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Sustainability disclosure and its impact on firm's value for Energy and Healthcare industry

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Abstract

This paper investigates the relationship between sustainability disclosure measured through the combined and individual environmental, social, and governance (ESG) scores and the value of European companies from energy and health care industries. The reasons for this research are the increased awareness of sustainability disclosure, the inclusion of nonfinancial information in corporate reporting and possible added value to the company, the ongoing COVID-19 pandemic, and its impact on the global economy. The sample consists of 305 observations for 61 European companies from different categories in the energy industry and 225 observations for 45 European companies in the health care industry. To apply the research model to the samples of companies set as panel data, two linear regressions were designed, each using a different dependent variable to increase the reliability of the outputs. The results indicate a negative and significant correlation between the environmental factor and firms' value for the energy sector and no influence of the sustainability disclosure on the value of companies in the health care industry. The research contributes to the literature by addressing the impact of sustainability disclosure on the value of the European companies from sensitive industries, using both the combined and individual ESG scores to measure sustainability disclosure. Furthermore, the study encourages other academic research on this subject.

1. Introduction

In the last decade, we have seen an increased awareness of the disclosure of nonfinancial information, in particularly, the presentation of aspects related to sustainability disclosure. The interest in the inclusion of nonfinancial information in corporate reporting has developed as a result of financial crises, international accounting scandals, climate change, investors' need for transparency, the rapid globalisation of the economy, technology developments, and support of regulatory bodies. As opposed to financial reporting, which is focused on historical and short-term data to enable profit maximisation for shareholders (Anning, 2018; Li et al., 2018), nonfinancial information is focused on the impact that business's activities may have on the environment and society and on assessing the needs

of stakeholders at large. The inclusion of nonfinancial aspects in corporate reporting transforms the short-term goals of the company, such as shareholders' wealth maximisation, into medium- and long-term goals and changes the focus from profit maximisation to value creation (Freeman, 2010).

Sustainability disclosure has the purpose of encouraging companies to adopt a more balanced manner of conducting their activities in order to protect the environment and the society in which the company is active (Qureshi et al., 2019). Although, it may seem unnecessary for companies fixated on profit maximisation to invest funds on aspects related to sustainability disclosure and therefore reduce the profit of the period, the results of such spending may overcome the costs incurred as shown by previous research on the association between sustainability

disclosure and firms' value (Aboud & Diab, 2018; Qureshi et al., 2019; Sadiq et al., 2020; Wong et al., 2020).

As a result of the increased importance of sustainability disclosure that includes aspects related to environmental, social, and corporate governance of the business sector and private investors (Chen & Yang, 2020); the need for transparency; and communication during the trying times of a global pandemic, this paper investigates whether an association between sustainability disclosure and firms' value exists for European companies in the energy and health care sectors. For a comprehensive interpretation of sustainability disclosure, the research takes into account both the combined and individual pillars of ESG (environment, social, and corporate governance). The environmental pillar is used to provide information regarding the interaction between the organisation, its activity, and environment as represented by the natural resources used by the company in its daily activities. In the context of rapid and irreversible changes in the global climate, investors, climate activists, governments, and regulatory organisations show increased attention to environmental information provided by the company. The environmental factor should consider and describe any negative effects produced by the company's activities on the environment and how the company manages to limit these effects. The social factor refers to the relationship between the organisation and its employees, customers, suppliers, and the communities in which the company is conducting its business activity. Regulations on data protection (Fiaschi et al., 2020, pp. 287–299), antidiscrimination, gender equality, development opportunities for the company's employees, and disadvantaged social categories are social aspects that may be disclosed by the company. The corporate governance factor relates to the company's leadership system, the implemented controls systems, the relationship with the shareholders, and the connection between shareholders and executives.

The scope of this research is to investigate possible associations between sustainability disclosure measured through the combined and individual ESG scores and the value of European companies in the energy and health care industries. The research may enable an enhanced understanding of the specific characteristics of energy and health care industry in terms of sustainability disclosure-related policies. The energy industry has been chosen, as it has a significant impact on sustainability, environmental and social aspects in particular; the global economy and society through employment opportunities (Lorenc & Kustra, 2021); and the increased focus shown by researchers and scientific journals' editors in previous years (Lungu, Caraiani, & Dascălu, 2019). As for the second sector selected for the research, the health care industry has played an even larger role during the last two years, a role that has been brought forward by the global COVID-19 pandemic. Investors have directed their attention towards this sector in the hope that health care companies will take advantage of the global pandemic, and this will be seen in their stock returns (Mittal & Sharma, 2021). Given the present circumstances and the willingness to invest capital in the health care industry, a study on whether or not the value of the company is influenced by sustainability disclosure presents an opportunity. Regardless of the industry in which a company is active, it has been assessed that ESG performance acts as a financial risk mitigator to investors in the unique situation of a global pandemic more than under common conditions (Broadstock et al., 2020).

Considering recent years, a significant number of studies investigating the relationship between sustainability disclosure and firms' value have been published. Irrespective of the numerous papers studying this association, the results are mixed and contradictory. Evidence is provided for the existence of a positive relation (Aboud & Diab, 2018; Friede, Busch, & Bassen, 2015; Gillan, Koch, & Starks, 2021; Y. Li et al., 2018; Liu, 2020; Richardson & Welker, 2001; Sadiq et al., 2020; Wong et al., 2020; Yoon, Hwan Lee, & Byun, 2018; Yu, Guo, & Luu, 2018), a negative one (Brammer, Brooks, & Pavelin, 2006; Friede et al., 2015; Horváthová, 2010; Li, Liao, & Albitar, 2019; Liu, 2020; Plumlee, Brown, & Marshall, 2008; Z. Ruan & Liu, 2021; Sadiq et al., 2020) or no significant connection at all (Deswanto & Siregar, 2018; Friede et al., 2015; Lorraine, Collison, & Power, 2004) when various measures are used for sustainability disclosure and firms' value.

The present investigation is developed on one main hypothesis in determining whether there is an association between sustainability disclosure measured through combined and individual ESG scores and the firms' value for the European companies acting in the energy and health care industries:

> *H1: There is an association between sustainability disclosure and the firms' value for the European companies acting in the energy and health care sectors.*

Several secondary assumptions result from the main hypothesis, as follows:

H1.1: There is an association between environmental disclosure and the firms' value for the European companies acting in the energy and health care sectors.

H1.2: There is an association between social disclosure and the firms' value for the European companies acting in the energy and health care sectors.

H1.3: There is an association between corporate governance disclosure and the firms' value for the European companies acting in the energy and health care sectors.

