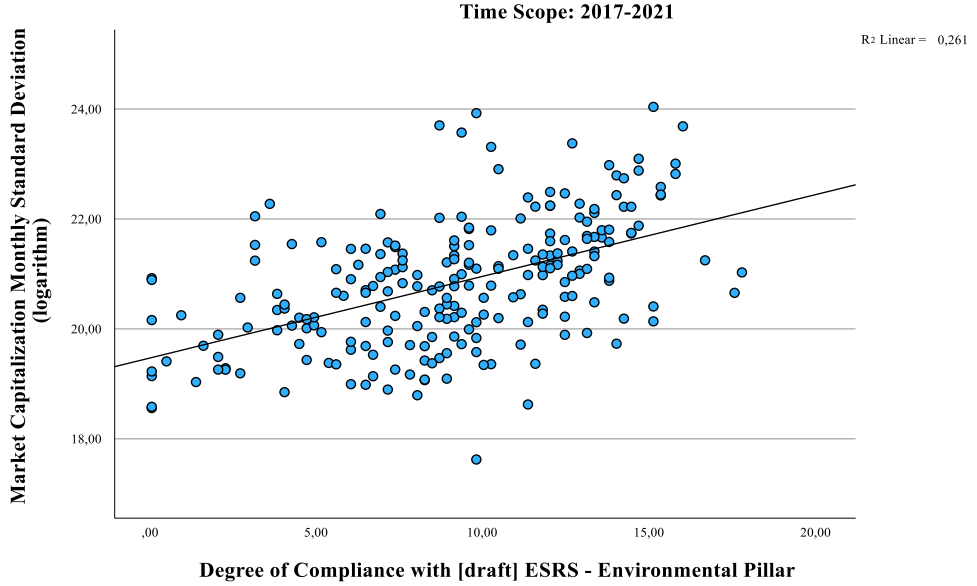
Regression Model 2.1. - Degree of Compliance with [draft] ESRS on Environmental, Social and Governance Pillar as predict variables for Monthly Standard Deviation of Market Capitalization

Time Scope: 2017-2021

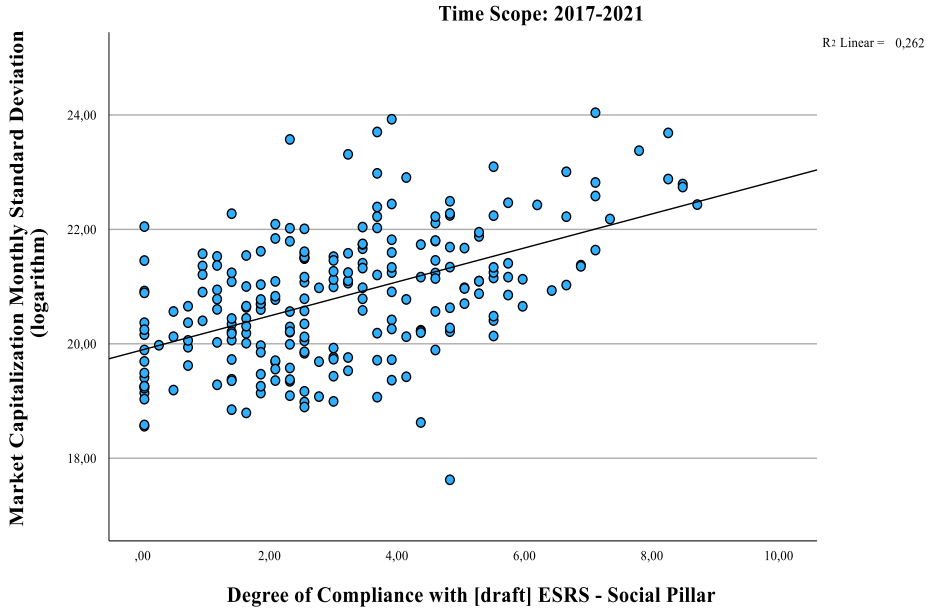


Regression Model 2.1. - Degree of Compliance with [draft] ESRS on Environmental Pillar as predictor variables for Month Standard Deviation of Market Capitalization

