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ENVIRONMENTAL, SOCIAL, GOVERNANCE INVESTING, COVID-19, AND CORPORATE PERFORMANCE IN MUSLIM COUNTRIES

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ABSTRACT

We examine the impact of Environment, Social, and Governance–ESG investing on corporate performance of non-financial firms in Muslim countries during the pandemic. Employing the random effect panel model with 1,546 firm-year observations, we find that the ESG combined score and its pillars have significant influence on corporate performance during the COVID-19 period. Namely, the performance of firms with higher ESG is relatively less affected as compared to the performance of firms with lower ESG. We also note that firms in Malaysia and the United Arab Emirates with high ESG have better operational (financial) performance. Finally, from the sectorial perspective, health care and energy (consumer staples) firms with higher ESG have higher operational (financial) performance during the pandemic.

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I. INTRODUCTION

Corporate sustainability (CS) has captured increasing interest from investors in the last few years. Essentially, CS integrates ethical concerns with investment decisions. In this regard, investors avoid certain stocks or industries according to certain screening criteria based on defined ethical guidelines. CS filtering excludes companies that produce alcohol, tobacco, weapons, gambling, and the like and also those engaging in unethical acts such as child labor (Berry & Junkus, 2013; Caplan et al., 2013). Environmental, social, and governance (ESG) investing is another narrower form of CS. ESG focuses on three pillars which are environmental (E), social (S), and governance (G). E pillar relates to the natural ecosystem, such as carbon emissions, natural resource usage, and pollution. S pillar measures social concerns (e.g., workforce health and safety, customer satisfaction, responsibilities to society). G pillar covers a company's management issues, including shareholder rights, board of directors' composition, compensation policy, and fraud (Matos, 2020).

Beloskar & Rao (2022) state two reasons that make ESG important for investors and companies. First, ESG encourages companies to behave ethically. Hence, companies that pursue ESG principles have easier access to finance. Next, in investment decisions considering ESG information improves the risk-adjusted performance of portfolios. ESG shows companies' Corporate Social Responsibility (CSR) performance, which can be measured using ESG scores gathered from providers such as Bloomberg or DataStream (Velte, 2017; Petitjean, 2019). ESG investing has drastically increased for the last two decades. ESG assets jump from $22.8 trillion to $30.6 trillion between 2016 and 2018, and it is estimated they will reach $53 trillion globally by 2025 (Bloomberg, 2021).

Since the financial crisis of 2008, investors' attention to firms' CSR performance has increased (Sabbaghi & Xu, 2013). World Health Organization (WHO) declared a global health emergency in January 2020 because of the increasing spread of the Coronavirus in China and the entire world (Bashir et al., 2020). Unlike the 2008 financial crisis, the COVID-19 pandemic is a health crisis with global economic ramifications (Rubbaniy et al., 2022). The pandemic's economic effects have been felt in both developed and emerging markets. Companies have suffered due to the widespread cessation of production and the sharp decline in consumption.

Islamic rules offer more than a religion. Islam is a whole way of life and aims to shape every aspect of the behavior of each member of society. Islam asks its adherents to uphold ethical standards in their life, interactions with others, business transactions, social interactions, and both private and public life (Mohammed, 2013). In general, ESG and Islamic principles share the same goal of fostering moral behavior in business. Hence, both Islam and the ESG concept emphasize environmental protection, socio-economic growth, and good governance in corporations (Ma'ruf et al., 2021).

Therefore, this study investigates the relationship between ESG scores and corporate performance of non-financial firms in Muslim countries including during the COVID-19 pandemic. We use panel regression analysis with data over the period from 2004 to 2021 and 207 companies that have ESG scores from eleven Muslim countries. Though corporate sustainability has no clear influence on corporate performance over the entire period, a clear positive impact arises through the end

of COVID. Namely, firms with higher ESG have better performance during the health crisis, especially for operational (financial) performance of firms in United Arab Emirates and Malaysia. In addition, the study notes that health care and energy (consumer staples) firms have better operational (financial) performance during the pandemic.

The contribution of empirical findings is twofold. First, we employ cross-country and cross-industry analyses differing from previous research (Hwang et al., 2021; Zhang et al., 2022) that considers the COVID-19 pandemic period. Second, since Islamic principles suggest sustainable goals, our study shows whether firms in Muslim countries have a sustainable investment policy to improve their corporate performance.

Our findings have various implications. First, managers/owners should realize that exogenous shocks and their types (e.g., financial, health) shape their firms' performance. Stakeholders should consider the firms' sustainable investing. Researchers and practitioners should extend the literature by considering more countries and comparing more exogenous shocks to generalize these findings. Policymakers should have different packages to support firms depending on their industry during exogenous shocks. As accessing finance becomes costly in crisis times, Central Banks in Muslim countries, Bank Indonesia in particular, should consider which firms follow Islamic principles (e.g., interest sensitivity) and support them more. Thus, these companies can compete with other companies in order to achieve their financial sustainability and performance targets.

This paper proceeds as follows: Section II reviews the related literature. Section III presents the empirical strategy including methodology and data. Section IV introduces the empirical results. Section V draws the concluding remarks.

II. RELATED LITERATURE

Previous research uses agency, stakeholder, and legitimacy theories to explain ESG activities for corporate financial performance. According to the agency theory, managers demonstrate their interest in the stakeholders. Good corporate governance may help businesses reduce tensions between management and stakeholders. Low profitability and high agency disputes are problems for companies with inadequate governance practices (Shakil et al., 2019). Besides, agency costs reflect the informational asymmetries present in corporate activities. The use of sustainability disclosure as a tool for stakeholder communication reduces knowledge gaps between shareholders and management. Since sustainability reports include risk disclosures, agency costs decrease and financial performance improves. (Al Hawaj & Buallay, 2022). Stakeholder theory argues that a company has obligations to other stakeholders besides its shareholders. A broad spectrum of stakeholders views corporate sustainability reporting as a critical concern. It is essential for stakeholders that companies manage, measure, and report their sustainability efforts. As a result, companies should maximize profit as well as sustainability value (Buallay, 2019). According to the legitimacy theory, companies use sustainability disclosure to enhance public opinion. Therefore, companies exert effort to ensure that others regard their actions as legitimate. For this reason, companies should implement strategies that can boost

public perception of them, such as social and environmental practices that include actual activities and disclosure (Eliwa et al., 2021). However, in the short term, the company does not benefit from environmental performance when the efforts only impact society; reward comes in the long term as improved financial performance (Yawika & Handayani, 2019).

Hwang et al. (2021) argue that ESG activities may help companies to improve financial performance during the COVID-19 pandemic in different ways. First, it strengthens trust between stakeholders and companies. That reduces transaction costs and information asymmetry during uncertain conditions caused by the pandemic. Second, companies are considered more trustworthy during the crisis due to investor and stakeholder commitment. Thus, companies with higher ESG scores are expected to deal successfully with the financial consequences of the COVID-19 pandemic compared to companies with lower scores.

There is an increasing number of studies examining the relationship between ESG scores and financial performance along with the growth of ESG investing. However, few of these studies have investigated this connection during crisis periods. In the existing literature regarding the link between ESG and firm performance, results provide mixed evidence. In recent studies, Shaikh (2022) examines the relationship between dimensions of ESG and financial performance using data covering the period between 2010 and 2018. He shows Return-on-Assets (ROA), Return-on-Equity (ROE), and Tobin's Q measures of GRI and non-GRI companies differ significantly. Also, while environmental and social dimensions of ESG negatively affect financial performance, governance affects the performance positively. Han et al. (2016) report comparable results. The findings of Shakil et al. (2019) differ from Shaikh (2022). They argue that environmental and social factors are positively correlated with financial performance, while governance has no influence. Likewise, employing Turkish companies over the period 2007-2017, Saygili et al. (2022) mention that the governance dimension affects financial performance positively and considerably more than other dimensions.

The more recent research (Duque-Grisales & Aguilera-Caracuel, 2021) finds the link between ESG combined scores, which includes three main dimensions: environmental, social, and governance disclosures to be negatively related to financial performance. However, Velte (2017) finds a positive relationship between the ESG combined score and ROA. Furthermore, he emphasizes that the governance factor has the most substantial effect on financial performance which is in line with the literature (Saygili et al., 2022). However, the ESG combined score and it's three dimensions have no impact on Tobin's Q. Giannopoulos et al. (2022) investigate the role of ESG scores on ROA and Tobin's Q by analyzing Norway data covering the period 2010-2019. They demonstrate a significant relationship between ESG scores and financial performance measures by documenting that ESG positively impacts ROA and negatively affects Tobin's Q. Al Hawaj & Buallay (2022) conduct a cross-sectorial research and show that the effects of ESG scores on financial performance differ across sectors that is in line with previous research (Buallay, 2019; El Khoury et al., 2021). Buallay (2021) documents that ESG scores positively impact ROE, but do not affect Tobin's Q. Other empirical studies (Lee et al., 2016; Fatemi et al., 2018; Zhao et al., 2018; Almeyda & Darmansya, 2019; Alareeni & Hamdan, 2020; Buallay, 2021) report a positive relationship between

ESG and financial performance. In contrast, Atan et al. (2018) find that financial performance is unrelated to ESG. Nollet et al. (2016) use linear and non-linear models to describe the relationship between ESG and financial performance. They demonstrate that the linear model suggests a positive relationship and the non-linear model implies a negative relationship between ESG and financial performance.