In order to develop a research design to address the hypotheses, ESG scores available on the Refinitiv Eikon platform were used to measure the sustainability disclosure; firms' value, market value, and Tobin's Q were considered. The initial sampling size consisted of 103 European companies from the energy industry and 130 European companies from the health care industry. The final sample was reduced to 61 companies for the energy sector and 45 for the health care sector with data over a period of five years (2015–2019), due to unavailability of ESG scores and financial information (for example, total revenues from business activity) for the period analysed in the research. Thus, the data sample from both industries have been set into a cross-data panel structure to increase the reliability of the results obtained from a limited number of observations.

The outputs obtained offer additional evidence regarding the existence or nonexistence of an association between sustainability disclosure measured through ESG scores and firms' value, similar to the ones provided by other studies that have investigated this relationship through distinct or comparable measures (Brammer et al., 2006; Deswanto & Siregar, 2018; Friede et al., 2015; Horváthová, 2010; Liu, 2020; Plumlee et al., 2008; Ruan & Liu, 2021; Sadiq et al., 2020).

The research limitations may be represented by the fact that companies pertaining to only two industries were analysed. Both industries are considered generally as sensitive industries, a fact that might limit the results of the study to other sensitive industries only. Another limitation is that only European companies are included in the database tested; different outputs may be obtained by extending the sample to include international companies. In addition, the total number of observations obtained for both industries may seem rather limited for the validity of the results.

The remainder of this paper is structured as follows: The second section highlights the prior research. The third section presents the research design by describing the sample and data, variables, and research method. The fourth section is dedicated to the presentation of the research results. Conclusions are provided in the fifth section.

2. Literature review

A theoretical introduction of sustainability disclosure measured through the combined and individual ESG scores would be highlighting that the origin of ESG as pillars of corporate social responsibility disclosure resides with shareholder and stakeholder theories as described in the study conducted by Qureshi et al. (2019). Milton Friedman introduced shareholder theory in an article published in the *New York Times* in September 1970. The theory stated that the sole responsibility of any company is only to its shareholders, for whom profit maximisation must be attained. Furthermore, all funds should be allocated to the achievement of this purpose; any deviation of funds towards other purposes such as social activities is trespassing the commitment towards shareholders. As opposed to shareholder theory, stakeholder theory emphasises the responsibility of the company towards all its stakeholders, defined by Freeman (2010) as being all the parties that can have an impact on the company or can be impacted by the company's activity. Among the stakeholders of a company, Freeman (2010) included employees, shareholders, customers and suppliers, governments, and the community at large. The interaction between all these parties achieves not only profit maximisation but also value creation (Freeman, 2010). Value creation is also described in the international integrated reporting framework (IIRC, 2021, p. 16) as a result of the interaction between different capitals available within a company, such as the financial, human, social, and relationship capitals. Following the assessment of both shareholder and stakeholder theory, it can be stated that the latter militates for inclusion of sustainability activities within the focus of the companies (Qureshi et al., 2019).

Disclosures about environmental, social, and corporate governance are representative for

sustainability practices and sustainable development; additionally, supporting sustainability disclosure will turn out to be advantageous for the company and its stakeholders (Eccles, Ioannou, & Serafeim, 2012). Elkington (1994) established that companies may be able to adopt a sustainable development by combining the economic, social, and environmental aspects of their business. By focusing on sustainability, companies may improve their financial performance and relations with stakeholders, while also protecting the environment (Elkington, 1994). Eccles et al. (2012) highlighted that companies that adopted sustainability disclosures as early as 1993 achieved a better accounting performance and stock market evolution in the long term compared with companies that did not adopt sustainability disclosure. Taking into consideration the European context on sustainability, the European Commission has demonstrated its support towards a sustainable development by disclosing the United Nations 2030 Agenda at the Sustainable Development Goals Summit in 2019. Further assessing the influence of sustainability disclosure on stock markets, ESG are considered to have a major role on responsible investing according to the study conducted by Caplan, Griswold, and Jarvis (2013). The role of sustainability (ESG) has been recognised by the US Security and Exchange Commission by publishing guidance on the disclosure of climate risk in 2010, following some pressure exercised by investors that consider sustainability disclosure to be fundamental in decision-making processes (Caplan et al., 2013). Ailman et al. (2017) described, as well, the contribution that ESG information has on investment decisions and the support received from the Sustainability Accounting Standards Board (SASB) on data standardisation, which will facilitate the presentation of sustainability disclosures.

As a consequence of the increased focus on sustainability disclosure shown by stock markets and because the investors start to perceive sustainability disclosure as a means to improve the firms' financial performance (Zhao et al., 2018) or acting as a financial risk mitigant (Broadstock et al., 2020), further studies on the relationship between sustainability disclosure and a company's value are expected to be generated in the coming years, and the influence exerted by the COVID-19 pandemic should be taken into account. Nonetheless, the current specialised literature offers a variety of studies developed on the relationship between sustainability disclosure and firms' value, but also on financial performance, to show the immediate effects of sustainability disclosure.

Brooks and Oikonomou (2018) conducted an extensive literature review on 45 years of empirical research on the effects of sustainability (ESG) disclosure and performance on firms' value. The authors concluded that ESG has a positive influence on the financial performance of companies; in addition, ESG seems to be taken into consideration when conducting significant operations such as mergers or acquisitions.

Friede et al. (2015) aggregated more than 2,200 individual papers to study the relation between ESG and corporate financial performance. Ninety percent of the studies demonstrate a non-negative relation between ESG and corporate financial performance, and the majority of the studies considered show positive outputs related to the association between ESG and corporate financial performance. Li et al. (2018) have investigated whether the sustainability disclosure (ESG) may have an influence on firms' value and concluded that there is a positive association between ESG and firms' value. Fatemi, Glaum, and Kaiser (2018) also researched this relationship, studying the connection between ESG and firms' value. Their conclusions are similar to those obtained by Sadiq et al. (2020) for 122 firms listed on the Malaysia Stock Exchange, namely that ESG strengths increase firms' value, whereas ESG weaknesses decrease it. Additionally, the research performed by Fatemi et al. (2018) and Sadiq et al. (2020) provided evidence that the sustainability (ESG) disclosure may reduce the negative effects of ESG weaknesses but also downgrade or improve the positive effects of ESG strengths. Other studies supporting the positive association between sustainability (ESG) disclosure and firms' value are those published by Yu et al. (2018) and Yoon et al. (2018). Yu et al. (2018) disclosed that the adoption of a sustainable disclosure policy will have a positive effect on firms' value for average listed companies. Yoon et al. (2018) presented in their paper a positive and significant impact of the sustainability disclosure on market value using data from sensitive industries, such as the energy industry, and providing evidence that this impact tends to be less important in the case of sensitive industries as compared with non-sensitive industries.

Wong et al. (2020) demonstrated a positive impact on the relationship between ESG certification and firms' value for Malaysian-listed companies. Liu (2020) offered evidence supporting an overall positive relationship between environmental and financial performance by performing a multilevel longitudinal

analysis. Gillan et al. (2021) performed a literature review concentrated on the research previously conducted on ESG. The results show a positive association between ESG performance and financial performance in particular for studies focused on major companies in developed economies.

