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THE IMPACTS OF FIRM-LEVEL AND COUNTRY-LEVEL VARIABLES ON ENVIRONMENTAL, SOCIAL, AND CORPORATE GOVERNANCE GREENWASHING

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Duygu Erol, Istanbul Ticaret Universtitesi Ingilizce Isletme Doktora ogrencisidir. Ayni zamanda Bireysel Emeklilik ve Hayat Sigortalari alaninda faaliyet gosteren bir firmanin ic denetim faaliyetlerini yurutmektedir. Surdurulebilirlik ve Bireysel Emeklilik surecleri hakkinda calismalar yapmaktadir.

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Abstract

While ESG investments have increased in the last 10 years, stakeholders are curious about the correctness of the ESG claims of companies. Greenwashing (GW) is a conscious and selective information disclosure of firms to create a positive image in the eyes of the stakeholders. It limits the integration of ESG data into investments as the stakeholders lose their trust in that declarations. Unaudited sustainability reports, lack of standardization in disclosure rules of ESG data, and the absence of a global governance body to ensure the accuracy of reported ESG information increase the risk of GW behaviors.

Purpose: The motivation of this study is to help out stakeholders to determine which company factors (size, profitability, board structure, governance model) and country factors (corruption, unemployment, wealth of the society) impact the ESG greenwashing behaviors within STOXX 600.

Method: We implemented a panel regression model. The dataset covers STOXX 600 firms from 2009-2020.

Findings: The results show that each ESG GW dimension is impacted by a different company and country variables. An increase in CSR committee and embedding sustainable factors into the Executive remuneration are two main factors that decrease all three dimensions of GW behaviors. Company governance and financial factors have more impact on the GW compared to the country factors.

Originality: According to our knowledge, this is the first research that evaluates each greenwashing dimension at the firm and country levels.

Keywords: ESG greenwashing, ESG disclosure, ESG performance, Institutional theory, Signaling theory, Legitimacy theory

JEL Classification: G30

FİRMA VE ULKE FAKTORLERİNİN CEVRESEL-SOSYAL VE KURUMSAL YONETİM SONUCLARİNİ AKLAMA (GREENWASHİNG) UZERİNE ETKİLERİ

Özet

Surdurulebilir yatirimlar son 10 yilda hizla artarken sirketlerin surdurulebilirlik ile ilgili yaptiklari beyanlarin dogrulugu ve guvenilirligi de paydaslar tarafindan daha cok sorgulanmaktadir. Yesilaklama (greenwashing) paydaslarin dusuncelerini ya da kararlarini sirket lehine cevirmeyi amaclayan, firmalarin bilincli ve secici sekilde yaptiklari faaliyetler ve aciklamalardir. Yesilaklama sisteme olan guveni zedelediginden, ESG verilerinin yatirimlara entegre edilmesini sinirlandirmaktadir. Surdurulebilirlik ile ilgili raporlarin denetimden gecirilmemesi, ESG verilerinin aciklanmasinda bir standardizasyon olmamasi, ESG ile ilgili bilgilerin dogrulugunu saglayacak global kurumlarin olmamasi greenwashing riskini daha da arttirmaktadir.

Amac: ESG greenwashing'i etkileyebilecek firma ve ulke faktorlerini inceleyerek paydaslarin degerlendirmelerine yardimci olabilmektir.

Yontem: Arastirmada panel data regresyon modeli uygulanmis, STOXX 600 de faaliyet gosteren firmalarin 2009-2020 yili verileri incelenmistir.

Bulgular: Bu analiz sonucunda cevresel, sosyal ve kurumsal yonetim boyutlarindaki yesil aklama risklerinin her birinin firma ve ulke faktorlerden farkli derecede etkilendigi gorulmustur. Kurumsal Sorumluluk ile ilgili komitelerin varligi ve yonetici ucretlendirme politikalarina surdurulebilirlik ile iliskilendirilmesinin greenwashing risklerini her boyutta (E-S-G) dusurdugu gorulmustur. Diger taraftan ulke faktorlerinden ziyade firma faktorlerinin (hem yonetim hem de finansal), greenwashing riski yaratmada daha etkili oldugu bulunmustur.

Ozgunluk: Literatur taramalarimiza gore, yesilaklama (greenwashing) boyutlarini firma ve ulke faktorleri acisindan inceleyen ilk calisma olmasi sebebiyle ozgunluk tasimaktadir.

Anahtar Kelimeler: ESG Greenwashing, ESG beyani, ESG performansi, Kurumsallik teorisi, Sinyal teorisi, Mesruiyet teorisi.

JEL Sınıflandırması: G30

INTRODUCTION

ESG prescribes a spectrum to integrate environmental, social, and governance factors into asset allocation and risk decisions, to create sustainable long-term financial benefits (Boffo & Patalano, 2020). Environmental (E) criteria show how a firm deal with climate change, air pollution, biodiversity loss, water security, and resource depletion. Social (S) criteria indicate how a company deals with vendors, employees, customers, and the communities in which it functions. Governance (G) criteria are related to a company's leadership, shareholder and minority rights, executive pay, audits, and internal controls (Chen, 2021).