There is limited research on the ESG impacts on corporate financial performance during exogenous shocks. Lins et al. (2017) find ESG positively affects ROA during the global financial crisis 2008-2009. Using data from South Korea between 2017 and 2020, Hwang et al. (2021) show that companies with higher performance in ESG activities suffered less from the financial effects of the COVID-19 pandemic. Zhang et al. (2022) examine the impact of COVID-19 and ESG on financial performance using a sample of Chinese listed firms for 2019Q1–2021Q1. They illustrate similar findings to Hwang et al. (2021). Nonetheless, more research is needed to fully understand the implications of ESG on corporate performance throughout the crisis caused by the COVID-19 pandemic. Consequently, this study fills the gap by examining the joint impact of ESG and COVID on corporate performance of firms in Muslim countries.

III. EMPIRICAL STRATEGY

3.1. Methodology

There are three panel methods, namely (i) pooled ordinary least squares-POLS, (ii) fixed effects-FE, and (iii) random effects-RE (Greene, 2017). To overcome unobserved heterogeneity, previous research uses FE when employing smaller periods-t and bigger observations-N (Song and Lee, 2012; Tekin and Polat, 2021b). Diagnostic tests like F test, Lagrange Multiplier-LM test, Akaike Information Criterion-AIC, Bayesian Information Criterion-BIC, and Hausman test help to choose the most appropriate panel model for the dataset. Since We compare POLS, FE, and RE as shown in Table A4. As smaller AIC and BIC indicate the better model, FE is preferred to the POLS. However, Hausman test results mention that RE is preferable to FE. Therefore, we use RE in our regression analyses.

We examine the impact of the ESG combined score and its components (E, S, and G) on performance measures (ROA and ROE) in the context of market turmoil. Thus, we include period dummies: the global financial crisis 2008-2009 (GFC) and COVID-19 (COV) in the empirical models. To understand the joint impact of corporate sustainability-CS scores (ESG, E, S, and G) and exogenous shocks (GFC and COV) on corporate performance, we use interaction terms. The full empirical models are as follows:

$$ROA_{i,t} = \beta_0 + \beta_1 CS_{i,t} + \beta_2 \left(CS_{i,t} x COV_t\right) + \beta_3 \left(CS_{i,t} x GFC_t\right) + \beta_4 COV_t + \beta_5 GFC_t + \beta_6 SIZE_{i,t} + \beta_7 LEV_{i,t} + \beta_8 R\&D_{i,t} + \beta_9 RISK_{i,t} + \sum \text{INDUSTRY} + v_{i,t} + \varepsilon_{i,t} \quad (1)$$

$$ROE_{i,t} = \beta_0 + \beta_1 CS_{i,t} + \beta_2 \left(CS_{i,t} x COV_t\right) + \beta_3 \left(CS_{i,t} x GFC_t\right) + \beta_4 COV_t + \beta_5 GFC_t + \beta_6 SIZE_{i,t} + \beta_7 LEV_{i,t} + \beta_8 R\&D_{i,t} + \beta_9 RISK_{i,t} + \sum \text{INDUSTRY} + v_{i,t} + \varepsilon_{i,t} \quad (2)$$

where,

$ROA_{i,t}$: Return on total assets for the firm i at time t,
$ROE_{i,t}$: Return on total equity for the firm i at time t,
$CS_{i,t}$: CS scores (ESG combined, E, S, and G) for the firm i at time t,
$CS_{i,t} \times COV_t$: Interaction between corporate sustainability scores and COV,
$CS_{i,t} \times GFC_t$: Interaction between corporate sustainability scores and GFC,
COV_t : COV equals 1 for years 2020-2021, otherwise 0,
GFC_t : GFC equals 1 for years 2008-2009, otherwise 0,
$SIZE_{i,t}$: Firm size for the firm i at time t,
$LEV_{i,t}$: Leverage for the firm i at time t,
$R\&D_{i,t}$: Research and development expense for the firm i at time t,
$RISK_{i,t}$: Firm risk for the firm i at time t,
$\sum INDUSTRY$: Set of dummies for eight industries,
$V_{i,t}$: Controlling the RE for unobservable factors,
$\varepsilon_{i,t}$: The error term.

3.2. Data

This study focuses on the relationship between corporate sustainability and firm performance of non-financial firms in 11 Muslim countries, which are Bahrain, Egypt, Indonesia, Kuwait, Malaysia, Morocco, Oman, Qatar, Saudi Arabia, Turkiye, United Arab Emirates-UAE. Therefore, we retrieve the annual ESG data and other firm-level variables from ASSET4–ESG and Datastream by Thomson Reuters Eikon for the period 2004-2021. Since financial firms have strict accounting structures and liquidity terms, we exclude them from the sample (La Porta et al., 2000; Song and Lee, 2012; Coldbeck and Ozkan, 2018; Tekin, 2020, 2021; Tekin and Polat, 2021a; Atif et al., 2022). Table 1 presents the sample composition comprising 1,546 firm-years. While UAE (409) and Malaysia (384) have the highest observation numbers in the sample, Oman (12) and Bahrain (13) have the lowest observation numbers. Industrial and consumer staples firms dominate the sample with 322 and 318 observations, respectively. Technology firms have 9 firm-years and energy firms follow with 88 firm-years. Moreover, we put an extra table into Appendix (Table A1) to show how we construct the firm- and country-level ESG data.

Table 1.
Sample Composition

Country	No. observations	Year	No. observations
Bahrain	13	2004	3
Egypt	40	2005	7
Indonesia	256	2006	16
Kuwait	41	2007	23
Malaysia	384	2008	45
Morocco	14	2009	49
Oman	12	2010	76
Qatar	47	2011	84
Saudi Arabia	96	2012	87

Table 1.
Sample Composition (Continued)

Country	No. observations	Year	No. observations
Turkiye	234	2013	92
United Arab Emirates-UAE	409	2014	99
Industry	**No. observations**	2015	113
Basic Materials	135	2016	115
Consumer Discretionary	264	2017	124
Consumer Staples	318	2018	146
Energy	128	2019	171
Health Care	88	2020	197
Industrials	322	2021	99
Technology	9	TOTAL	1.546
Telecommunication	282		

Source: Thomson Reuters Datastream & ESG

Regarding dependent variables, we utilize two corporate performance measures: (i) operational performance (proxied by Return-on-Assets) and (ii) financial performance (proxied by Return-on-Equity) as the literature does (Duque-Grisales & Aguilera-Caracuel, 2021).

As the proxy of corporate sustainability-CS, we employ pillars of Environment-E, Social-S, Governance-G, and their combined score-ESG (Al Hawaj & Buallay, 2022). To specify the effect of CS measures during the global financial crisis-GFC and the COVID pandemic-COV, we interact the combined ESG and its pillars with GFC and COV.

We also include firm size-SIZE, leverage-LEV, R and D expenses-R&D, and firm risk-RISK as control variables (Velte, 2017). Table 2 represents the variable definition. We present summary statistics in Table A2 and correlation matrices in Table A3. Since the variance inflation factor (VIF) values are smaller than five, there is no multicollinearity problem across the explanatory variables in the whole sample period and subperiods.