Paolone et al. (2021) have conducted research on the impact of ESG scores on marketing performance for the largest European companies in the pharmaceutical sector using innovative research employing a fuzzy set qualitative comparative analysis. The values of the ESG scores and market share used were those published on Thomson Reuters and Statista.com. Their findings show that ESG pillars facilitate improved marketing performance, with the influence of the corporate governance score being stronger than the impact of the other two pillars.

All the studies that present a positive association between sustainability disclosure and firms' value encourage organisations to adopt a sustainability policy disclosure, which will enable the inclusion of non-financial information in corporate reporting, thus increasing the degree of transparency between the management of the company and its investors and the focus on long-term goals, such as the value creation process (Chen & Yang, 2020; Yu et al., 2018).

An example of research that identified a negative association between sustainability disclosure and market value is the one performed by Brammer et al. (2006). The authors obtained evidence about a negative association, specifically between social performance and stock returns for a sample of UK companies, contrary to the findings obtained by Richardson and Welker (2001), indicating a positive association between social disclosure and the market value represented by the cost of equity capital. Furthermore, the research conducted by Horváthová (2010) shows a negative association between environmental and financial performance, a similar finding to the one obtained by Liu (2020) for sensitive industries, such as utilities. Liu (2020) explained that the negative connection may be the result of a general lack of trust shown by the customers in these sensitive industries. Evidence concerning a negative relationship between social and financial performance is offered by Schuler and Cording (2006). The negative connection is a result of poor management focused on ESG-related activities instead of other activities that could bring more value to the company. If the inappropriate management persists, sustainability (ESG) practices may lead to underperformance for those companies

in the future. Ruan & Liu (2021) performed a recent study on the association between ESG activities and company performance focused on Chinese A-Share companies listed on China's Shanghai and Shenzhen stock markets between 2015 and 2019. Their results suggest that ESG activities have a significant negative impact on firms' performance, especially for private companies that are less sensitive to environmental aspects. Plumlee et al. (2008) studied the association between the quality of voluntary environmental disclosures and firms' value. Their findings suggest the existence of a negative relationship between cost of capital, representing firms' value, and the quality of voluntary environmental disclosures for companies acting in environmentally sensitive industries. Z. Li et al. (2019) used a sample of 496 listed Chinese companies to expose the initial negative impact of adopting environment regulations on market value.

The research published by Deswanto and Siregar (2018) offers insight on the association between environmental disclosure, environmental performance, financial performance, and firms' value. By analysing companies listed on the Indonesia Stock Exchange, the authors identified that environmental disclosures have no effect on firms' value; moreover, environmental disclosures have no impact on the relationship between environmental performance or financial performance and firms' value. Lorraine et al. (2004) have also highlighted the fact that environmental performance has no effect on the market value of companies. In a study investigating the impact of ESG reporting for European-listed companies in the agri-food sector, Conca et al. (2020) exposed a negative connection between a company's market value and disclosures related to corporate governance practices.

3. Research design

3.1. Sample and data

To investigate the association between the sustainability disclosure measured by the combined and individual ESG scores and firms' value for European companies in the energy and health care industries, information was gathered for the companies from these categories. Out of 103 European companies from the energy sector and 130 European companies identified in the health care sector, for 42 energy companies and 85 health care companies, only partial

Table 1. Description of the database

Industry subcategory	Total
Panel A. Number of companies from the energy sector included in the analysis	
Coal	2
Oil & Gas	33
Oil- & Gas-Related Equipment and Services	22
Renewable Energy	4
Total companies for the energy sector	**61**
Panel B. Number of company-year observations from the energy sector included in the analysis	
Coal	10
Oil & Gas	165
Oil- & Gas-Related Equipment and Services	110
Renewable Energy	20
Total company-year observations for energy sector	**305**
Panel C. Number of companies from the health care sector included in the analysis	
Biotechnology & Medical Research	3
Health care Equipment & Supplies	13
Health care Providers & Services	7
Pharmaceuticals	22
Total companies for health care sector	**45**
Panel D. Number of company-year observations from the health care sector included in the analysis	
Biotechnology & Medical Research	15
Health care Equipment & Supplies	65
Health care Providers & Services	35
Pharmaceuticals	110
Total company-year observations for the health care sector	**225**

ESG scores or financial information were identified at the time of data collection from the Refinitiv Eikon platform. For the remaining 61 (energy) and 45 (health care) companies, with the required data available on the platform, a total sample of 530 company-year observations, grouped on five years (2015–2019), as panel data was subsequently tested. For database description purposes only, the companies selected were part of different subcategories of the energy (coal, oil, and gas; oil- and gas-related equipment and services; and renewable energy) and health care (biotechnology and medical research, health care equipment and supplies, health care providers and services, and pharmaceuticals) industries (Table 1).

The Refinitiv Eikon platform was used to collect data about sustainability disclosure through the combined and individual ESG scores presented as numerical values for the period 2015–2019. The five-year period was selected as being the most recent period that could be analysed through the scores available. The financial information measuring the firms' value for the companies in the sample was also obtained from the Refinitiv Eikon platform. Although the companies analysed are all European based, the figures taken into consideration are presented in US dollars, which represent a globally secure currency and because not all the companies included in the research have adopted the euro as their official currency.

3.2. Variables

The variables used in this research model are detailed in Table 2. To conduct complex research on

Table 2. Variables used in the panel data regression model

Variable name	Type of variable	Description of variable	Referenced studies/research
LNMV	dependent	Natural logarithm of market value available on Refinitiv Eikon platform	Brammer et al. (2006); Fatemi et al. (2018); Y. Li et al. (2018)
Tobin's Q	dependent	Computed as the relation between market value and total assets	Fatemi et al. (2018); Y. Li et al. (2018); Yu et al. (2018)
ESG	independent	Sustainability disclosure measured through ESG scores available on Refinitiv Eikon	Fatemi et al. (2018); Y. Li et al. (2018); Yoon et al. (2018)
ENV	independent	Environmental score available on Refinitiv Eikon	Fatemi et al. (2018); Yoon et al. (2018)
SOC	independent	Social score available on Refinitiv Eikon	Fatemi et al. (2018); Yoon et al. (2018)
GOV	independent	Corporate governance score available on Refinitiv Eikon	Fatemi et al. (2018); Yoon et al. (2018)
CASH_TA	control	Computed as the relationship between cash and cash equivalents value and total assets, both published on Refinitiv Eikon	Y. Li et al. (2018)
LNTR	control	Natural logarithm of total revenues related to the business activities of the company, available on Refinitiv Eikon	Fatemi et al. (2018)

the dependent variable measuring firms' value, two financial indicators were considered: the market value (also used by Fatemi et al., 2018 and Brammer et al., 2006) included in the panel data regression model as natural logarithm (LNMV) and TOBIN's Q (considered also in the studies of Fatemi et al., 2018; Y. Li et al., 2018; and Yu et al., 2018) was computed as market value scaled by total assets.