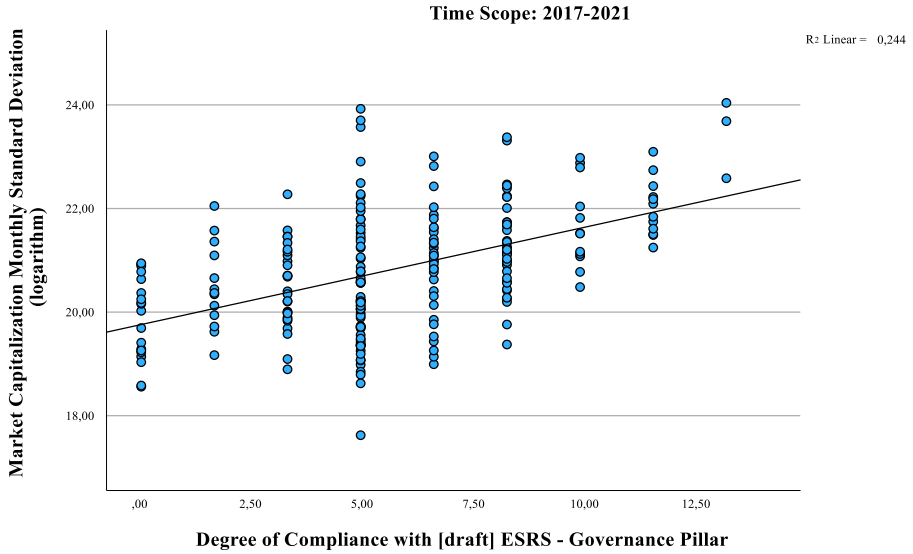
Time Scope: 2017-2021



Regression Model 2.1. - Degree of Compliance with [draft] ESRS on Social Pillar as predictor variables for Monthly Standa Deviation of Market Capitalization



Regression Model 2.1. - Degree of Compliance with [draft] ESRS on Governance Pillar as predictor variables for Monthly Standard Deviation of Marketcapitalization



Appendix 28 – Regression model 2.2. – included/excluded variables

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	Degree of Compliance with [draft] ESRS - Governance Pillar, Degree of Compliance with [draft] ESRS - Social Pillar, Degree of Compliance with [draft] ESRS - Environmental Pillar[b]	.	Enter
2	.	Degree of Compliance with [draft] ESRS - Social Pillar	Backward (criterion: Probability of F-to-remove >= ,100).
3	.	Degree of Compliance with [draft] ESRS - Environmental Pillar	Backward (criterion: Probability of F-to-remove >= ,100).
4	.	Degree of Compliance with [draft] ESRS - Governance Pillar	Backward (criterion: Probability of F-to-remove >= ,100).

a. Dependent Variable: CMGR (market capitalization)

b. All requested variables entered.

Appendix 29 – Regression model 2.2. – Model summary

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,104[a]	,011	-,002	,07110
2	,086[b]	,007	-,001	,07106
3	,077[c]	,006	,001	,07096
4	,000[d]	,000	,000	,07102

a. Predictors: (Constant), Degree of Compliance with [draft] ESRS - Governance Pillar, Degree of Compliance with [draft] ESRS - Social Pillar, Degree of Compliance with [draft] ESRS - Environmental Pillar

b. Predictors: (Constant), Degree of Compliance with [draft] ESRS - Governance Pillar, Degree of Compliance with [draft] ESRS - Environmental Pillar

c. Predictors: (Constant), Degree of Compliance with [draft] ESRS - Governance Pillar

d. Predictor: (constant)

Appendix 30 – Regression model 2.2. – ANOVA

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	,012	3	,004	,822	,483[b]
	Residual	1,132	224	,005		
	Total	1,145	227			
2	Regression	,009	2	,004	,843	,432[c]
	Residual	1,136	225	,005		
	Total	1,145	227			
3	Regression	,007	1	,007	1,334	,249[d]
	Residual	1,138	226	,005		
	Total	1,145	227			
4	Regression	,000	0	,000	.	.[e]
	Residual	1,145	227	,005		
	Total	1,145	227			

a. Dependent Variable: CMGR (market capitalization)

b. Predictors: (Constant), Degree of Compliance with [draft] ESRS - Governance Pillar, Degree of Compliance with [draft] ESRS - Social Pillar, Degree of Compliance with [draft] ESRS - Environmental Pillar

c. Predictors: (Constant), Degree of Compliance with [draft] ESRS - Governance Pillar, Degree of Compliance with [draft] ESRS - Environmental Pillar

d. Predictors: (Constant), Degree of Compliance with [draft] ESRS - Governance Pillar

e. Predictor: (constant)

Appendix 31 – Regression model 3.1. – included/excluded variables

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	Degree of Compliance with [draft] ESRS - Governance Pillar, Degree of Compliance with [draft] ESRS - Environmental Pillar, Degree of Compliance with [draft] ESRS - Social Pillar[b]	.	Enter
2	.	Degree of Compliance with [draft] ESRS - Social Pillar	Backward (criterion: Probability of F-to-remove >= ,100).

a. Dependent Variable: ESG Score

b. All requested variables entered.