Table 2.
Variable Measurement

Variables	Symbols	Measurements
Dependent		
Operational performance	ROA	Net income / Total assets
Financial performance	ROE	Net income / Total equity
Explanatory		
ESG combined score	ESG	Combined score of environmental, social and governance pillars (between 0 and 1)
Environment score	E	Environment pillar includes living and non-living natural systems (between 0 and 1)
Social score	S	Social pillar includes workforce, humanity and responsibility (between 0 and 1)

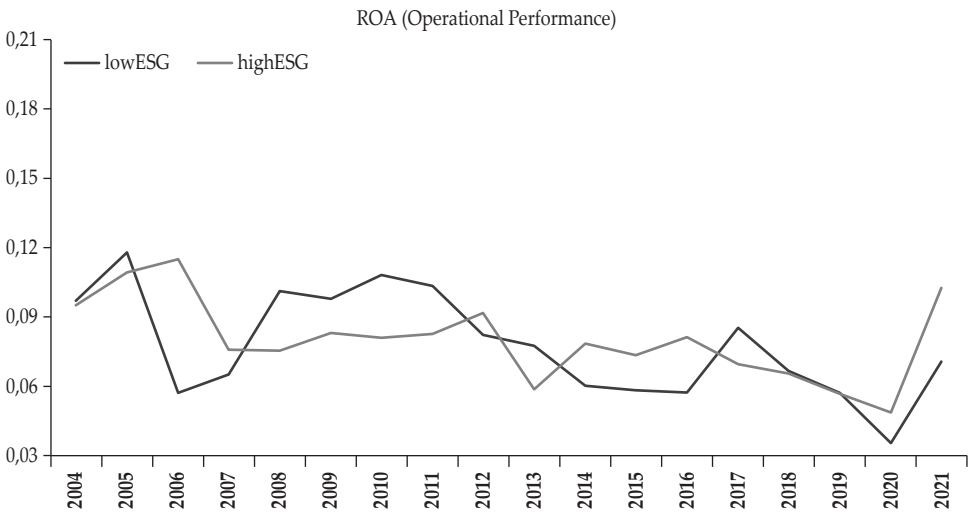
Table 2.
Variable Measurement (Continued)

Variables	Symbols	Measurements
Governance score	G	Governance pillar includes board and executive information (between 0 and 1)
Global financial crisis	GFC	Equals 1 for the years 2008 and 2009, otherwise 0
Covid	COV	Equals 1 for the years 2020 and 2021, otherwise 0
Control		
Firm size	SIZE	The annual logarithm of total assets
Leverage	LEV	Total debt / Total assets
Research and Development	R&D	R-D expenses / Total assets
Firm risk	RISK	Annual variance of earnings before interest and tax

Source: Thomson Reuters Datastream & ESG

IV. EMPIRICAL RESULTS

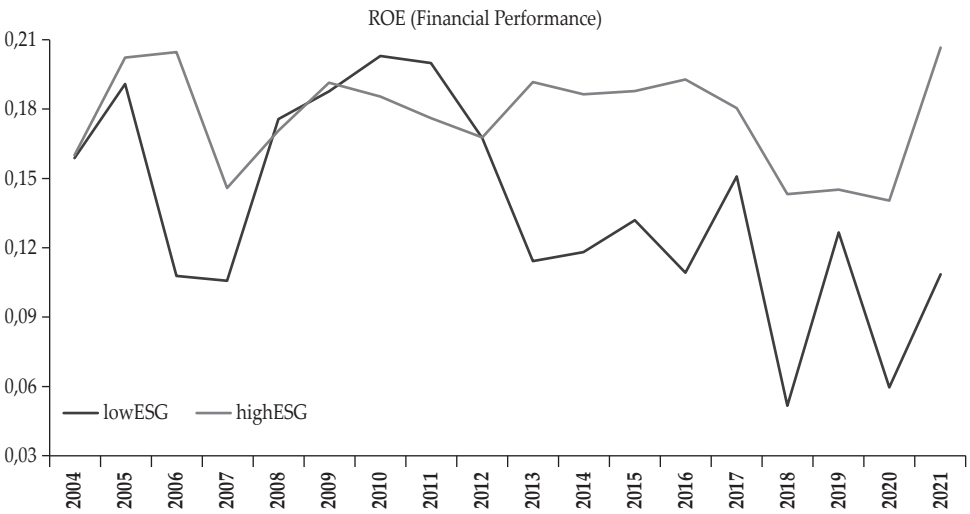
First, we present the trend on corporate performance from 2004 to 2021 across the ESG level in Figure 1. Corporate performance fluctuates over time but tends to increase after an exogenous shock. Specifically, corporate performance of firms with lower ESG scores drops more than those with higher ESG in 2020 with the outbreak of the pandemic. However, all firms sharply increase their corporate performance in 2021, the second year of the pandemic. Therefore, firms may learn from the crisis and turn the crisis into opportunity.



Source: Thomson Reuters Datastream & ESG

Note: This figure presents the operational and financial performances between 2004 and 2021 across high and low ESG level, which is above and below median of the combined ESG score by year.

Figure 1.
Trends on Performance Measures Across ESG Level



Source: Thomson Reuters Datastream & ESG

Note: This figure presents the operational and financial performances between 2004 and 2021 across high and low ESG level, which is above and below median of the combined ESG score by year.

Figure 1.
Trends on Performance Measures Across ESG Level (Continued)

4.1. Univariate Analyses

We split the sample across four sub-periods: 2004-2007 (pre-GFC), 2008-2009 (GFC), 2010-2019 (post-GFC), and 2020-2021 (COV) to understand how performance measures differ cross periods. Furthermore, we divide the sample into two parts, which are high- and low-ESG using the median of the combined ESG score. Their average performance is presented in Table 3.

Firms with lower ESG experience significant reduction in the ROA (ROE) from GFC to COV and from post-GFC to COV. Namely, corporate performances of firms with lower ESG change after the GFC and during the COV. However, the performance of firms with higher ESG has not significantly changed over the periods. Also, ROA does not differ significantly across ESG level, and vice versa for ROE. Especially, firms with higher ESG have higher ROE during post-GFC and COV periods.

Table 3.
Means and Differences of Performance Measures by ESG Level and Periods

Panel A. Operational performance (ROA)								
	2004-2007	**2008-2009**	**2010-2019**	**2020-2021**	**Differences**			
	(1)	**(2)**	**(3)**	**(4)**	**(1) - (3)**	**(2) - (4)**	**(1) - (2)**	**(3) - (4)**
Lower ESG	0.080	0.099	0.073	0.047	0.007	0.052***	-0.019	0.026***
Higher ESG	0.098	0.080	0.072	0.067	0.026	0.013	0.018	0.005
Differences	-0.018	0.019	0.001	-0.020				
Panel B. Financial performance (ROE)								
	2004-2007	**2008-2009**	**2010-2019**	**2020-2021**	**Differences**			
	(5)	**(6)**	**(7)**	**(8)**	**(5) - (7)**	**(6) - (8)**	**(5) - (6)**	**(7) - (8)**
Lower ESG	0.134	0.182	0.130	0.076	0.004	0.106**	-0.048	0.054***
Higher ESG	0.179	0.182	0.172	0.162	0.007	0.020	-0.003	0.010
Differences	-0.045	0.000	-0.042***	-0.086***				

Note: This table represents the mean and differences of performance measures across the ESG level (below and above median of ESG combined score) and periods (2004-2007, 2008-2009, 2010-2019, 2020-2021). Variables are defined in Table 2. *** and ** represent significance at 1% and 5%.

4.2. Multivariate Analyses

We analyze how the impact of combined ESG and its pillars on performance measures differ during the GFC and COV as presented in Table 4. All models, excluding the model 4, show that corporate sustainability-CS scores do not have an impact on corporate performance. Next, corporate performances of firms decline during the COV, mainly at the beginning of the pandemic. However, the interaction terms of CS measures with COV have positive effect on both ROA and ROE. In other words, firms with higher CS scores have higher operational and financial performance in the COVID era, which is in line with the literature (Hwang et al., 2021). Considering the means of CS scores in Table 3, firms with higher CS experience lower reduction in their performance as compared to those with lower CS. Consequently, firms with higher CS scores are less affected during the market turmoil. Moreover, neither GFC nor CS x GFC is significant. Hence, CS and GFC have no meaningful impact on firm performance.