While sustainable investments have increased over the years, the stakeholders' concern regarding the correctness of ESG figures also increased. Jong et al. (2020) found that greenwashing negatively influences consumers' attitudes and behavioral intentions toward the brand or company. It is important to distinguish which factors are impacting the ESG washing more to foster transparency and reliability in reporting nonfinancial information. ESG washing prevents stakeholders from taking accurate and timely investment positions.

ESG greenwashing terminology is derived from greenwashing and is still a developing concept in the literature. CFA Institute (2020) defines "Greenwashing as delivering a false message, impression or providing misleading information or a misleading report about how a company and its products are environmentally sound or positive in an ESG context".

Yu et al. (2020) describe Greenwashers as "companies which seem very transparent and issue large quantities of ESG data but perform poorly in ESG matters". In light of this definition, we define ESG washing as a discrepancy between an organization's ESG claims versus its actual ESG performance. In this article, we use the greenwashing definition of Yu et al. (2020), therefore ESG Greenwashing (ESG GW) and greenwashing terms are used interchangeably.

The theoretical background of ESG greenwashing is based on socio-political theories (political economy, legitimacy, stakeholder theory), agency theory, institutional theory, and signal theory. The social theories are complementary to each other and explain that low social and environmental performers face strong social and political stress, tension and are threatened by legitimacy. Therefore, some firms tend to report elective disclosures to alter stakeholder perceptions about their actual performance and to avert stakeholders' attention to other safer areas (Uyar et al., 2020). The institutional theory explains the increase of greenwashing through the complex market drivers, regulatory pressure, organizational culture, and managerial impacts (Delmas & Burbano, 2011). On the other hand, signaling theory explains why companies show better ESG disclosure or ESG performance since they try to impact the stakeholders with good signals.

The main difficulties of ESG data disclosure and performance are unaudited sustainability reports, lack of standardization in disclosure rules of ESG data, and the absence of a global governing body to ensure the accuracy of reported ESG information. Sustainability Risk Agencies do not have a

consensus on how to measure the ESG indicators (Broadstock et al., 2021; Johnson, 2020; Sharma et al., 2020). Therefore, most companies make their own adjustments to fill the gaps in the literature and the Sustainability Risk Agent's results.

This research aims to determine whether firm-level or country-level variables impact the Greenwashing dimensions (ESG Greenwashing (ESG GW), Environmental Greenwashing (EGW), Social Greenwashing (SGW), or Governance Greenwashing (GGW)) of the companies. The motivation of this study is to provide a management implication that the investors can consider these factors during their investments to reduce the risk of ESG greenwashing. The research question is about which company and country factors impact ESG greenwashing and their dimensions.

The scope of the research focuses on the ESG disclosure and ESG performance scores between 2009 to 2020 for STOXX 600 companies. STOXX 600 companies are international companies while their head offices are located in Europe.

This article has three main parts. The first section will review the related literature about greenwashing theoretical background and present the hypothesis. The second section will explain the model, methodology, data, and results. The final section will explain the discussion points, findings, and future recommendations.

LITERATURE REVIEW AND CONTEPTUAL FRAMEWORK

Google Ngram viewer shows that publications about greenwashing have increased significantly since the 2000s. However, there are limited studies in the literature on greenwashing of ESG figures. The literature review of Gatti et al. (2019) explains that 62% of the selected articles on greenwashing focus on environmental issues. 38 % of the selected articles on greenwashing focus on social issues. The review of literature by Lyon and Montgomery (2015) shows that 78.7% of articles about greenwashing are in the fields of corporate communication, marketing, and management. 12.8% of articles are focused on law and legislation.

Greenwashing has an interdisciplinary nature. Therefore, there are different definitions and perspectives, which have been adopted by researchers (e.g., Gangadharbatla & Paladino, 2014; Gatti et al., 2019; Guo, Tao, Li & Wang, 2017; Nyilasy, Roulet & Touboul, 2015; Wilson, Robinson & Darke, 2010, as cited in Torelli et al., 2019). The greenwashing definitions can be combined as a deliberate and selective choice of the management to hide or to shine some of the information so that a company is seen better in the eyes of the stakeholders (e.g., Attig, Brockman & Trabelsi, 2020; Bowen 2014; Braam, 2020; Lashitew, 2021; Young & Schumacher, 2021, as cited in Olatubosun & Nyazenga, 2019).