Appendix 32 – Regression model 3.1. – Model summary

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,804[a]	,646	,641	8,97918
2	,803[b]	,645	,642	8,96499

a. Predictors: (Constant), Degree of Compliance with [draft] ESRS - Governance Pillar, Degree of Compliance with [draft] ESRS - Environmental Pillar, Degree of Compliance with [draft] ESRS - Social Pillar

b. Predictors: (Constant), Degree of Compliance with [draft] ESRS - Governance Pillar, Degree of Compliance with [draft] ESRS - Environmental Pillar

Appendix 33 – Regression model 3.1. – ANOVA

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	31291,280	3	10430,427	129,369	<,001[b]
	Residual	17173,266	213	80,626		
	Total	48464,546	216			
2	Regression	31265,148	2	15632,574	194,505	<,001[c]
	Residual	17199,399	214	80,371		
	Total	48464,546	216			

a. Dependent Variable: ESG Score

b. Predictors: (Constant), Degree of Compliance with [draft] ESRS - Governance Pillar, Degree of Compliance with [draft] ESRS - Environmental Pillar, Degree of Compliance with [draft] ESRS - Social Pillar

c. Predictors: (Constant), Degree of Compliance with [draft] ESRS - Governance Pillar, Degree of Compliance with [draft] ESRS - Environmental Pillar

Appendix 34 – Regression model 3.1. – Coefficients

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t
		B	Std. Error	Beta	
1	(Constant)	34,615	1,964		17,627
	Degree of Compliance with [draft] ESRS - Environmental Pillar	2,199	,285	,512	7,725
	Degree of Compliance with [draft] ESRS - Social Pillar	,308	,541	,039	,569
	Degree of Compliance with [draft] ESRS - Governance Pillar	2,034	,266	,377	7,652
2	(Constant)	34,270	1,865		18,379
	Degree of Compliance with [draft] ESRS - Environmental Pillar	2,313	,202	,538	11,455
	Degree of Compliance with [draft] ESRS - Governance Pillar	2,079	,254	,385	8,188

Appendix 35 – Regression model 3.1. – Multicollinearity Test

Coefficients[a]

Model		Sig.	95,0% Confidence Interval for B		Collinearity Statistics
			Lower Bound	Upper Bound	Tolerance
1	(Constant)	<,001	30,744	38,486	
	Degree of Compliance with [draft] ESRS - Environmental Pillar	<,001	1,638	2,760	,379
	Degree of Compliance with [draft] ESRS - Social Pillar	,570	-,758	1,373	,353
	Degree of Compliance with [draft] ESRS - Governance Pillar	<,001	1,510	2,559	,687
2	(Constant)	<,001	30,594	37,945	
	Degree of Compliance with [draft] ESRS - Environmental Pillar	<,001	1,915	2,711	,751
	Degree of Compliance with [draft] ESRS - Governance Pillar	<,001	1,578	2,579	,751

Coefficients[a]

Model		Collinearity Statistics
		VIF
1	(Constant)	
	Degree of Compliance with [draft] ESRS - Environmental Pillar	2,640
	Degree of Compliance with [draft] ESRS - Social Pillar	2,834
	Degree of Compliance with [draft] ESRS - Governance Pillar	1,457
2	(Constant)	
	Degree of Compliance with [draft] ESRS - Environmental Pillar	1,332
	Degree of Compliance with [draft] ESRS - Governance Pillar	1,332

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions		
				(Constant)	Degree of Compliance with [draft] ESRS - Environmental Pillar	Degree of Compliance with [draft] ESRS - Social Pillar
1	1	3,743	1,000	,01	,00	,01
	2	,135	5,261	,33	,00	,34
	3	,092	6,370	,13	,05	,03
	4	,029	11,290	,53	,94	,63
2	1	2,848	1,000	,01	,01	
	2	,095	5,469	,38	,04	
	3	,057	7,054	,61	,95	

a. Dependent Variable: ESG Score

Appendix 36 – Regression model 3.2. – included/excluded variables

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	Controversy Score, ESG Score, Degree of Compliance with [draft] ESRS[b]	.	Enter

a. Dependent Variable: Market Capitalization Monthly Standard Deviation (logarithm)

b. All requested variables entered.

Appendix 37 – Regression model 3.2. – Model summary

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,656[a]	,431	,423	,86600

a. Predictors: (Constant), Controversy Score, ESG Score, Degree of Compliance with [draft] ESRS

Appendix 38 – Regression model 3.2. – ANOVA

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	119,720	3	39,907	53,212	<,001[b]
	Residual	158,240	211	,750		
	Total	277,960	214			

a. Dependent Variable: Market Capitalization Monthly Standard Deviation (logarithm)

b. Predictors: (Constant), Controversy Score, ESG Score, Degree of Compliance with [draft] ESRS

Appendix 39 – Regression model 3.2. – Coefficients

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t
		B	Std. Error	Beta	
1	(Constant)	20,668	,377		54,875
	Degree of Compliance with [draft] ESRS	,120	,036	,267	3,299
	ESG Score	,011	,006	,143	1,783
	Controversy Score	-,016	,002	-,422	-7,715