The ESG scores available on the Refinitiv Eikon platform are considered to be the independent value agreed for the data panel linear regression models. The scores vary from 0% to 100% and are computed by Eikon analysts based on data concerning environmental, social, and corporate governance aspects. Refinitiv ESG scores were utilised because the information on the basis of which they are computed comes directly from the companies; hence, there is a high degree of accuracy and reliability for these scores. ESG scores are variables used in numerous other studies that investigate the relationship between sustainability disclosure and firms' value (Fatemi et al., 2018; Y. Li et al., 2018; Yoon et al., 2018), regardless of the source from which they have been extracted (Bloomberg; Kinder, Lydenberg and Domini; Refinitiv Eikon). Within the scope of further explaining the research model, detailed scenarios on environmental, social,

and corporate governance disclosures were also considered for each industry analysed.

Apart from ESG combined and individual scores, which are set as the independent variable representing sustainability disclosure in the linear regression models, data for the following control variables were identified by the literature to be noteworthy in explaining the relationship between the sustainability disclosure and firms' value: total revenues from business activity (Fatemi et al., 2018), for which a natural logarithm function was applied for comparability purposes (LNTR); and the CASH_TA ratio (Y. Li et al., 2018), computed as the value of cash and cash equivalents scaled by total assets.

3.3. Research method

A linear regression analysis applied to the database structured as panel data was used to estimate the type of association between the dependent variable (firms' value) and the independent variable (sustainability disclosure measured through the combined and individual ESG scores) for the two industries taken into consideration. Regression analysis was also applied in previous studies on a fixed dataset (Fatemi et al., 2018; Y. Li et al., 2018) to investigate on the

connection between the sustainability disclosure and firms' value. The Eviews statistical programme was used to run the regression models on the selected panel data. The regression models were applied to the ESG combined score and to the score of each individual pillar (environment, social, and corporate governance) to assess in a holistic manner the impact of sustainability disclosure on firms' value.

The primary research hypothesis on the association between sustainability disclosure and firms' value for European companies in the energy and health care industries was tested in two main scenarios. Thus, two linear regression models were created, one using the natural logarithm of market value to represent the dependent variable, and the other one using Tobin's Q for the dependent variable:

Scenario 1 $\quad$ $LNMV_t = \beta_0 + \beta_1 ESG + \beta_2 CASH\_TA_t + \beta_3 LNTR_t + \varepsilon_t$

Scenario 2 $\quad$ $Tobin's\ Q_t = \beta_0 + \beta_1 ESG_t + \beta_2 CASH\_TA_t + \beta_3 LNTR_t + \varepsilon_t$

Each of the two main scenarios was disaggregated in three secondary scenarios, which assessed the model for the disclosure of environment, social, and corporate governance aspects:

Scenario 1.1 $\quad$ $LNMV_t = \beta_0 + \beta_1 ENV_t + \beta_2 CASH\_TA_t + \beta_3 LNTR_t + \varepsilon_t$

Scenario 1.2 $\quad$ $LNMV_t = \beta_0 + \beta_1 SOC_t + \beta_2 CASH\_TA_t + \beta_3 LNTR_t + \varepsilon_t$

Scenario 1.3 $\quad$ $LNMV_t = \beta_0 + \beta_1 GOV_t + \beta_2 CASH\_TA_t + \beta_3 LNTR_t + \varepsilon_t$

Scenario 2.1 $\quad$ $Tobin's\ Q_t = \beta_0 + \beta_1 ENV_t + \beta_2 CASH\_TA_t + \beta_3 LNTR_t + \varepsilon_t$

Scenario 2.2 $\quad$ $Tobin's\ Q_t = \beta_0 + \beta_1 SOC_t + \beta_2 CASH\_TA_t + \beta_3 LNTR_t + \varepsilon_t$

Scenario 2.3 $\quad$ $Tobin's\ Q_t = \beta_0 + \beta_1 GOV_t + \beta_2 CASH\_TA_t + \beta_3 LNTR_t + \varepsilon_t$

The regression models were developed based on key dependent and independent variables identified in the specialised literature to be appropriate in assessing the type of connection between sustainability disclosure and firms' value. The dataset was transformed into cross-panel data presenting each variable in the model presented on a five-year period for all the companies included in the database (company-year observation). The independent variable of the research model is represented by the sustainability disclosure measured through the combined and individual ESG scores, a

recurrent choice in the prior studies. The numerical values for the scores were downloaded from the Refinitiv Eikon platform, where the information was available. As for the dependent variable, representing the firms' value, two variables were applied for an in-depth understanding — market value and Tobin's Q — whose data were also obtained from the Refinitiv Eikon platform. The research models included the following control variables, identified in previous literature to be pertinent: cash and cash equivalents scaled by total assets, and total revenues from business activities.

4. Research results

4.1. Descriptive statistics and correlation analysis

Before evaluating the coefficients obtained by using the two regression models based on different scenarios resulting from combinations of independent and dependent variables, the data for the two sectors used for the research were assessed. Descriptive statistics were computed for the regression variables in Eviews software (Table 3) and addressed the assumption that the data are normally distributed, and the regression models based on these variables are valid. Due to a high skewness, the variables market value and total revenues were transformed using natural logarithms for both industries assessed.

Assessing the Pearson correlation coefficient for energy companies (Table 4, above the diagonal), it can be observed that the ESG combined score (ESG), environmental score (ENV), social score (SOC), and corporate governance score (GOV) are positively and strongly correlated with market value (LNMV), at a significance level of .01; this provides evidence for supporting the research hypotheses H1, H1.1, H1.2, and H1.3. Additionally, the results obtained for the ESG combined score (ESG), environmental score (ENV), social score (SOC), and corporate governance score (GOV) in correlation with market value (LNMV) are also validated by the Spearman correlation (Table 4, below the diagonal) for the companies from the energy sector, with a coefficient of 0.498 (ESG), 0.456 (ENV), 0.425 (SOC), and respectively of 0.373 (GOV), at a significance level of .01, showing a highly significant positive association between all the independent variables and market value, the dependent variable for companies from energy sector. Moreover, the Pearson correlation highlights a positive and significant