Table 4.
The Impact of ESG, COVID-19, and GFC on Corporate Performance

Panel A. Operational performance (ROA)								
	(1) ESG		**(2) E**		**(3) S**		**(4) G**	
CS x COV	0.057***	(0.021)	0.030*	(0.016)	0.044**	(0.017)	0.045**	(0.020)
CS x GFC	0.001	(0.030)	-0.004	(0.026)	0.003	(0.025)	0.004	(0.030)
CS	0.010	(0.011)	0.004	(0.009)	0.004	(0.009)	0.018*	(0.010)
COV	-0.050***	(0.010)	-0.037***	(0.008)	-0.045***	(0.009)	-0.045***	(0.010)
GFC	0.018	(0.014)	0.019*	(0.011)	0.017	(0.011)	0.016	(0.016)
SIZE	0.004***	(0.001)	0.004**	(0.001)	0.004***	(0.001)	0.003**	(0.001)
LEV	-0.238***	(0.016)	-0.236***	(0.016)	-0.237***	(0.016)	-0.237***	(0.016)
R&D	0.374	(0.386)	0.362	(0.387)	0.379	(0.387)	0.355	(0.385)
RISK	0.363***	(0.019)	0.366***	(0.019)	0.364***	(0.019)	0.365***	(0.019)
Constant	0.259***	(0.042)	0.263***	(0.042)	0.256***	(0.042)	0.265***	(0.042)
Industry FE	Yes		Yes		Yes		Yes	
R-squared	0.456		0.455		0.456		0.456	
Observations	1,546		1,546		1,546		1,546	
Panel B. Financial performance (ROE)								
	(5) ESG		**(6) E**		**(7) S**		**(8) G**	
CS x COV	0.184***	(0.061)	0.110**	(0.047)	0.125**	(0.049)	0.143**	(0.057)
CS x GFC	0.078	(0.085)	0.047	(0.075)	0.083	(0.071)	0.048	(0.085)
CS	0.032	(0.030)	-0.003	(0.024)	0.018	(0.025)	0.047	(0.029)
COV	-0.128***	(0.029)	-0.090***	(0.022)	-0.103***	(0.025)	-0.111***	(0.029)
GFC	-0.001	(0.039)	0.013	(0.032)	-0.000	(0.033)	0.007	(0.046)
SIZE	0.006*	(0.004)	0.006	(0.004)	0.006*	(0.004)	0.006	(0.004)
LEV	-0.271***	(0.044)	-0.265***	(0.044)	-0.267***	(0.044)	-0.268***	(0.044)
R&D	0.703	(1.093)	0.628	(1.096)	0.720	(1.094)	0.635	(1.093)
RISK	0.459***	(0.053)	0.472***	(0.053)	0.466***	(0.053)	0.463***	(0.053)
Constant	0.384***	(0.113)	0.404***	(0.114)	0.374***	(0.114)	0.404***	(0.113)
Industry FE	Yes		Yes		Yes		Yes	
R-squared	0.154		0.153		0.153		0.156	
Observations	1,546		1,546		1,546		1,546	

Note: This table represents the regression analyses to investigate the impact of corporate sustainability scores by employing the ESG combined and its pillars (E, S, G) on corporate performance, including the global financial crisis (GFC) and the COVID (COV) periods. Variables are defined in Table 2. Standard errors are reported by parentheses. ***, **, and * represent significance at 1%, 5%, and 10%.

Regarding the control variables, firm size and leverage are positively and negatively related to corporate performance, respectively, which aligns with the literature (Velte, 2017; Al Hawaj & Buallay, 2022). Contrary to the previous research (Velte, 2017), risky firms have higher performance. On the other hand, R&D expenses have no meaningful impact on the corporate performances of non-financial ESG-certified firms in Muslim countries.

4.3. Further Analyses

We retest our regression analyses across eleven countries by reporting industry dummies in Table 5. Since the sample sizes of some countries like Bahrain, Egypt, Kuwait, Morocco, Oman, and Qatar are small, some variables in the models are omitted as we cannot report them. For brevity, we discuss only our main explanatory variables, which are CS x COV, CS x GFC, CS, COV, and GFC. First, CS is positively significant only in models 11 and 23 for Turkish firms. Firms with higher CS have higher ROA-operational performance in Turkiye. Also, in model 19, Moroccan firms with lower CS have higher ROE-financial performance.

Table 5.
ESG, COVID-19, GFC and Corporate Performance by Country

Panel A. Operational performance (ROA)						
	Whole Sample		**Bahrain**		**Egypt**	
	(1)		**(2)**		**(3)**	
CS x COV	0.001***	(0.030)	0.178	(0.304)	0.002	(0.324)
CS x GFC	0.010	(0.011)			0.046	(1.669)
CS	0.057	(0.021)	-0.080	(0.146)	-0.072	(0.141)
COV	-0.050***	(0.010)	-0.132	(0.092)	0.031	(0.186)
GFC	0.018	(0.014)			0.034	(0.768)
SIZE	0.004***	(0.001)	-0.063*	(0.035)	0.020	(0.074)
LEV	-0.238***	(0.016)	-0.388*	(0.204)	-0.216*	(0.129)
R&D	0.374	(0.386)				
RISK	0.363***	(0.019)	0.405	(0.305)	0.616***	(0.234)
Industry Controls						
Basic Materials	-0.158***	(0.039)				
Consumer Discretionary	-0.117***	(0.038)	-0.261**	(0.121)	0.028	(0.142)
Consumer Staples	-0.120***	(0.038)			0.121	(0.113)
Energy	-0.159***	(0.041)				
Health Care	-0.115***	(0.040)				
Industrials	-0.175***	(0.038)				
Telecommunication	-0.147***	(0.038)			-0.071	(0.080)
Constant	0.259***	(0.042)	1.172**	(0.514)	-0.142	(1.230)
R-squared	0.456		0.949		0.456	0.134
Observations	1.546		13		40	

Table 5.
ESG, COVID-19, GFC and Corporate Performance by Country (Continued)

	Indonesia		Kuwait		Malaysia	
	(4)		(5)		(6)	
CS x COV	0.011	(0.067)	0.006	(0.029)	0.003	(0.049)
CS x GFC	-0.013	(0.070)	-0.239	(0.229)	-0.262*	(0.149)
CS	0.036	(0.022)	-0.007	(0.013)	0.030	(0.027)
COV	-0.023	(0.023)	-0.023*	(0.014)	-0.022	(0.028)
GFC	-0.005	(0.030)	0.178	(0.163)	0.055	(0.040)
SIZE	-0.043***	(0.008)	-0.027***	(0.003)	-0.046***	(0.009)
LEV	-0.299***	(0.032)	-0.067***	(0.015)	-0.251***	(0.036)
R&D	0.523	(1.212)			0.367	(4.366)
RISK	0.385***	(0.035)	0.094	(0.119)	0.545***	(0.039)
Industry Controls						
Basic Materials	0.138*	(0.083)	0.436***	(0.038)	0.022	(0.088)
Consumer Discretionary	0.228***	(0.083)			0.018	(0.070)
Consumer Staples	0.271***	(0.081)			0.078	(0.069)
Energy	0.162*	(0.082)			-0.092	(0.076)
Health Care	0.143	(0.109)			0.040	(0.072)
Industrials	0.181**	(0.088)	0.451***	(0.040)	-0.013	(0.072)
Telecommunication	0.203**	(0.082)	0.502***	(0.042)	0.104	(0.078)
Constant	1.069***	(0.197)			0.947***	(0.140)
R-squared	0.623		0.583		0.569	
Observations	256		41		384	
Panel A. Operational performance (ROA)						
	Morocco		**Oman**		**Qatar**	
	(7)		**(8)**		**(9)**	
CS x COV			-0.197	(0.132)	-0.105	(0.071)
CS x GFC	-0.621	(0.438)				
CS	-0.276***	(0.077)	0.082	(0.081)	0.071	(0.066)
COV	0.028	(0.025)	0.037	(0.051)	0.029	(0.026)
GFC	0.236	(0.173)				
SIZE	0.148	(0.095)	-0.023	(0.024)	0.008	(0.007)
LEV	-0.810***	(0.247)	-0.046	(0.240)	-0.046	(0.038)
R&D						
RISK	0.108	(0.147)	0.250	(0.247)	0.185	(0.144)
Industry Controls						
Basic Materials						
Consumer Discretionary					0.009	(0.043)
Consumer Staples	-1.776	(1.359)			0.066	(0.058)
Energy					-0.009	(0.043)
Health Care					-0.000	(0.041)
Industrials					-0.016	(0.033)
Telecommunication	-2.213	(1.675)	0.409	(0.318)	-0.057*	(0.033)
Constant					-0.070	(0.113)
R-squared	0.986		0.900		0.135	
Observations	14		12		47	

Table 5.
ESG, COVID-19, GFC and Corporate Performance by Country (Continued)