Appendix 40 – Regression model 3.2. – Multicollinearity Test

Coefficients[a]

Model		Sig.	95,0% Confidence Interval for B		Collinearity Statistics
			Lower Bound	Upper Bound	Tolerance
1	(Constant)	<,001	19,926	21,411	
	Degree of Compliance with [draft] ESRS	,001	,048	,192	,413
	ESG Score	,076	-,001	,023	,420
	Controversy Score	<,001	-,020	-,012	,900

Coefficients[a]

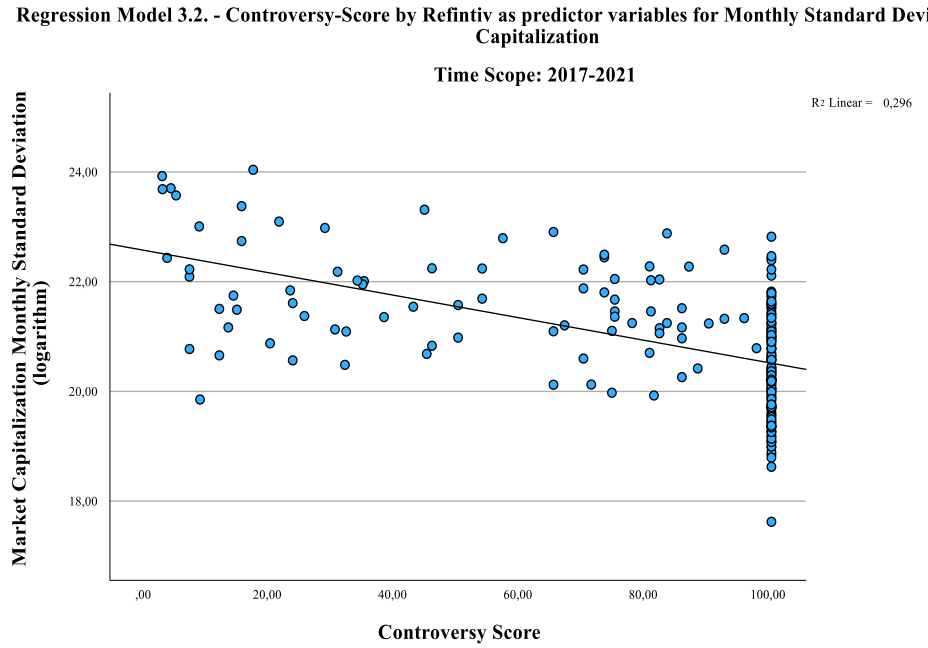
Model		Collinearity Statistics
		VIF
1	(Constant)	
	Degree of Compliance with [draft] ESRS	2,420
	ESG Score	2,383
	Controversy Score	1,110

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions		
				(Constant)	Degree of Compliance with [draft] ESRS	ESG Score
1	1	3,774	1,000	,00	,00	,00
	2	,179	4,589	,00	,11	,01
	3	,035	10,388	,28	,51	,06
	4	,011	18,133	,72	,38	,94

a. Dependent Variable: Market Capitalization Monthly Standard Deviation (logarithm)

Appendix 41 – Regression model 3.2. – Relationship of ESG Controversies Score with dependent variable standard deviation in MCap



Appendix 42 – Regression model 3.3. – included/excluded variables

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	Controversy Score, ESG Score, Degree of Compliance with [draft] ESRS[b]	.	Enter
2	.	Degree of Compliance with [draft] ESRS	Backward (criterion: Probability of F-to-remove >= ,100).
3	.	Controversy Score	Backward (criterion: Probability of F-to-remove >= ,100).

a. Dependent Variable: CMGR (market capitalization)

b. All requested variables entered.

Appendix 43 – Regression model 3.3. – Model summary

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,123[a]	,015	,001	,07286
2	,123[b]	,015	,006	,07269
3	,117[c]	,014	,009	,07257

a. Predictors: (Constant), Controversy Score, ESG Score, Degree of Compliance with [draft] ESRS

b. Predictors: (Constant), Controversy Score, ESG Score

c. Predictors: (Constant), ESG Score

Appendix 44 – Regression model 3.3. – ANOVA

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	,017	3	,006	1,083	,357[b]
	Residual	1,120	211	,005		
	Total	1,137	214			
2	Regression	,017	2	,009	1,628	,199[c]
	Residual	1,120	212	,005		
	Total	1,137	214			
3	Regression	,016	1	,016	2,960	,087[d]
	Residual	1,122	213	,005		
	Total	1,137	214			

a. Dependent Variable: CMGR (market capitalization)

b. Predictors: (Constant), Controversy Score, ESG Score, Degree of Compliance with [draft] ESRS

c. Predictors: (Constant), Controversy Score, ESG Score

d. Predictors: (Constant), ESG Score