Olatubosun and Nyazenga (2019), Delmas and Burbano (2011), and Torelli et al. (2019) create typologies for greenwashing. Olatubosun and Nyazenga (2019) study refers to aggressive greenwashing when companies boost their communication in media while using selective disclosure of positive ESG information. Defensive greenwashing focuses on reducing the reputational damages of the protests against the company or adverse media activities. Delmas and Burbano (2011) define Firm-level greenwashing and product-level greenwashing. Firm-level greenwashing is defined as when companies mislead customers about the environmental activities of the company. Product-level greenwashing is defined as when companies give inaccurate information regarding the environmental impacts of their products or services. Torelli et al. (2019) also classify greenwashing based on environmental communications. They propose four main levels of greenwashing: the corporate level (inaccurate environmental information about the real image of the company), strategic level (inaccurate information about firms' strategies), dark level (false environmental communication for hiding illegal activities), and product-level (leading environmental communication for the product groups) (Torelli et al., 2019).

Delmas and Burbano (2011) and Lyon and Montgomery (2015) conducted research on the main drivers of greenwashing. Delmas and Burbano (2011) explain the drivers of greenwashing from three-angle: Market External Drivers, Organizational Drivers, Individual Psychological Drivers. Lyon and Montgomery (2015) categorized two main drivers of greenwashing: External/ environmental (i.e Lax regulatory environment, Weak political pressure, Threat of regulation, Weak pressure from

environmental groups) and internal/ organizational (Low visibility, Large size, Being "relatively" green, Growing firms, Firms in a service industry).

Following the literature, firm-level governance (internal) factors and country-level (external) factors are used as independent variables in this article.

Hypothesis Development

Greenwashing has been conceptualized in the literature with theories such as legitimacy theory, stakeholder theory, and institutional theory, suggesting ESG disclosure is a function of political and social pressures (Mahoney et al., 2013). We formulate the following hypothesis based on those theories to assess the impact of firm-level and country-level variables.

Firm-Level determinants

Uyar et al. (2020) found that the CSR committee is significant for increasing CSR disclosure and explain that it increases the stakeholders' attention and reviews. Therefore, we propose the following hypothesis:

H1: The existence of a CSR committee reduces the ESG washing dimensions

Improvement Tools (such as whistle-blower policy, ombudsman, suggestion box, hotline, newsletter, and website) and anti-bribery policies increase corporate citizenship Schons and Steinmeier (2015) and reduce agency theory problems regarding information asymmetry. Therefore, we propose the following hypothesis:

H2 Higher improvement tools for ethics scores reduce the risk of ESG washing dimensions

Several researchers like Haque and Ntim (2020), Labini et al. (2018), Maas (2016) focus on the relations between remuneration schemes and sustainability reporting or performance. Therefore, we propose the following hypothesis:

H3: The existence of sustainability factors in executive remuneration schemes reduces the ESG greenwashing dimensions

Ghitti et al. (2020) proposed a measure for greenwashing and found that board size is negative, and the share of independent members is positively highly statistically significant with greenwashing. Yu et al. (2020) find that an increased number of independent board directors have a direct negative effect on greenwashing behavior due to reducing agency costs and increasing scrutiny. While women on the board have a positive impact on ESG performance (Di Miceli & Donaggio, 2018). The literature review shows an insignificant negative relationship between the presence of women on board and greenwashing (Ghitti et al., 2020). Therefore, we propose the following hypothesis:

H4. A greater board size reduces firms' ESG greenwashing dimensions.

H5. A greater number of independent board members reduces firms' ESG greenwashing dimensions.

H6. More female board members reduce the risk of ESG greenwashing dimensions.

According to Jong et al. (2020), companies with higher Return on Asset (ROA) likely to be more profit-driven, are more aggressive in greenwashing (Ghitti et al., 2020). Therefore, we propose the following hypothesis:

H7. The more profitable companies create more greenwashing for each dimension.

Researchers suggest that the larger the company, the lower the engagement in greenwashing (Velte, 2017; Delmas & Burbano, 2011; Ghitti et al., 2020). Therefore, we propose the following hypothesis:

H8. Larger firms show less ESG washing for all dimensions.

mixed results exist in the literature for the relationship between leverage and greenwashing behavior. Zhang (2022) cited Brammer and Pavelin (2006), and Nawaiseh (2015) and argue for a positive association between high leverage and greenwashing behavior. Ghitti et al. (2020) argue that high-leverage companies have less likelihood of greenwashing because they will have stronger controls by creditors and regulators and the cost of greenwashing would increase the cost of leverage. Thus, we propose the following hypothesis:

H9. There is a negative relationship between the high leverage firms and greenwashing behavior of the companies.

Country-level determinants

Yu et al. (2020) show that companies that are located in less corrupt countries are less likely to engage in greenwashing behavior. In line with the legitimacy and institutional theory, we propose the following hypothesis.

H10. Firms engage in less ESG greenwashing in countries where corruption is low.

Low transparency of laws increases the financial and sustainability risks for stakeholders and prevents better ESG performance Ng et al. (2020). By taking into account stakeholders and legitimacy theory, we propose the following hypothesis:

H11. Firms engage in more ESG greenwashing dimensions in countries with a low rule of law/ lower transparency of regulation.