	Saudi Arabia		Turkiye		UAE	
	(10)		(11)		(12)	
CS x COV	0.060	(0.047)	-0.012	(0.042)	0.205***	(0.050)
CS x GFC	0.100	(0.259)	-0.092**	(0.048)	0.037	(0.062)
CS	-0.032	(0.030)	0.042**	(0.019)	-0.024	(0.021)
COV	-0.053***	(0.020)	0.013	(0.020)	0.117***	(0.026)
GFC	0.027	(0.042)	0.055**	(0.025)	0.001	(0.031)
SIZE	-0.001	(0.005)	-0.013***	(0.005)	0.010**	(0.004)
LEV	-0.270***	(0.034)	-0.147***	(0.028)	-0.240***	(0.031)
R&D	-3.142	(2.379)	0.074	(0.280)	5.621	(7.319)
RISK	0.241***	(0.067)	0.275***	(0.043)	0.282***	(0.040)
Industry Controls						
Basic Materials	0.197**	(0.090)	0.049	(0.070)		
Consumer Discretionary	0.432***	(0.085)	0.014	(0.068)	-0.343*	(0.199)
Consumer Staples	0.210**	(0.088)	-0.037	(0.068)	-0.353*	(0.199)
Energy	0.427***	(0.113)	0.023	(0.086)	-0.387*	(0.200)
Health Care	0.275***	(0.085)	-0.056	(0.073)	-0.320*	(0.196)
Industrials	0.258***	(0.098)	0.014	(0.070)	-0.358*	(0.199)
Telecommunication	0.183**	(0.093)	-0.009	(0.073)	-0.345*	(0.200)
Constant			0.324***	(0.091)	0.332	(0.205)
R-squared	0.498		0.361		0.432	
Observations	96		234		409	
Panel B. Financial performance (ROE)						
	Whole Sample		**Bahrain**		**Egypt**	
	(13)		(14)		(15)	
CS x COV	0.184***	(0.061)	0.231	(0.324)	0.394	(1.011)
CS x GFC	0.078	(0.084)			1.675	(5.214)
CS	0.032	(0.030)	-0.099	(0.155)	-0.715	(0.439)
COV	-0.128***	(0.029)	-0.163*	(0.098)	-0.132	(0.583)
GFC	-0.001	(0.039)			-0.513	(2.401)
SIZE	0.006*	(0.004)	-0.077**	(0.037)	0.062	(0.230)
LEV	-0.271***	(0.044)	-0.376*	(0.217)	0.967**	(0.403)
R&D	0.703	(1.093)				
RISK	0.459***	(0.053)	0.463	(0.325)	-0.986	(0.731)
Industry Controls						
Basic Materials	-0.275**	(0.106)				
Consumer Discretionary	-0.172*	(0.103)	-0.349***	(0.129)	0.317	(0.445)
Consumer Staples	-0.161	(0.102)			1.032***	(0.354)
Energy	-0.269**	(0.110)				
Health Care	-0.202*	(0.109)				
Industrials	-0.280***	(0.103)				
Telecommunication	-0.191*	(0.104)			0.442*	(0.250)
Constant	0.384***	(0.113)	1.447***	(0.548)	-1.488	(3.842)
R-squared	0.154		0.956		0.302	
Observations	1,546		13		40	

Table 5.
ESG, COVID-19, GFC and Corporate Performance by Country (Continued)

	Indonesia		Kuwait		Malaysia	
	(16)		(17)		(18)	
CS x COV	-0.009	(0.348)	0.100	(0.105)	0.347***	(0.111)
CS x GFC	-0.250	(0.390)	-0.635	(0.843)	-0.947***	(0.337)
CS	0.195*	(0.115)	-0.070	(0.047)	-0.007	(0.061)
COV	-0.088	(0.121)	-0.098**	(0.050)	-0.201***	(0.064)
GFC	0.145	(0.168)	0.452	(0.598)	0.166*	(0.091)
SIZE	-0.060**	(0.023)	-0.043***	(0.010)	-0.115***	(0.021)
LEV	-0.307***	(0.118)	-0.006	(0.056)	-0.131	(0.081)
R&D	-3.803	(6.391)			-2.722	(9.895)
RISK	-0.178	(0.164)	-0.286	(0.438)	0.598***	(0.089)
Industry Controls						
Basic Materials	0.057	(0.287)	0.695***	(0.140)	0.183	(0.207)
Consumer Discretionary	0.198	(0.289)			0.165	(0.165)
Consumer Staples	0.234	(0.285)			0.306*	(0.162)
Energy	0.118	(0.286)			-0.071	(0.180)
Health Care	0.198	(0.387)			0.162	(0.170)
Industrials	0.153	(0.297)	0.694***	(0.148)	0.121	(0.170)
Telecommunication	0.233	(0.291)	0.804***	(0.154)	0.441**	(0.183)
Constant	1.489**	(0.599)			1.982***	(0.325)
R-squared	0.056		0.311		0.231	
Observations	256		41		384	
Panel B. Financial performance (ROE)						
	Morocco		**Oman**		**Qatar**	
	(19)		**(20)**		**(21)**	
CS x COV			-0.239	(0.199)	-0.128	(0.159)
CS x GFC	0.670	(1.689)				
CS	-0.593**	(0.297)	0.016	(0.122)	0.081	(0.142)
COV	0.065	(0.096)	0.031	(0.077)	-0.001	(0.057)
GFC	-0.324	(0.667)				
SIZE	0.258	(0.368)	-0.031	(0.037)	0.022	(0.014)
LEV	-1.030	(0.953)	0.262	(0.363)	0.053	(0.076)
R&D						
RISK	0.167	(0.567)	0.484	(0.374)	0.266	(0.293)
Industry Controls						
Basic Materials						
Consumer Discretionary					0.064	(0.085)
Consumer Staples	-3.105	(5.245)			0.154	(0.117)
Energy					-0.046	(0.082)
Health Care					0.019	(0.079)
Industrials					-0.012	(0.066)
Telecommunication	-3.600	(6.464)	0.603	(0.480)	-0.097	(0.061)
Constant					-0.254	(0.221)
R-squared	0.877		0.792		0.057	
Observations	14		12		47	

Table 5.
ESG, COVID-19, GFC and Corporate Performance by Country (Continued)

	Saudi Arabia		Turkiye		UAE	
	(22)		**(23)**		**(24)**	
CS x COV	0.113	(0.101)	0.047	(0.131)	0.327***	(0.104)
CS x GFC	-0.024	(0.560)	-0.171	(0.147)	0.247*	(0.128)
CS	-0.078	(0.066)	0.113*	(0.058)	-0.032	(0.044)
COV	-0.084*	(0.043)	0.021	(0.064)	-0.216***	(0.053)
GFC	0.125	(0.090)	0.095	(0.076)	-0.075	(0.064)
SIZE	0.007	(0.013)	-0.028*	(0.015)	0.026***	(0.009)
LEV	-0.366***	(0.078)	-0.121	(0.091)	-0.456***	(0.064)
R&D	-7.395	(5.342)	-0.097	(0.864)	9.565	(9.141)
RISK	0.488***	(0.146)	0.916***	(0.135)	0.598***	(0.084)
Industry Controls						
Basic Materials	0.154	(0.217)	-0.024	(0.315)		
Consumer Discretionary	0.746***	(0.205)	-0.005	(0.302)	-0.773*	(0.412)
Consumer Staples	0.227	(0.211)	-0.131	(0.301)	-0.766*	(0.411)
Energy	0.518*	(0.272)	0.044	(0.397)	-0.846**	(0.413)
Health Care	0.323	(0.203)	-0.160	(0.329)	-0.742*	(0.406)
Industrials	0.271	(0.232)	-0.011	(0.311)	-0.782*	(0.412)
Telecommunication	0.147	(0.224)	-0.171	(0.329)	-0.742*	(0.414)
Constant			0.729**	(0.356)	0.609	(0.424)
R-squared	0.324		0.239		0.403	
Observations	96		234		409	

Note: This table presents the regression analyses across the whole sample and 11 countries for Return-on-Assets-ROA in Panel A and Return-on-Equity-ROE in Panel B. Industry dummies reported. Variables are described in Table 2. ***, ** and * signify significance at 1%, 5% and 10%.

In times of the COV, firms in Kuwait and Saudi Arabia have lower operational performance-ROA and vice versa for those in UAE. Nevertheless, firms in Bahrain, Kuwait, Malaysia, Saudi Arabia, and UAE experience lower financial performance-ROE. In times of the GFC, while Turkish firms have higher ROA, Malaysian firms observe higher ROE.

Regarding the CS x COV, firms with higher CS in UAE (Malaysia and UAE) have higher ROA (ROE). Considering the CS x GFC, Malaysian and Turkish firms with lower CS have higher ROA. Also, firms with lower (higher) in Malaysia (UAE) have higher ROE. In sum, the role of CS on performance measures varies across countries and during market turmoil.

We examine the impact of ESG, COV, and GFC on both performance measures across seven industries in Table 6. However, CS is positively significant with ROA (ROE) for basic materials and consumer staples (basic materials) firms. During the pandemic, not only do firms in all industries, excluding basic materials, consumer staples, and telecommunication have lower ROA, but also consumer discretionary and industrial firms have lower ROE. In times of the GFC, just consumer staples firms have lower ROE.