Table 3. Descriptive statistics

Industry	Variables	N	Minimum	Maximum	Mean	Std. Dev.	Skewness	Kurtosis	Jarque–Bera	Probability
Energy	ESG	305	4.9900	98.7500	58.8901	19.9855	–0.5624	2.8215	16.4845	0.0003
	ENV	305	1.0000	94.0000	57.3140	22.7409	–0.5413	2.6507	16.4474	0.0003
	SOC	305	2.0000	96.0000	61.3124	24.1545	–0.6612	2.4189	26.5131	0.0000
	GOV	305	7.0000	98.0000	57.3870	24.5517	–0.2045	1.8332	19.4269	0.0000
	LNMV	305	7.3267	18.7759	14.9135	2.1252	–0.7117	3.9778	37.9005	0.0000
	Tobin's Q Ratio	305	0.0004	4.6385	0.5617	0.5049	3.1138	19.3998	3910.8030	0.0000
	CASH_TA	305	0.0007	0.9862	0.1197	0.1073	4.0459	29.0572	9460.8050	0.0000
	LNTR	305	6.3882	19.6587	15.2608	2.1018	–0.2113	3.3473	3.8024	0.1494
	Valid N (listwise)	305								
Health care	ESG	225	21.2300	94.1200	62.0992	18.4218	–0.2477	2.1167	9.6149	0.0082
	ENV	225	1.0000	93.0000	53.6667	23.9968	–0.2606	2.1027	10.0964	0.0064
	SOC	225	17.0000	97.0000	69.9067	21.4329	–0.6036	2.3739	17.3373	0.0002
	GOV	225	5.0000	94.0000	56.5333	22.6097	–0.2024	2.0184	10.5684	0.0050
	LNMV	225	11.4189	19.4157	15.9311	1.6129	0.1496	2.6102	2.2639	0.3224
	Tobin's Q Ratio	225	0.0567	13.9959	2.2169	2.3912	2.8025	11.6745	999.9692	0.0000
	CASH_TA	225	0.0001	0.7481	0.0859	0.1103	3.4578	16.8211	2239.2340	0.0000
	LNTR	225	9.7116	17.9405	14.8934	1.6427	–0.0520	3.0168	0.1042	0.9492
	Valid N (listwise)	225								

Notes: The variables listed are defined in Table 2.

correlation between Tobin's Q and the corporate governance score (GOV), with a coefficient of 0.117, at a significance level of .05.

In what concerns the correlations obtained for companies from the health care industry, it results from the Pearson correlation that the ESG combined score (ESG), environmental score (ENV), social score (SOC), and corporate governance score (GOV) are positively and significantly correlated with market value (LNMV), at a significance level of .01, offering evidence in support of all research hypotheses. Furthermore, a negative and significant correlation is obtained between Tobin's Q and the corporate governance score (GOV), with a coefficient of 0.157, at a significance level of .05. All Pearson correlations identified are also validated by Spearman correlation coefficients (Table 4, below the diagonal) of 0.679 (ESG), 0.684 (ENV), 0.653 (SOC), and 0.368 (GOV).

Additionally, a negative and significant corelation coefficient of 0.162 was obtained between Tobin's Q and the corporate governance score (GOV) as opposed to the positive and significant correlation identified between the same variables for companies in the energy industry.

4.2. Discussion on the research hypotheses

In order to assess the association between sustainability disclosure and firms' value for the sample of companies in the energy and health care industries (respectively, 305 and 225 observations), the samples were transformed in cross-panel data in the Eviews statistical programme. The results obtained are presented in Table 5 and Table 6, for the energy industry, and Table 7 and Table 8, for the health care

Table 4. Pearson/Spearman correlation matrix

Industry	Variables	ESG	ENV	SOC	GOV	LNMV	Tobin's Q	CASH_TA	LNTR
Energy	ESG	1	0.895**	0.905**	0.676**	0.483**	0.050	−0.213**	0.618**
	ENV	0.881**	1	0.764**	0.434**	0.473**	−0.036	−0.171**	0.652**
	SOC	0.900**	0.773**	1	0.396**	0.394**	0.068	−0.219**	0.458**
	GOV	0.655**	0.405**	0.379**	1	0.360**	0.117*	−0.141*	0.443**
	LNMV	0.498**	0.456**	0.425**	0.373**	1	0.394**	−0.250**	0.763**
	Tobin's Q Ratio	0.039	0.003	0.056	0.033	0.507**	1	0.028	−0.075
	CASH_TA	−0.123*	−0.083	−0.145*	−0.104	−0.008	0.094	1	−0.214**
	LNTR	0.587**	0.609**	0.453**	0.430**	0.779**	0.135	0.046	1
	Variables	**ESG**	**ENV**	**SOC**	**GOV**	**LNMV**	**Tobin's Q**	**CASH_TA**	**LNTR**
Health care	ESG	1	0.781**	0.913**	0.710**	0.667**	−0.039	0.085	0.713**
	ENV	0.777**	1	0.745**	0.250**	0.689**	0.014	−0.186**	0.707**
	SOC	0.910**	0.753**	1	0.422**	0.615**	0.037	−0.100	0.664**
	GOV	0.724**	0.267**	0.450**	1	0.355**	−0.157*	0.053	0.386**
	LNMV	0.679**	0.684**	0.653**	0.368**	1	0.175**	−0.205**	0.869**
	Tobin's Q Ratio	−0.097	−0.001	−0.027	−0.162*	0.193**	1	0.146*	−0.174**
	CASH_TA	−0.162*	−0.169*	−0.194**	−0.041	−0.195**	0.272**	1	−0.292**
	LNTR	0.731**	0.725**	0.690**	0.396**	0.840**	−0.240**	−0.356**	1

Notes: In the above table, Pearson (Spearman) correlations are presented above (below) the diagonal of the matrix. **Significance at the .01 level. *Significance at the .05 level.

industry. The relationship between sustainability disclosure measured through ESG combined scores and firms' value represented by market value was analysed in the first main scenario (scenario 1), presented in Table 5 for the energy industry and Table 7 for the health care industry. Three sub-scenarios are disaggregated from scenario 1 to assess whether a relationship exists between each pillar of ESG (environment, social, and corporate governance) and firms' value, represented in this scenario by the natural logarithm of market value.

The results of regression analysis for the first scenario indicate that a proportion between 53% and 55% of the total variation in the market value of the European companies in the energy industry may be explained by sustainability disclosure measured through the combined and individual ESG scores, when controlling for revenues (LNTR) and cash scaled by total assets (CASH_TA). The outputs presented in Table 5 support a negative and significant correlation between the environmental score (ENV) and firms' value measured by market

value (LNMV) for companies in the energy sector (scenario 1.1). Plumlee et al. (2008) obtained similar results in what concerns the negative association between the environmental factor and firms' value represented by cost of capital for companies operating in environmentally sensitive industries, such as the energy industry. Z. Li et al. (2019) highlighted the initial negative effect on firms' value for companies adopting environmental regulations. Horváthová (2010) and Liu (2020) identified a negative association between environmental and financial performance. An explanation for the negative correlation may be the general lack of trust shown by the customers in sensitive industries (Liu, 2020). Disaggregating the analysis on the scenarios, it can be seen that the control variable, LNTR, is significant and positive for the overall sample of companies in the energy industry presented for every scenario detailed in Table 5. Furthermore, the control variable CASH_TA is not significant in any of the four scenarios analysed. Hereafter, only one of the three secondary hypotheses of this study (H1.1) is validated by the results of the