According to our knowledge, no direct studies have been performed on the association between the unemployment rate and greenwashing. Freeman et al. (2007) as cited in Baldini et.al (2018) attest that companies are encouraged to increase their ESG disclosure to attract a more skilled workforce because it is considered an indicator of higher career opportunities. We hypothesized a positive relationship between the unemployment rate and greenwashing because employee scrutiny will be lessened when the employees can easily be replaced.

H12. Firms engage in more ESG greenwashing dimensions in countries with high unemployment rates.

Yu et al. (2020) use GDP per capita as a control variable while looking at the impact of greenwashing. Their findings show that GDP per capita plays an ambiguous role in firms' ESG greenwashing. Their finding also supports previous scholars who suggest that economic development cannot fully explain the variation in cross-country corporate social performance (Ioannou & Serafeim, 2012). Following the stakeholder theory and the new institutional theory; we propose the following hypothesis.

H13. Firms engage in less ESG greenwashing for all dimensions in countries with high GDP per capita.

According to our knowledge, no direct studies have been performed on the tax social contribution rate and greenwashing. The tax contribution variable represents social security contributions that are compulsory to pay the government that confers entitlement to receive a (contingent) future social benefit. The scores for Ireland and Latvia are lower than the OECD average and the highest scores are reported by France, Slovenia, Austria, and the Netherlands (OECD, 2022).

H14. Firms engage in less ESG greenwashing dimensions in countries with high tax social contributions.

RESEARCH DESIGN

Data and Methodology

Even though there are different definitions of greenwashing, the common definition is to have differences in what the Company says and what the company does to gain advantages in the eyes of the stakeholders. Yu et al. (2020) calculated greenwashing as the difference between normalized ESG disclosure and normalized ESG performance score. We followed a similar approach to Yu et al. (2020) while calculating the GW.

The research question is what company and country factors impact the ESG washing behaviors of STOXX 600 companies. The scope of this research covers STOXX 600 companies from 2009 to 2020. The STOXX Europe 600 Index represents large, mid and small capitalization companies across 17 countries of the European region. Companies that are operated in the tax haven countries like Luxembourg, Cyprus, Malta, Isle of Man, Bermuda, and Forea Ireland were excluded because they may deteriorate the results of the country factors. ESG performance scores were extracted from Thomson Reuters Refinitiv database and ESG disclosure scores from the Bloomberg database. Country variables were extracted from Euromonitor, World Bank, and transparency org databases. The data for this research starts from 2009 because historical data of the previous periods are not always available or reliable for all companies.

Several scholars use the Bloomberg ESG disclosure scores in their studies (e.g., Bernardi & Stark, 2018; Ioannou & Serafeim, 2017; Lueg & Lueg, 2020; Raimo et al., 2021). Bloomberg's Environmental, Social & Governance (ESG Data) dataset offers ESG metrics and ESG disclosure scores for more than 11,800 companies in 100+ countries for over 410,000 active securities (Global

ESG Data_ content and data, 2021). ESG Disclosure Score is calculated based on the ESG information that firms provide through corporate documents (sustainability reports and annual reports), press releases, direct communication, third-party research, and news items (Tamimi & Sebastianelli, 2017). A score of zero means that firms do not disclose any ESG information while a score of 100 is assigned to companies that provide complete ESG information. Bloomberg calculates for industry-specific disclosures by normalizing the final score based only on a selected set of fields applicable to the industry type (Raimo et al., 2021).

Refinitiv provides ESG performance data on over 9,000 listed companies including many of the primary, global, and some regional indices like MSCI World, MSCI Europe, STOXX Europe 600. Several authors use the previous Thomson Reuters Asset 4 database as a source of ESG performance scores (e.g., Cheng et al., 2014; Ioannou & Serafeim, 2012; Marsat & Williams, 2014; Martinez, 2015; Martinez & Schneider, 2016; Mervelskemper, & Streit, 2016; Nitsche & Schroeder, 2015; Rees, 2011; Tangjitprom, 2013; Weber et al., 2008; Wimmer, 2012, as cited in Mervelskemper, & Streit, 2017). Yu et al. (2020) and Zhang et.al (2018) use Thomson Reuters Refinitive database. ESG score as well as its environmental (E), social (S), and governance (G) pillars (or subscores) are gathered based on publicly reported data such as official websites, CSR reports, and annual reports and measure a firm's ESG performance. The overall ESG scores and the sub-scores, are percentile rank scores and are scaled to range between 0 (minimum score) and 100 (maximum score). According to Thomson Reuters Refinitiv, ESG scores "are based on the relative performance of ESG factors with the company's sector (for E and S) and country of incorporation (for G)" (Refinitiv, 2020a). ESG scores were first created by ASSET4, which was acquired in 2009 by Thomson Reuters. Since 2018, the ESG data of Thomson Reuters become part of Thomson Reuters Refinitiv and are known as "Refinitiv ESG" (Berg et al., 2021).

The greenwashing score = (Bloomberg ESG disclosure score) - (Reuters ESG performance score).