Table 6.
ESG, COVID-19, GFC and Corporate Performance by Industry

Panel A. Operational performance (ROA)								
	Basic Materials		**Consumer Discretionary**		**Consumer Staples**		**Health Care**	
	(1)		**(2)**		**(3)**		**(4)**	
CS x COV	-0.029	(0.075)	0.031	(0.057)	-0.001	(0.061)	0.160**	(0.075)
CS x GFC	-0.068	(0.268)	0.032	(0.057)	0.021	(0.120)	-0.003	(0.137)
CS	0.073**	(0.036)	-0.011	(0.024)	0.088**	(0.034)	-0.020	(0.042)
COV	-0.015	(0.033)	-0.051*	(0.026)	-0.018	(0.031)	-0.097***	(0.030)
GFC	0.054	(0.070)	-0.020	(0.033)	0.025	(0.041)	0.031	(0.063)
SIZE	-0.003	(0.003)	0.002	(0.003)	0.006***	(0.002)	0.009***	(0.003)
LEV	-0.185***	(0.038)	-0.219***	(0.034)	-0.254***	(0.044)	-0.358***	(0.045)
R&D	1.995	(1.510)	1.250	(1.417)	-5.530	(5.682)	69.642***	(9.990)
RISK	0.120*	(0.063)	0.296***	(0.055)	-0.144***	(0.047)	0.348***	(0.047)
Constant	0.158***	(0.052)	0.163***	(0.050)	0.001	(0.041)	0.022	(0.065)
R-squared	0.178		0.513		0.017		0.614	
Observations	135		264		318		128	
	Energy		**Industrials**		**Telecommunication**			
	(5)		**(6)**		**(7)**			
CS x COV	0.214**	(0.100)	0.044	(0.037)	-0.024	(0.048)		
CS x GFC	-0.456	(0.506)	0.005	(0.046)	-0.053	(0.070)		
CS	0.030	(0.061)	-0.025	(0.016)	0.034	(0.022)		
COV	-0.106**	(0.047)	-0.042**	(0.018)	-0.007	(0.024)		
GFC	0.249	(0.252)	0.033	(0.023)	0.040	(0.028)		
SIZE	-0.000	(0.011)	0.001	(0.002)	-0.001	(0.003)		
LEV	-0.380***	(0.086)	-0.181***	(0.026)	-0.128***	(0.037)		
R&D	0.355	(1.841)	0.102	(0.330)	-17.837*	(9.310)		
RISK	0.632***	(0.057)	0.459***	(0.033)	0.274***	(0.064)		
Constant	0.241	(0.177)	0.134***	(0.038)	0.132**	(0.060)		
R-squared	0.720		0.570		0.216			
Observations	88		322		282			
Panel B. Financial performance (ROE)								
	Basic Materials		**Consumer Discretionary**		**Consumer Staples**		**Health Care**	
	(8)		**(9)**		**(10)**		**(11)**	
CS x COV	-0.091	(0.193)	0.174	(0.205)	0.173*	(0.096)	0.349	(0.304)
CS x GFC	-0.547	(0.726)	0.271	(0.224)	0.381**	(0.184)	-0.166	(0.573)
CS	0.135*	(0.081)	-0.027	(0.078)	0.020	(0.057)	-0.099	(0.144)
COV	0.012	(0.086)	-0.162*	(0.092)	-0.074	(0.049)	-0.134	(0.124)
GFC	0.177	(0.188)	-0.182	(0.131)	-0.112*	(0.062)	0.112	(0.261)
SIZE	-0.004	(0.004)	0.004	(0.005)	0.013	(0.010)	0.013**	(0.006)
LEV	-0.068	(0.068)	-0.177*	(0.091)	-0.426***	(0.090)	-0.146	(0.109)
R&D	0.997	(3.395)	5.906**	(2.497)	-5.313	(9.374)	107.298*	(9.973)
RISK	-0.218	(0.137)	-0.500***	(0.161)	0.760***	(0.095)	-0.111	(0.182)
Constant	0.117	(0.091)	0.102	(0.092)	0.171	(0.173)	-0.121	(0.135)
R-squared	0.127		0.107		0.083		0.111	
Observations	135		264		318		128	

Table 6.
ESG, COVID-19, GFC and Corporate Performance by Industry (Continued)

Panel B. Financial performance (ROE)						
	Energy		Industrials		Telecommunication	
	(12)		(13)		(14)	
CS x COV	0.185	(0.189)	0.109	(0.102)	-0.024	(0.137)
CS x GFC	-0.686	(0.984)	0.163	(0.128)	-0.184	(0.200)
CS	0.124	(0.116)	-0.027	(0.044)	-0.038	(0.063)
COV	-0.084	(0.087)	-0.144***	(0.051)	-0.055	(0.068)
GFC	0.392	(0.489)	0.007	(0.065)	-0.084	(0.081)
SIZE	-0.004	(0.019)	0.003	(0.006)	-0.010	(0.010)
LEV	-0.498***	(0.152)	-0.373***	(0.070)	-0.392***	(0.108)
R&D	1.224	(3.443)	0.280	(0.914)	-100.929***	(9.001)
RISK	0.846***	(0.109)	0.811***	(0.093)	-0.208	(0.186)
Constant	0.355	(0.298)	0.238**	(0.094)	-0.278	(0.176)
R-squared	0.354		0.129		0.037	
Observations	88		322		282	

Note: This table presents the regression analyses across seven industries for Return-on-Assets-ROA in Panel A and Return-on-Equity-ROE in Panel B. Variables are described in Table 2. ***, ** and * signify significance at 1%, 5% and 10%.

Assessing the joint impact of CS with COV and GFC, the CS x COV is positively associated with the ROA of health care and energy firms. CS x COV and CS x GFC are positively significant in the ROE equation for consumer staples firms. Overall, the role of ESG scores differs depending on the industry, exogenous shock, and performance measures.

V. CONCLUDING REMARKS

We assess how corporate sustainability measures (ESG combined score, E, S, and G) impact the corporate performance during the pandemic and the global financial crisis. We apply random effect panel model to a sample of 1,546 firm-year observations from eleven Muslim countries over the period 2004-2021.

Firms with higher ESG scores and components have higher operational and financial performance in the pandemic era. More Specifically, the performance of firms with higher ESG are less affected by the pandemic. This result holds particularly for firms in the United Arab Emirates (Malaysia and UAE) for operational (financial) performance. Also, health care and energy (consumer staples) firms with higher ESG have higher operational (financial) performance during the COVID period. While larger and risky firms have higher firm performance, low leveraged firms have higher performance.

The implications of empirical findings are manifold. First, managers/owners should be cognizant of the exogenous shocks and their type (e.g., financial, health) in shaping their firms' performance. Stakeholders should consider the level of firms' sustainable investing policy, especially in the time of recessions. Researchers and practitioners should extend the literature by incorporating more countries and including more episodes of exogenous shocks to generalize these findings.

Policymakers should have different packages to support firms depending on their industry during exogenous shocks. As accessing finance becomes costly in crisis times, Central Banks in Muslim countries, Bank Indonesia in particular, should consider which firms follow Islamic principles (e.g., interest sensitivity) and support them more such that they can compete with other companies in order to reach their financial sustainability and performance targets.

Due to data availability, the study has a limitation in that only eleven countries represent Muslim countries in our sample. Unlisted companies could have ESG scores on the Thomson Reuters Datastream database. Obtaining data from other sources (e.g., Bloomberg) might help better capture the relationship between ESG scores and financial performance.

REFERENCES

Al Hawaj, A. Y., & Buallay, A. M. (2022). A worldwide sectorial analysis of sustainability reporting and its impact on firm performance. *Journal of Sustainable Finance & Investment*, *12*(1), 62–86.

Alareeni, B. A., & Hamdan, A. (2020). ESG impact on performance of US S&P 500-listed firms. *Corporate Governance: The International Journal of Business in Society*, *20*(7), 1409–1428.

Almeyda, R., & Darmansya, A. (2019). The influence of environmental, social, and governance (ESG) disclosure on firm financial performance. *IPTEK Journal of Proceedings Series, 0*(5), 278-289.

Atan, R., Alam, Md. M., Said, J., & Zamri, M. (2018). The impacts of environmental, social, and governance factors on firm performance: Panel study of Malaysian companies. *Management of Environmental Quality: An International Journal, 29*(2), 182–194.

Atif, M., Liu, B., & Nadarajah, S. (2022). The effect of corporate environmental, social and governance disclosure on cash holdings: Life-cycle perspective. *Business Strategy and the Environment,* 31, 2193-2212. https://doi.org/10.1002/bse.3016.

Bashir, M. F., Benjiang, M. A., & Shahzad, L. (2020). A brief review of socio-economic and environmental impact of Covid-19. *Air Quality, Atmosphere & Health, 13*(12), 1403–1409.

Beloskar, V. D., & Rao, S. V. D. N. (2022). Did ESG save the day? Evidence from India during the COVID-19 crisis. *Asia-Pacific Financial Markets.* https://doi.org/10.1007/s10690-022-09369-5

Berry, T. C., & Junkus, J. C. (2013). Socially responsible investing: An investor perspective. *Journal of Business Ethics*, *112*(4), 707–720.

Bloomberg. (2021). Global ESG 2021 Midyear Outlook. https://www.bloomberg.com/professional/blog /esg-assets-may-hit-53-trillion-by-2025-a-third-of-global-aum/ Accessed on 30th Jan 2022.