Table 5. The impact of sustainability disclosure on the market value for the energy sector

Variable	Coefficient ESG (scenario 1)	Coefficient ENV (scenario 1.1)	Coefficient SOC (scenario 1.2)	Coefficient GOV (scenario 1.3)
ESG (scenario 1)	–0.0056			
	(0.0052)			
ENV (scenario 1.1)		–0.0129**		
		(0.0045)		
SOC (scenario 1.2)			0.0023	
			(0.0039)	
GOV (scenario 1.3)				–0.0006
				(0.0037)
CASH_TA	–0.3105	–0.5215	–0.0692	–0.1597
	(0.7496)	(0.7375)	(0.7482)	(0.7399)
LNTR	0.9976***	1.0265***	0.9648***	0.9767***
	(0.0226)	(0.0195)	(0.0184)	(0.0166)
Akaike	3.5774	3.5541	3.5801	3.5812
Schwarz	3.6140	3.5907	3.6167	3.6178
Hannan-Quinn	3.5920	3.5687	3.5948	3.5958
Adj. R2	0.5407	0.5513	0.5394	0.5389
Log likelihood	–542.5472	–539.0004	–542.9702	–543.1288
Durbin-Watson	0.2265	0.2386	0.2265	0.2254

first linear regression model applied to companies in the energy industry.

The association between sustainability disclosure measured through the combined and individual ESG scores and firms' value represented by Tobin's Q is assessed in the second main scenario (scenario 2), presented in Table 6 and Table 8. The panel data regression model is the following: *Tobin's Q$_t$ = β$_0$ + β$_1$ESG$_t$ + β$_2$CASH_TA$_t$ + β$_3$LNTR$_t$ + εt.* Three sub-scenarios are disaggregated from scenario 2 to evaluate the correlation between each pillar of ESG (environment, social, and corporate governance) and firms' value, represented in this scenario by Tobin's Q.

The results presented in Table 6 show a similar impact of the sustainability disclosure on the firms' value, when using Tobin's Q as the dependent variable, instead of the market value of the company. Advancing the analysis on the secondary scenarios, the findings show that not all the variables have a significant impact on the firms' value. Assessing scenario 2.1, it can be observed that the environmental score (ENV) as an independent variable has a significant (with a maximum significance level of 95%) and

negative influence on firms' value for the overall sample of companies in the energy sector (Z. Li et al., 2019; Plumlee et al., 2008). However, the low percentage (1%) of adjusted R-squared suggests that only an insignificant variation in firms' value may be explained by the independent variable: environmental score, in this case. As for the other scenarios assessed, no significant correlation was identified between the independent variable and the dependent variable. Thus, the second regression model does not explain any of the research hypotheses declaring a possible connection between sustainability disclosure measured through the combined and individual ESG scores and firms' value for companies in the energy sector.

The analysis of regression results for the health care industry on the first scenario indicates approximately 72% of the total variation in the market value of the European companies in the health care industry may be explained by sustainability disclosure as measured through the combined and specific ESG scores, when controlling for revenues and cash scaled by total assets. The results of applying the first regression model

Table 6. The impact of sustainability disclosure on Tobin's Q for the energy sector

Variable	Coefficient ESG (scenario 2)	Coefficient ENV (scenario 2.1)	Coefficient SOC (scenario 2.2)	Coefficient GOV (scenario 2.3)
ESG (scenario 2)	–0.0002			
	(0.0018)			
ENV (scenario 2.1)		–0.0036**		
		(0.0016)		
SOC (scenario 2.2)			0.0009	
			(0.0014)	
GOV (scenario 2.3)				0.0021
				(0.0013)
CASH_TA	0.2831	0.1847	0.3197	0.3304
	(0.2632)	(0.2597)	(0.2621)	(0.2582)
LNTR	0.0351***	0.0488***	0.0305***	0.0262***
	(0.0080)	(0.0069)	(0.0065)	(0.0058)
Akaike	1.4837	1.4667	1.4824	1.4756
Schwarz	1.5203	1.5032	1.5190	1.5122
Hannan-Quinn	1.4983	1.4813	1.4970	1.4903
Adj. R2	–0.0027	0.0143	–0.0013	0.0054
Log likelihood	–223.2661	–220.6641	–223.0603	–222.0344
Durbin-Watson	0.2033	0.2058	0.2052	0.2103

Table 7. The impact of sustainability disclosure on the market value for the health care sector

Variable	Coefficient ESG (scenario 1)	Coefficient ENV (scenario 1.1)	Coefficient SOC (scenario 1.2)	Coefficient GOV (scenario 1.3)
ESG (scenario 1)	–0.0038			
	(0.0040)			
ENV (scenario 1.1)		–0.0004		
		(0.0029)		
SOC (scenario 1.2)			–0.0031	
			(0.0033)	
GOV (scenario 1.3)				–0.0017
				(0.0027)
CASH_TA	1.8217***	1.8113***	1.8187***	1.8659***
	(0.5014)	(0.5123)	(0.5015)	(0.5059)
LNTR	1.0734***	1.0588***	1.0719***	1.0635***
	(0.0174)	(0.0121)	(0.0163)	(0.0111)
Akaike	2.5312	2.5353	2.5314	2.5336
Schwarz	2.5767	2.5808	2.5769	2.5791
Hannan-Quinn	2.5496	2.5537	2.5498	2.5520
Adj. R2	0.7208	0.7197	0.7207	0.7201
Log likelihood	–281.7581	–282.2180	–281.7816	–282.0290
Durbin-Watson	0.3088	0.3079	0.3106	0.3081

Table 8. The impact of sustainability disclosure on the Tobin's Q for the health care sector

Variable	Coefficient ESG (scenario 2)	Coefficient ENV (scenario 2.1)	Coefficient SOC (scenario 2.2)	Coefficient GOV (scenario 2.3)
ESG (scenario 2)	–0.0016			
	(0.0112)			
ENV (scenario 2.1)		0.0066		
		(0.0081)		
SOC (scenario 2.2)			0.0124	
			(0.0093)	
GOV (scenario 2.3)				–0.0179**
				(0.0076)
CASH_TA	4.0859***	4.3167***	4.1180***	4.4996***
	(1.4180)	(1.4440)	(1.4125)	(1.4118)
LNTR	0.1288***	0.0964***	0.0628	0.1878***
	(0.0492)	(0.0341)	(0.0460)	(0.0310)
Akaike	4.6105	4.6076	4.6026	4.5862
Schwarz	4.6560	4.6532	4.6481	4.6317
Hannan-Quinn	4.6289	4.6260	4.6209	4.6046
Adj. R2	–0.0159	–0.0130	–0.0079	0.0085
Log likelihood	–515.6781	–515.3590	–514.7872	–512.9448
Durbin-Watson	0.1602	0.1630	0.1637	0.1699

(Table 7) revealed no significant association between sustainability disclosure and firms' value measured by market value for the health care sector. Previous studies, such as those of Deswanto and Siregar (2018) and Lorraine et al. (2004), have revealed similar results regarding the relationship between environmental disclosure and firms' value. Moreover, disaggregating the analysis on secondary scenarios, it can be seen that both control variables, LNTR and CASH_TA, are significant and positive for the overall sample, as seen in Table 7. Nonetheless, the results presented in Table 7 do not support any of the hypotheses presented in the first part of this paper for companies in the health care sector.