Even though a similar approach by Yu et al. (2020) was used, we did not normalize the ESG scores because it is not a common approach in the literature. ESG rating agencies refer that the scores were already normalized. Industry adjustments were made to both ESG disclosure and ESG performance scores by deducting the average greenwashing score of the sector for which the firm works. ESG disclosure and ESG performance scores are needed to calculate the ESG GW scores. Companies with more than 2 years of missing data are excluded from the analysis. However, if there are only 2 years of missing data, the data were imputed with either mean or nearest prior or next year data, depending on the place of the missing value. After this elimination, the number of firms decreased from 580 to 326 (69 of them are financial firms).

There are 326 firms for 12 years, therefore we have 3912 observations (326x12=3912).

Table 1. Sectoral Basis Representation of Sample, per Country.

Sectors	UK	FR	DEU	CHE	SWE	ESP	NLD	FIN	BEL	ITA	DNK	NOR	IRL	AUT	PRT	POL	Grand Total
Communication Services	5	4	1	1	2	1	1	1	1	1		1					19
Consumer Discretionary	10	11	7	1	2	1					1						33
Consumer Staples	11	5	2	2			2	1	2		1	1	1		1		29
Energy	1	1				1	2	1		1		1		1	1	1	11
Financials	14	6	5	7	3	5	2	2	3	3	2	3	1	2			58
Health Care	5	3	2	5	1	1	2	1	1								21
Industrials	17	14	7	5	8	3	3	3	1	3	3	1	4	1			73
Information Technology	3	3	2	1	2	1	1	1									14
Materials	9	2	5	4	2		2	2	2		2	2	1	1			34
Real Estate	5	2		1	2				1								11
Utilities	6	4	2			6		1		2				1	1		23
Grand Total	**86**	**55**	**33**	**27**	**22**	**19**	**15**	**13**	**11**	**10**	**9**	**9**	**7**	**6**	**3**	**1**	**326**

Model

We use the panel regression model to calculate the association of firm-level and country-level factors with each ESG GW dimension.

Panel regression model:

$Y= \alpha + \beta_1 X_{1it} + \beta_2 X_{2it} + \beta_3 X_{3it} + \beta_4 X_{4it} + \beta_5 X_{5it} + \beta_6 X_{6it} + u_{it}$

$\text{Greenwashing score}_{jkt} = b_0 + b_1 * (\text{firm-level governance variables})_{jt} + b_2 * (\text{country variables})_{jt} + b_3 * (\text{firm-level financial variables})_{jt} + b_4 * (\text{log GPD per capital}) + \varepsilon_{jk}$

1. Y: dependent variable: ESG Greenwashing (ESG GW), Environmental Greenwashing (EGW), Social Greenwashing (SGW), Governance Greenwashing (GGW). Dependent variables are calculated by deducting ESG/E/S/G Disclosure score (Bloomberg database)-ESG/E/S/G Performance Score (Refinitive)
2. A: constant/ intercept: the value of a response or dependent variable in a regression equation when its associated predictor or independent variables equal zero.
3. $\beta_1 X_{1it}$: first independent variables: Firm-level governance variables: CSR sustainability committee, improvement tools, and business ethics, policy executive compensation ESG performance, the board size, independent board members, board gender diversity percent. Data are extracted from Refinitive.
4. $\beta_2 X_{2it}$: second independent variables: Country variables: corruption perception index(transparency.org database), rule of law (alternative variable: transparency of laws extracted from Euromonitor), unemployment rate (World bank database), Tax social contribution (OECD database).
5. $\beta_3 X_{3it}$: third independent variables: Firm-level financial variables (control variables): ROA, log Total Assets, leverage (data are extracted from Refinitive)

6. $\beta_4 X_{4it}$: fourth independent variables: Country variables (control variables): log GPD per capita (constant). Data are extracted from World Bank.
7. ε_{jk}: error term

First of all, the multicollinearity analysis was performed for all variables, VIF values are between 1 to 2 for all variables, and since VIF<10, there is no collinearity between the variables. Pooled OLS, Fixed effect, or Random Effect regression assumptions are tested for each dependent variable. Hausman test shows that fixed effect regression is applicable for ESGGW, GGW, and SGW. On the other hand, random regression is applicable to the EGW. Afterward, Pesaran test results show that the model has a cross-sectional dependency. Since there is autocorrelation in the model according to correlation test results, the next stage heteroscedasticity was tested. The results indicate the presence of heteroscedasticity in the model. Therefore, Driscoll and Kraay's analysis is implemented by following Hoechle (2007). Statistically insignificant values are deducted from the model one by one, and the model was implemented again for each dependent variable.

EMPIRICAL RESULTS

The analysis shows that the country variables are in general statistically insignificant compared to firm-level variables. For robustness checks, we changed Log (GDP per capita) with the Human Development Index, however, as STOXX 600 is European-based, multicollinearity was very high. Then the log (GDP per capita) was replaced with Log (GDP constant). The results were still statistically insignificant for all ESG GW dimensions. The corruption perception index was changed with 'absence of corruption score' variable. However, the results were not changed, they were still statistically insignificant for GGW and ESG GW. In addition, the rule of law was changed with the 'transparency of law' for robustness. Transparency of law and the EGW are negatively related and statistically significant. There was high collinearity between the rule of law and transparency law and the results are similar, we use the variable of 'transparency of law' instead of 'rule of law'.