Buallay, A. (2019). Sustainability reporting and firm's performance: Comparative study between manufacturing and banking sectors. *International Journal of Productivity and Performance Management*, *69*(3), 431–445.

Buallay, A. (2021). Sustainability reporting in food industry: An innovative tool for enhancing financial performance. *British Food Journal, 124*(6), 1939–1958. https://doi.org/10.1108/BFJ-01-2021-0053

Caplan, L., Griswold, J. S., & Jarvis, W. F. (2013). *From SRI to ESG: The changing world of responsible investing*. Commonfund Institute.

Coldbeck, B., & Ozkan, A. (2018). Comparison of adjustment speeds in target research and development and capital investment: What did the financial crisis of 2007 change?. *Journal of Business Research*, *84*, 1-10.

Duque-Grisales, E., & Aguilera-Caracuel, J. (2021). Environmental, social and governance (ESG) scores and financial performance of multilatinas: Moderating effects of geographic international diversification and financial slack. *Journal of Business Ethics, 168*(2), 315–334.

El Khoury, R., Naimy, V., & Iskandar, S. (2021). ESG versus corporate financial performance: Evidence from East Asian firms in the industrials sector. *Studies of Applied Economics, 39*(3), 1-24.

Eliwa, Y., Aboud, A., & Saleh, A. (2021). ESG practices and the cost of debt: Evidence from EU countries. *Critical Perspectives on Accounting*, *79*, 102097. https://doi.org/10.1016/j.cpa.2019.102097

Fatemi, A., Glaum, M., & Kaiser, S. (2018). ESG performance and firm value: The moderating role of disclosure. *Global Finance Journal*, *38*, 45–64.

Giannopoulos, G., Kihle Fagernes, R. V., Elmarzouky, M., & Afzal Hossain, K. A. B. M. (2022). The ESG disclosure and the financial performance of Norwegian listed firms. *Journal of Risk and Financial Management*, *15*(6), 237-252. https://doi.org/10.3390/jrfm15060237

Greene, W. (2017). *Econometric analysis.* 8th edition. Prentice-Hall International.

Han, J.-J., Kim, H. J., & Yu, J. (2016). Empirical study on relationship between corporate social responsibility and financial performance in Korea. *Asian Journal of Sustainability and Social Responsibility, 1*(1), 61–76.

Hwang, J., Kim, H., & Jung, D. (2021). The effect of ESG activities on financial performance during the COVID-19 pandemic—Evidence from Korea. *Sustainability*, *13*(20), 11362. https://doi.org/10.3390/su132011362

La Porta, R., Lopez-de-Silanes, F., Shleifer, A., & Vishny, R. W. (2000). Agency problems and dividend policies around the world. *The Journal of Finance*, *55*(1), 1-33.

Lee, K.-H., Cin, B. C., & Lee, E. Y. (2016). Environmental responsibility and firm performance: The application of an environmental, social and governance model. *Business Strategy and the Environment*, *25*(1), 40–53.

Lins, K. V., Servaes, H., & Tamayo, A. (2017). Social capital, trust, and firm performance: The value of corporate social responsibility during the financial crisis. *Journal of Finance*, *72*(4), 1785–1824.

Ma'ruf, A., Mahomed, Z., & Mohamad, S. (2021). Sustainable finance and a Sharī' analysis of environmental, social and governance (ESG) criteria. In M. K. Hassan, M. Saraç, & A. Khan (Eds.), *Islamic finance and sustainable development* (pp. 193–217). Cham: Palgrave Macmillan. https://doi.org/10.1007/978-3-030-76016-8_9

Matos, P. (2020). ESG and responsible institutional investing around the world: A critical review. *SSRN Electronic Journal*. https://doi.org/10.2139/ssrn.3668998

Mohammed, J. A. (2013). The Ethical system in Islam – Implications for business practices. In C. Luetge (Ed.), *Handbook of the philosophical foundations of business ethics* (pp. 873–882). Netherlands: Springer. https://doi.org/10.1007/978-94-007-1494-6_3

Nollet, J., Filis, G., & Mitrokostas, E. (2016). Corporate social responsibility and financial performance: A non-linear and disaggregated approach. *Economic Modelling*, *52*, 400–407.

Petitjean, M. (2019). Eco-friendly policies and financial performance: Was the financial crisis a game changer for large US companies? *Energy Economics, 80*, 502–511.

Rubbaniy, G., Khalid, A. A., Rizwan, M. F., & Ali, S. (2022). Are ESG stocks safe-haven during COVID-19? *Studies in Economics and Finance, 39*(2), 239–255.

Sabbaghi, O., & Xu, M. (2013). ROE and corporate social responsibility: Is there a return on ethics? *Journal of Accounting and Finance*, *13*(4), 82-95.

Saygili, E., Arslan, S., & Birkan, A. O. (2022). ESG practices and corporate financial performance: Evidence from Borsa Istanbul. *Borsa Istanbul Review*, *22*(3), 525–533.

Shaikh, I. (2022). Environmental, social, and governance (ESG) practice and firm performance: An international evidence. *Journal of Business Economics and Management*, *23*(1), 218–237.

Shakil, M. H., Mahmood, N., Tasnia, M., & Munim, Z. H. (2019). Do environmental, social and governance performance affect the financial performance of banks? A cross-country study of emerging market banks. *Management of Environmental Quality: An International Journal*, *30*(6), 1331–1344. https://doi.org/10.1108/MEQ-08-2018-0155

Song, K. R., & Lee, Y. (2012). Long-term effects of a financial crisis: Evidence from cash holdings of East Asian firms. *Journal of Financial and Quantitative Analysis, 47*(3), 617-641.

Tekin, H. (2020). How optimal cash changed by the global financial crisis? A multi-country analysis. *Economics and Business Letters*, *9*(2), 114-123.

Tekin, H. (2021). Market differences and adjustment speed of debt, equity, and debt maturity. *Australian Journal of Management, 46*(4), 629-651.

Tekin, H., & Polat, A. Y. (2021a). Do market differences matter on dividend policy?. *Borsa Istanbul Review, 21*(2), 197-208.

Tekin, H., & Polat, A. Y. (2021b). Is leverage a substitute or outcome for governance? Evidence from financial crises. *International Journal of Emerging Markets*, *18*(4), 1007-1030. https://doi.org/10.1108/IJOEM-03-2020-0297

Velte, P. (2017). Does ESG performance have an impact on financial performance? Evidence from Germany. *Journal of Global Responsibility, 80*(2), 169–178.

Yawika, M. K., & Handayani, S. (2019). The effect of ESG performance on economic performance in the high profile industry in Indonesia. *Journal of International Business and Economics*, *7*(2), 112–121.

Zhang, D., Wang, C., & Dong, Y. (2022). How does firm ESG performance impact financial constraints? An experimental exploration of the COVID-19 pandemic. *The European Journal of Development Research, 35*, 219-239. https://doi.org/10.1057/s41287-021-00499-6

Zhao, C., Guo, Y., Yuan, J., Wu, M., Li, D., Zhou, Y., & Kang, J. (2018). ESG and corporate financial performance: Empirical evidence from China's listed power generation companies. *Sustainability*, *10*(8), 2607. https://doi.org/10.3390/su10082607

APPENDICES

Table A1.
Construction of the Sample

Panel A. Firms in Muslim Countries the Sample	
28,463	Thomson Reuters Datastream Sample
- 26,917	Thomson Reuters Non-ESG Sample
1,546	Thomson Reuters ESG Sample
Panel B. Muslim Countries in the Sample	
20	Muslim Countries in Thomson Reuters Datastream Sample *(Bahrain, Bangladesh, Bosnia, Egypt, Indonesia, Iraq, Jordan, Kazakhstan, Kuwait, Lebanon, Malaysia, Morocco, Oman, Pakistan, Palestine, Qatar, Saudi Arabia, Tunisia, Turkiye, UAE)*
-9	Muslim Countries in Thomson Reuters Non-ESG Sample *(Bangladesh, Bosnia, Iraq, Jordan, Kazakhstan, Lebanon, Pakistan, Palestine, Tunisia)*
11	Muslim Countries in Thomson Reuters ESG Sample *(Bahrain, Egypt, Indonesia, Kuwait, Malaysia, Morocco, Oman, Qatar, Saudi Arabia, Turkiye, UAE)*