Table 8 shows the outputs obtained by using the second linear regression model (Tobin's Q as the dependent variable) on the sample of companies from the health care industry. Analysing the data obtained for the health care sector, the percentage of the total variation in firms' value that may be explained by the sustainability disclosure measured through the combined and individual ESG scores (considered as independent variables) is insignificant — therefore failing to explain the total variation in firms' value.

These findings may be related to the research of Deswanto and Siregar (2018), which identified that environmental disclosures have no effect on firms' value; moreover, environmental disclosures have no impact on the relationship between environmental performance or financial performance and firms' value. In addition, Lorraine et al. (2004) have also highlighted the fact that environmental performance has no effect on the market value of companies.

Based on the Eviews statistical software outputs disaggregated on the scenarios displayed in Table 8, it can be seen that there is a significant and negative correlation between corporate governance score (GOV, scenario 2.3) and firms' value represented by Tobin's Q for the overall sample of companies. The results of the research conducted are similar to those of other studies focused on the relation between sustainability disclosure and the value of the company. Conca et al. (2020) identified a negative association between corporate governance disclosures and the market value of European companies from the agri-food sector. Despite this correlation, the value of adjusted R-squared indicates an insignificant variation in firms' value explained by the independent variable.

5. Conclusions

The health care industry appears to be less prone to the influence of sustainability disclosure on firms' value than the energy industry, as observed in the results section. Nevertheless, both industries are considered to be sensitive sectors of activity in general and even more now during the COVID-19 pandemic, which has had a major and extensive impact on the global economy.

This research investigated the associations between sustainability disclosure as measured through the combined and individual ESG scores and firms' value for European companies acting in the energy and health care sectors. Previous empirical evidence offers mixed results when unidirectional linear relationships are tested. Based on the findings of this research, disaggregate investigations may be conducted on the three subcategories of industry for both of the two sectors analysed.

The results presented in Table 5 support a negative association between the environmental score (ENV) and firms' value as measured by market value only for companies in the energy sector. Previous studies (Horváthová, 2010; Z. Li et al., 2019; Liu, 2020; Plumlee et al., 2008) obtained similar results in what concerns the negative influence of environmental disclosure on firms' value. In Table 6, where the results of the second regression model are presented, a significant and negative relationship between the environmental disclosure and firms' value was also highlighted for the overall sample of companies in the energy sector. However, in this scenario, the percentage of adjusted R-squared is very low (1%) to be able to explain the variation in the dependent variable.

Concerning the results obtained for the health care industry (Table 7 and Table 8), no significant connection between sustainability disclosure, measured through both the combined and individual ESG scores, and firms' value, measured by market value, was obtained for the overall sample of companies (Table 7); therefore, none of the hypotheses described in the first part of the paper were validated. The results are similar to those presented by Deswanto and Siregar (2018) and Lorraine et al. (2004). In the second scenario (Tobin's Q used as dependent value), a significant and negative correlation between the corporate governance score (GOV: scenario 2.3) and firms' value was identified

for the overall sample, the correlation being similar to the one obtained by Conca et al. (2020). As in the case with the results obtained for the second regression model applied to companies from the energy industry, the value of adjusted R-squared is insignificant, as it is the variation in firms' value explained by the independent variables for the health care sector. Contrary to the results obtained for the energy industry, in what concerns the health care sector, the hypotheses defined were not validated by the results of the statistical tests.

The main contribution of this investigation to the literature consists of addressing the association of sustainability disclosure, measured through the combined and individual ESG scores, with firms' value for companies in the energy and health care sectors — both being considered sensitive industries in general. The present research may encourage other studies to focus on the influence of sustainability disclosure on firms' value for companies in other sensitive industries or industries affected significantly by the COVID-19 pandemic.

Future research may be extended by including a global sample of companies in the energy and health care industries or determining the type of association between sustainability disclosure and firms' value for companies in other sensitive industries or even companies from non-sensitive industries. Particularities of the companies from sensitive industries compared to companies from non-sensitive industries may be identified. Also, the need for harmonisation of the different sustainability frameworks used by companies may also be investigated.

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References

Aboud, A., & Diab, A. (2018). The impact of social, environmental and corporate governance disclosures on firm value: Evidence from Egypt. *Journal of Accounting in Emerging Economies, 8*(4), 442–458. https://doi.org/10.1108/JAEE-08-2017-0079

Ailman, C., Edkins, M., Mitchem, K., Eliopoulos, T., & Guillot, J. (2017). The next wave of ESG integration: Lessons from institutional investors. *Journal of Applied Corporate Finance, 29*(2), 32–43. https://doi.org/10.1111/jacf.12231

Anning, F. (2018). An assessment of the traditional theory of firm based assumption of profit maximization in an organization. *SSRN Electronic Journal*. August 20. http://dx.doi.org/10.2139/ssrn.3235066

Brammer, S., Brooks, C., & Pavelin, S. (2006). Corporate social performance and stock returns: UK evidence from disaggregate measures. *Financial Management, 35*, 97–116.

Broadstock, D., Chan, K., Cheng, L., & Wang, X. (2020). The role of ESG performance during times of financial crisis: Evidence from COVID-19 in China. *Finance Research Letters, 38*(2021), 101716. https://doi.org/10.1016/j.frl.2020.101716

Brooks, C., & Oikonomou, I. (2018). The effects of environmental, social and governance disclosures and performance on firm value: A review of the literature in accounting and finance. *The British Accounting Review, 50*(1), 1–50. https://doi.org/10.1016/j.bar.2017.11.005

Caplan, L., Griswold, J. S., & Jarvis, W. F. (2013). *From SRI to ESG: The changing world of responsible investing.* Commonfund Institute. Retrieved from https://files.eric.ed.gov/fulltext/ED559300.pdf

Chen, H. Y., & Yang, S. S. (2020). Do investors exaggerate corporate ESG information? Evidence of the ESG momentum effect in the Taiwanese market. *Pacific-Basin Finance Journal, 63*(2020), 101407. https://doi.org/10.1016/j.pacfin.2020.101407

Conca, L., Manta, F., Morrone, D., & Toma, P. (2020). The impact of direct environmental, social, and governance reporting: Empirical evidence in European-listed companies in the agri-food sector. *Business Strategy and the Environment, 30*(2), 1080–1093. https://doi.org/10.1002/bse.2672

Deswanto, R. B., & Siregar, S. V. (2018). The associations between environmental disclosures with financial performance, environmental performance, and firm value. *Social Responsibility Journal, 14*(1), 180–193. https://doi.org/10.1108/SRJ-01-2017-0005

Eccles, R. G., Ioannou, I., & Serafeim, G. (2012). The impact of a corporate culture of sustainability on corporate behavior and performance. NBER working paper series No. 17950.