Table 2. Driscoll and Kray Analysis Results

	EGW	SGW	GGW	ESG GW
CSRSustainability	-3.672***	-3.319***	-1.997*	-1.905**
PolicyExecutive Score	-1.517***	-3.016***	-2.360***	-2.764***
BoardSize	0.0748	-0.415***	0.717***	0.082
IndBoardMembers	0.039***	0.003	-0.149***	-0.057***
ROA	0.112	-0.033	0.202**	0.057*
Log TA	-4.832***	-1.429	-3.661***	-0.862
Logunem	-0.751	1.288	-1.5874	-0.442
PolicyBribery score	0.286	-8.584***	-0.25	-3.231***
Taxsoccontnew	0.021	0.021	2.480***	0.942***
ImprovementTools	-0.236	-5.906***	-3.164***	-3.523***
InternalAudit indepn	6.285***	-4.594*	0.4382726	0.714
Corruptionperct	0.023*	-0.322***	0.050	-0.075
BoardGenderDiv	0.011	-0.035**	-0.061	0.008
Logtans	-10.098***	0.83	0.819	-1.342
Loggdppcons	-0.274	-4.185	-1.22174	-3.662
Leverage	-3.677***	-3.613	-8.6434***	-8.836***
_cons	47.65***	109.91**	-28.310**	34.881

*** 1% significance level, ** 5 % significance level and * 10 % significance level

H1: The existence of a CSR committee reduces the ESG washing risk

The hypothesis is accepted as there is a negative and statistically significant relationship for all dimensions of greenwashing (EGW, SGW, SGW, and ESG GW). The results support the studies of Uyar et al. (2020) and align with the stakeholder and legitimacy theory.

H2. Improvement tools for ethics scores reduce the risk of ESG washing behavior

Improvement tools (whether the policy exists or not) have a negative and statistically significant relationship with the SGW, GGW, and ESG GW behaviors. It supports the hypothesis. However, it does not have statistically significant relations with the EGW dimension. The existence of whistleblower procedures and hotlines increases the transparency of the organization. It helps to determine how well the social and governance aspects of the companies work. The organization can get signals and red flags if ESG disclosures or ESG performance are not in line with what was promised or communicated. Improvement tools are used as one of the methods to deal with agency theory problems. It supports stakeholder theory too as employee feedback is used as input to

understand how things are executed in the organization. The stakeholders use the inputs to prevent and detect GW behaviors.

On the other hand, there are no statistically significant relations for EGW behavior. Since the environmental rules and the measures are more solid and companies might need to have more hard controls to prevent EGW.

H3: The existence of sustainability factors in executive remuneration schemes reduces the ESG greenwashing risk

The existence of sustainability factors in executive remuneration schemes reduces the greenwashing scores in all dimensions (EGW, GW, SGW, and ESG GW). The results are in line with the theory of Haque and Ntim (2020) and agency theory. Sustainability-embedded remuneration schemes increase the ownership of the agents and reduce the information asymmetry and create a good internal control mechanism to reduce greenwashing risks in all dimensions.

H4. A greater board size reduces firms' ESG greenwashing behavior.

Board size is negatively and statistically significant with SGW, whereas it is positively and statistically significant for GGW. The negative association of SGW with board size supports Ghitti et al. (2020) study. An increase in board size increases the monitoring of the stakeholders. It helps organizations to increase the network centrality of the board and increase diversity and know-how hence the board can react quicker and better to detect and prevent the SGW. Stakeholders theory explains this approach as well. On the other hand, there are also studies showing that higher board size can cause group thinking, less monitoring, lack of innovations, and greater conflict of interest (Harjoto & Wang, 2020). Therefore, board size and the GGW can also be positively related especially in the areas of governance hence it is not easy to measure the correctness of governance factors. Board size is not statistically significant for EGW and the ESG GW.

H5. An increased share of independent directors reduces firms' ESG greenwashing behavior

There are contradicting results in the literature too. Table 2 shows an increase in the share of independent directors reduces GGW and ESGGW behaviors and the relations are statistically significant. It is expected that the independent board members bring more transparency, increase credibility, and act free from bias and conflict of interests. Previous literature supports that independent board members increase the quality of ESG disclosures (Yu et al., 2020). They can bring new or more developed skills to follow up the actions to prevent or detect greenwashing. Increasing independent board members solve agency theory problems and support the stakeholder theory. Because the existence of independent stakeholders will increase the scrutiny of GW activities of the company, ESG disclosures, and performance too.