Elkington, J. (1994). Towards the sustainable corporation: Win-Win-Win business strategies for sustainable development. *California Management Review, 36*(2), 90–100. https://doi.org/10.2307/41165746

European Union delivering on the United Nations 2030 agenda. (2019). Retrieved from https://ec.europa.eu/info/sites/default/files/factsheet-eu-delivering-2030-agenda-sustainable-development_en_0.pdf

Fatemi, A., Glaum, M., & Kaiser, S. (2018). ESG performance and firm value: The moderating role of disclosure. *Global Finance Journal, 38*(2018), 45–64. https://doi.org/10.1016/j.gfj.2017.03.001

Fiaschi, D., Giuliani, E., Nieri, F., & Salvati, N. (2020). How bad is your company? Measuring corporate wrongdoing beyond the magic of ESG metrics. *Business Horizons, 63*(3), 287–299. https://doi.org/10.1016/j.bushor.2019.09.004

Freeman, R. E. (2010). *Strategic management: A stakeholder approach*. Cambridge University Press.

Friede, G., Busch, T., & Bassen, A. (2015). ESG and financial performance: aggregated evidence from more than 2000 empirical studies. *Journal of Sustainable Finance & Investment, 5*(4), 210–233. https://doi.org/10.1080/20430795.2015.1118917

Friedman, M. (1970). A Friedman doctrine: The social responsibility of business is to increase its profits. *The New York Times Magazine, 13*(1970), 32–33.

Gillan, S. T., Koch, A., & Starks, L. T. (2021). Firms and social responsibility: A review of ESG and CSR research in corporate finance. *Journal of Corporate Finance, 66*, 101889. https://doi.org/10.1016/j.jcorpfin.2021.101889

Horváthová, E. (2010). Does environmental performance affect financial performance? A meta-analysis. *Ecological Economics, 70*, 52–59. https://doi.org/10.1016/j.ecolecon.2010.04.004

International Integrated Reporting Council. (IIRC 2021). International integrated reporting framework. Retrieved from https://integratedreporting.org/wpcontent/uploads/2021/01/InternationalIntegratedReportingFramework.pdf

Li, Y., Gong, M., Zhang, X.-Y., & Koh, L. (2018). The impact of environmental, social, and governance disclosure on firm value: The role of CEO power. *The British Accounting Review, 50*, 60e75. https://doi.org/10.1016/j.bar.2017.09.007

Li, Z., Liao, G., & Albitar, K. (2019). Does corporate environmental responsibility engagement affect firm value? The mediating role of corporate innovation. *Business Strategy and the Environment, 29*(3), 1045–1055. https://doi.org/10.1002/bse.2416

Liu, Z. (2020). Unraveling the complex relationship between environmental and financial performance — A multilevel longitudinal analysis. *International Journal of Production Economics, 219*, 328–340. https://doi.org/10.1016/j.ijpe.2019.07.005

Lorenc, S., & Kustra, A. (2021). Distributing enterprise value to stakeholders in the range of sustainable development on the basis of the energy industry in Poland. *Sustainability, 13*(4), 2130. https://doi.org/10.3390/su13042130

Lorraine, N. H. J., Collison, D. J., & Power, D. M. (2004). An analysis of the stock market impact of environmental performance information. *Accounting Forum, 28*(1), 7–26. https://doi.org/10.1016/j.accfor.2004.04.002

Lungu, C. I., Caraiani, C., & Dascălu, C. (2019). Multidisciplinary approach of sustainable performance — Financial performance nexus. The perspective of energy industry corporations. *Proceedings of the 14th international conference accounting and management information systems*, AMIS IAAER 2019, 365–387.

Mittal, S., & Sharma, D. (2021). The impact of COVID-19 on stock returns of the Indian healthcare and pharmaceutical sector. *Australasian Accounting, Business and Finance Journal, 15*(1), 5–21. https://doi.org/10.14453/aabfj.v15i1.2

Paolone, F., Cucari, N., Wu, J., & Tiscini, R. (2021). How do ESG pillars impact firms' marketing performance? A configurational analysis in the pharmaceutical sector. *Journal of Business & Industrial Marketing.* https://doi.org/10.1108/JBIM-07-2020-0356

Plumlee, M., Brown, D., & Marshall, S. (2008). The impact of voluntary environmental disclosure quality on firm value. Retrieved from https://ssrn.com/abstract=1140221

Qureshi, M. A., Kirkerud, S., Theresa, K., & Ahsan, T. (2019). The impact of sustainability (environmental, social, and governance) disclosure and board diversity on firm value: The moderating role of industry sensitivity. *Business Strategy and the Environment, 29*(3), 1199–1214. https://doi.org/10.1002/bse.2427

Richardson, A. J., & Welker, M. (2001). Social disclosure, financial disclosure and the cost of equity capital. *Accounting, Organizations and Society, 26*(7), 597e616.

Ruan, L., & Liu, H. (2021). Environmental, social, governance activities and firm performance: Evidence from China. *Sustainability, 13*(2), 767. https://doi.org/10.3390/su13020767

Sadiq, M., Singh, J., Raza, M., & Mohamad, S. (2020). The impact of environmental, social and governance index on firm value: Evidence from Malaysia. *International Journal of Energy Economics and Policy, 10*(5), 555–562. https://doi.org/10.32479/ijeep.10217

Schuler, D. A., & Cording, M. (2006). A corporate social performance — corporate financial performance behavioral model for consumers. *Academy of Management Review, 31*(3), 540e558.

Wong, W. C. et al. (2020). Does ESG certification add firm value? *Finance Research Letters, 39*(March), 101593. https://doi.org/10.1016/j.frl.2020.101593

Yoon, B., Hwan Lee, J., & Byun, R. (2018). Does ESG performance enhance firm value? Evidence from Korea. *Sustainability, 10*, 3635. https://doi.org/10.3390/su10103635

Yu, E. P., Guo, C. Q., & Luu, B. V. (2018). Environmental, social and governance transparency and firm value. *Business Strategy and the Environment, 27*(7), 987–1004. https://doi.org/10.1002/bse.2047

Zhao, C. et al. (2018). ESG and corporate financial performance: Empirical evidence from China's listed power generation companies. *Sustainability, 10*, 2607. https://doi.org/10.3390/su10082607