EGW and the independent board directors have positive relations and are statistically significant. These results support Ghitti et al. (2020) study because they found that increase in independent directors does not ensure better monitoring of greenwashing because their impact can be limited. Ghitti et al. (2020) also refer to Dyck (2010) that firms that employ independent directors have essentially no evident impact on firms' Environmental and Social performance, especially for the ones where the Environmental and Social norms are relatively weak. SGW did not show a statistically significant relation.

H6. More female board members reduce the risk of ESG greenwashing behavior.

Different results exist in the literature to explain the relations between gender diversity and ESG disclosures or ESG performance. Diversity of board members increases objectivity and heterogeneity therefore the organizations can react better or quicker compared to their competitors in a fast-changing working environment. However, Ghitti et al. (2020) could not find statistically significant relations, even though the coefficient is negative with board gender diversity and GW behaviors. We found that board gender diversity is statistically significant and shows negative relations only for the SGW. Velte (2017)'s study refers that women on board have a positive impact on stakeholder trust, which could lead to better corporate sustainability reporting and financial performance. This also supports the stakeholder theory. However, board diversity does not have statistically significant relations with other GW dimensions (like EGW, GGW, or ESG GW).

H7. The more profitable companies show more greenwashing for each dimension.

According to the research result, GGW and ESGGW have a positive and significant relationship with the Return on Assets (ROA). The hypothesis is accepted. EGW and SGW do not have statistically significant relations. The results support Jong et al. (2020) that a higher ROA is more aggressive in greenwashing because they are more profit-driven and take care of profit more than sustainability. In addition, the more profitable companies have a higher GW because they have more tools to manipulate the data or can have the litigations to fight back (Yu et al., 2020; Delmas & Burbano, 2011; Ghitti et al., 2020). Profitable firms might pretend to have a good governance structure with some certifications or reports or news. This might explain the positive relationship between GGW and profitability. The analysis supports the stakeholders and new institutional theory because the stakeholder pressure on the highly profitable firms might cause GW behaviors.

H8. Larger firms show less ESG washing for all dimensions

Larger-size firms and GW behaviors are negatively related for all GW dimensions. However, it is statistically significant only for the EGW and GGW. Larger firms have higher pressure from the stakeholders as they are more visible. EGW is negatively related to the larger firms because the NGOs and activists also focus on these firms more. This negative relation regarding EGW was also noted by other scholars (Delmas & Burbano, 2011).

Size can also impact higher GGW because bigger companies are in general subject to implementing global standards and regulatory rules. For example, Non-Financial Risk Reporting in Europe is applicable for companies that employ more than 500 employees in the financial industry. These companies have also non-financial reporting standards, and they need to comply with corporate governance principles. The results support the hypothesis, and it is in line with the new institutional theory, legitimacy theory, and signaling theory too.

H9. The high leverage reduces the ESG washing for all dimensions.

The analysis shows that leverage has negative relations with all ESG GW dimensions but is statistically significant for EGW, GGW, and ESGGW. Leverage and the SGW does not have statistically significant relations. Brammer and Pavelin (2006), and Nawaiseh (2015) also refer that high leverage increases the monitoring of the stakeholders of the company. Stakeholders do not want to know only the financial performance, but they are interested in non-financial risks that the company might be imposed. Therefore, debtors can create a control mechanism to prevent ESG GW, EGW, and GGW. This is in line with the stakeholder theory. SGW is not found statistically significant with the leverage.

H10. Firms will engage in less ESG greenwashing in countries where corruption is low

The corruption perception score has statistically significant relations with the EGW and the SGW, however, the direction of the relations is contradictory to each other. SGW and the corruption perception index have a negative relation. This hypothesis is also aligned with the legitimacy theory and new institutional theory (Baldini et al., 2018). Companies that are in less corrupt countries will act properly and show less GW behavior, they will try to ascertain legitimacy. Institutions will also force them to act properly and supports the appropriate corporate behaviors, therefore they will show fewer GW behaviors. However, the corruption perception score and the GGW and ESGGW are not statistically significant and the relation of the EGW looks not aligned with the previous literature results.

H11. Firms will engage in more ESG greenwashing dimensions in countries with a low rule of law/ lower transparency of regulation.

Transparency of law has a negative and statistically significant relationship with EGW. This is in line with the hypothesis. Environmental regulations have comparably more hard controls than social and governance requirements. This might impact the effective scrutiny of the stakeholders (such as regulators or NGOs) and decrease the EGW. However, SGW, GGW, and ESG GW do not statistically significant relation with the transparency of regulations.

H12. Firms engage in more ESG greenwashing for all dimensions in countries with a high unemployment rate.

None of the GW dimensions have a statistically significant relation. The hypothesis is rejected and not supported by the result.

H13. Firms engage in less ESG greenwashing for all dimensions in countries with high GDP per capita.

According to the results GDP per capita and the GW, dimensions are negatively related, however, none of them are statistically significant. HDI was used for the robustness tests however it was still not significant either. Therefore, the hypothesis is rejected and not supported by the result.

H14. Firms engage in less ESG greenwashing dimensions in countries with high tax social contributions.

Tax social contribution is positively and significantly related to the SGW and ESGGW. This is not in line with the hypothesis.

In addition to the above firm-based and country variables, we also checked how anti-policy bribery policies and independent auditors impact the ESG GW for each dimension. The policy and bribery score of the company has a negative and statistically significant relationship with the SGW and ESGGW. It is not statistically significant for the EGW and GGW dimensions. Firms with enhanced anti-corruption commitment are more likely to have higher firm value, and this relationship is stronger for politically connected firms (Devi et al., 2019).

On the other hand, for the independence of internal audit and the greenwashing relations, the results are contradictory. EGW is positively and statistically significant with internal audit independence whereas SGW is negatively and statistically significant in relation to the effective internal audit function. Since the correlation coefficients are high in this variable, the results are not so reliable. In addition, GGW and ESG GW are statistically insignificant. Effective independent internal audit function increases the transparency of the organizations and helps to solve agency theory problems and should have support to reduce the greenwashing risk. However, where the corruption score is high, this can impact the effectiveness of the internal auditors too. The hypothesis is not accepted and supported by the results.

CONCLUSION, DISCUSSION, AND SUGGESTIONS

We examined STOXX 600 companies' ESG greenwashing behaviors for each dimension of ESG GW (ESG GW, EGW, SGW, and GGW). As far as we are aware this is the first research on the association of firm and country variables with each ESG GW dimension. Since ESG integrations and responsible investments are increasing significantly in the last 10 years, it is important for all stakeholders to know what kind of factors can impact GW risks. Many challenges still exist in ESG investments and greenwashing risk could not be reduced due to lack of standardization, unclarities, and lack of measurements. Rating agencies come up with different results due to their methodological differences. Products and regulations are quite different therefore it is not easy to ascertain the

standards like in financial reporting. However, there is a high need to establish a base to prevent greenwashing. Due to limited studies in the literature, there is no consensus on either how to calculate ESG or how to measure ESG greenwashing. Quantitative and qualitative studies have tried different methodologies while calculating greenwashing. On the other hand, it is good to mention that all quantitative studies use different rating agency results, therefore the results might also be impacted by the rating agencies' nuances. Evaluation of these differences can be considered for future research. The research is differentiated from Yu et al. (2020) study because the dependent variables are calculated slightly differently. ESG disclosure and ESG performance scores were not normalized as Yu et al. (2020) did because rating agencies (Bloomberg and Reuters) have already normalized their scores. The ESG GW dependent variables are evaluated one by one. In addition, we worked on STOXX 600 companies, including the ones in the financial sector. Since the head office of STOXX 600 companies are located mainly in the Europe region, it can be considered as a limitation of this research. Therefore, we advise future researchers to increase the scope to include different regions to check if the country factors are still not significant. They can also extend this research by combining it with qualitative aspects, like sending the interview questions to respective companies. In addition types of unemployment (blue collar/ white collar or labor union effective countries/ labor unions are not effective countries) and the impact on greenwashing can also be potential research for the future. Our research shows that company factors do not always impact different GW dimensions at the same level and same direction.

EGW can be prevented via an increase in CSR existence, Policy Executive remuneration policy, firm size, and leverage. Interestingly, there is a positive relationship between the EGW and the increase of independent board members, as well as an independent audit function. It can be interpreted that environmental matters need to be considered by the point of experts. If the independent functions are not the point of experts related to environmental matters, they can even increase the EGW behaviors. Transparency of laws can help to decrease EGW because normally the environmental regulatory rules are complex to follow, and transparency of the regulatory requirements increases the efficiency of the scrutiny of the stakeholders because people can understand and judge better.

SGW can be prevented with the increase of the CSR committee and Policy executive committee, the board size, policy bribery score, improvement tools like whistleblower policies or code of conduct, independent internal audit, and board gender diversity. The corruption perception index is the only country factor that reduces the SGW too. Since it is difficult to measure the social aspects of the company, good governance always helps companies to ascertain better ESG performance and ESG disclosure scores from the social aspects.

GGW can be decreased with the increase of the CSR committee and Policy executive committee, independent board members, size, improvement tools, and leverage. On the other side, board size and profitability are positively related to the increase of GGW. There are mixed results in the literature

regarding board size and profitability too. The tax social contribution index, which is high in the northern European countries, is the only country factor that is positively related to the GGW.

ESGGW can be decreased by increasing the CSR committee and Policy executive committee, independent board members, policy bribery score, size, improvement tools (like whistleblower procedures), and leverage. On the other side, profitability is positively related to the increase of ESGGW. The tax social contribution index is the only country factor which positively related to the ESGGW too.

According to this research, an increase in CSR committees and having sustainable requirements in the remuneration scheme impact all ESG GW dimensions in the same direction.

In summary, we contribute to the literature by evaluating the GW dimensions separately and explaining how each country and firm-level factor impact GW. This can be used as a managerial and scientific implementation of this study.

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