Source: Thomson Reuters Datastream & ESG

Table A2.
Summary Statistics

	ROA	ROE	ESG	E	S	G	SIZE	LEV	R&D	RISK
2004-2021										
Mean	0.071	0.147	0.416	0.363	0.415	0.487	17.031	0.255	0.001	-0.115
SD	0.107	0.251	0.206	0.263	0.261	0.220	3.573	0.177	0.006	0.124
Min	-0.663	-0.996	0.019	0.000	0.000	0.010	9.941	0.000	0.000	-0.962
P50	0.057	0.121	0.409	0.341	0.400	0.492	16.300	0.250	0.000	-0.099
Max	0.949	0.999	0.924	0.984	0.972	0.987	26.581	1.000	0.150	0.708
2004-2007										
Mean	0.089	0.156	0.467	0.467	0.456	0.525	13.933	0.135	0.000	-0.072
SD	0.078	0.136	0.227	0.266	0.280	0.233	1.688	0.139	0.000	0.079
Min	-0.206	-0.354	0.075	0.000	0.047	0.010	9.941	0.000	0.000	-0.298
P50	0.082	0.134	0.479	0.478	0.474	0.541	13.998	0.100	0.000	-0.059
Max	0.367	0.581	0.894	0.963	0.959	0.906	19.337	0.535	0.003	0.097
2008-2009										
Mean	0.089	0.182	0.385	0.353	0.374	0.492	16.151	0.203	0.001	-0.107
SD	0.075	0.192	0.211	0.253	0.271	0.224	2.999	0.149	0.005	0.112
Min	-0.204	-0.904	0.022	0.000	0.024	0.032	11.306	0.000	0.000	-0.459
P50	0.077	0.142	0.353	0.328	0.313	0.460	15.607	0.198	0.000	-0.103
Max	0.400	0.811	0.899	0.963	0.921	0.928	25.298	0.545	0.040	0.392
2010-2019										
Mean	0.072	0.151	0.411	0.352	0.408	0.493	17.408	0.264	0.001	-0.120
SD	0.111	0.253	0.205	0.261	0.260	0.218	3.665	0.177	0.007	0.120
Min	-0.663	-0.996	0.019	0.000	0.000	0.013	9.968	0.000	0.000	-0.855
P50	0.056	0.122	0.402	0.328	0.393	0.495	16.588	0.261	0.000	-0.100
Max	0.949	0.999	0.923	0.984	0.972	0.987	26.581	1.000	0.150	0.708

Table A2.
Summary Statistics (Continued)

	ROA	ROE	ESG	E	S	G	SIZE	LEV	R&D	RISK
2020-2021										
Mean	0.057	0.119	0.428	0.381	0.445	0.455	16.726	0.269	0.001	-0.105
SD	0.109	0.283	0.201	0.266	0.253	0.218	3.278	0.180	0.005	0.143
Min	-0.359	-0.996	0.033	0.000	0.013	0.010	10.706	0.000	0.000	-0.962
P50	0.044	0.103	0.429	0.362	0.448	0.466	16.098	0.264	0.000	-0.098
Max	0.786	0.999	0.924	0.940	0.972	0.942	26.522	0.785	0.060	0.561

Source: Thomson Reuters Datastream & ESG

Table A3.
Correlation Matrices

Panel A. Operational Performance (ROA)								
		[1]	[2]	[3]	[4]	[5]	[6]	VIF
2004-2021	ROA							
[1] E	0.032							2.71
[2] S	0.039	0.793						2.94
[3] G	0.038	0.366	0.420					1.23
[4] SIZE	0.059	-0.148	-0.211	-0.036				1.11
[5] LEV	-0.345	0.021	0.062	0.080	0.125			1.05
[6] R&D	0.096	-0.052	-0.081	-0.061	0.049	-0.094		1.03
RISK	-0.270	-0.018	-0.003	0.002	-0.171	0.103	-0.116	1.06
2004-2007	ROA							
[1] E	0.036							4.15
[2] S	0.157	0.835						3.71
[3] G	-0.004	0.486	0.453					1.34
[4] SIZE	0.082	0.200	-0.001	0.031				1.30
[5] LEV	-0.109	0.197	0.181	0.023	0.124			1.17
[6] R&D	.	.	.	.	.	.		.
RISK	0.201	0.273	0.302	0.212	-0.287	-0.242	.	1.38
2008-2009	ROA							
[1] E	-0.137							2.58
[2] S	-0.141	0.763						2.94
[3] G	-0.150	0.508	0.588					1.57
[4] SIZE	0.273	0.016	-0.174	-0.140				1.35
[5] LEV	-0.431	0.155	0.150	0.105	0.110			1.06
[6] R&D	0.098	-0.109	-0.115	-0.147	-0.010	-0.046		1.07
RISK	-0.269	0.045	0.130	0.116	-0.416	0.066	-0.191	1.29
2010-2019	ROA							
[1] E	0.026							2.79
[2] S	0.014	0.798						3.03
[3] G	0.027	0.378	0.429					1.24
[4] SIZE	0.066	-0.155	-0.221	-0.045				1.11
[5] LEV	-0.347	0.016	0.069	0.087	0.101			1.08
[6] R&D	0.110	-0.036	-0.073	-0.050	0.058	-0.114		1.03
RISK	-0.398	-0.044	-0.015	-0.034	-0.158	0.168	-0.110	1.08

Table A3.
Correlation Matrices (Continued)

Panel A. Operational Performance (ROA)								
		[1]	**[2]**	**[3]**	**[4]**	**[5]**	**[6]**	**VIF**
2020-2021	ROA							
[1] E	0.101							2.54
[2] S	0.195	0.777						2.81
[3] G	0.103	0.274	0.353					1.18
[4] SIZE	0.015	-0.164	-0.226	0.011				1.10
[5] LEV	-0.327	0.002	-0.026	0.078	0.115			1.02
[6] R&D	0.025	-0.119	-0.131	-0.119	-0.038	-0.046		1.05
RISK	0.093	0.000	-0.039	0.079	-0.109	-0.019	-0.132	1.05
Panel B. Financial Performance (ROE)								
		[1]	**[2]**	**[3]**	**[4]**	**[5]**	**[6]**	**VIF**
2004-2021	ROE							
[1] E	0.068							2.71
[2] S	0.098	0.793						2.94
[3] G	0.078	0.366	0.420					1.23
[4] SIZE	0.064	-0.148	-0.211	-0.036				1.11
[5] LEV	-0.121	0.021	0.062	0.080	0.125			1.05
[6] R&D	0.056	-0.052	-0.081	-0.061	0.049	-0.094		1.03
RISK	-0.294	-0.018	-0.003	0.002	-0.171	0.103	-0.116	1.06
2004-2007	ROE							
[1] E	0.041							4.15
[2] S	0.220	0.835						3.71
[3] G	0.021	0.486	0.453					1.34
[4] SIZE	0.083	0.200	-0.001	0.031				1.30
[5] LEV	0.011	0.197	0.181	0.023	0.124			1.17
[6] R&D	.	.	.	.	.	.		.
RISK	0.182	0.273	0.302	0.212	-0.287	-0.242	.	1.38
2008-2009	ROE							
[1] E	0.012							2.58
[2] S	0.040	0.763						2.94
[3] G	-0.093	0.508	0.588					1.57
[4] SIZE	0.300	0.016	-0.174	-0.140				1.35
[5] LEV	-0.293	0.155	0.150	0.105	0.110			1.06
[6] R&D	0.035	-0.109	-0.115	-0.147	-0.010	-0.046		1.07
RISK	-0.225	0.045	0.130	0.116	-0.416	0.066	-0.191	1.29
2010-2019	ROE							
[1] E	0.054							2.79
[2] S	0.071	0.798						3.03
[3] G	0.058	0.378	0.429					1.24
[4] SIZE	0.071	-0.155	-0.221	-0.045				1.11
[5] LEV	-0.105	0.016	0.069	0.087	0.101			1.08
[6] R&D	0.063	-0.036	-0.073	-0.050	0.058	-0.114		1.03
RISK	-0.386	-0.044	-0.015	-0.034	-0.158	0.168	-0.110	1.08

Table A3.
Correlation Matrices (Continued)

Panel B. Financial Performance (ROE)								
		[1]	[2]	[3]	[4]	[5]	[6]	VIF
2020-2021	ROE							
[1] E	0.142							2.54
[2] S	0.221	0.777						2.81
[3] G	0.172	0.274	0.353					1.18
[4] SIZE	-0.004	-0.164	-0.226	0.011				1.10
[5] LEV	-0.137	0.002	-0.026	0.078	0.115			1.02
[6] R&D	0.029	-0.119	-0.131	-0.119	-0.038	-0.046		1.05
RISK	-0.072	0.000	-0.039	0.079	-0.109	-0.019	-0.132	1.05

Note: This table presents the correlation matrices across performance measures and its determinants. Variance inflation factor (VIF) values presented to check whether the sample face any multicollinearity problem. Since all VIF values smaller than 5, there is no multicollinearity problem. Since ESG is the combined score of E, S, and G. Thus, we do not include the ESG score into the correlation matrices. Variables are defined in Table 2.

Table A4.
Panel Model Selection

	Dependent variable: ROA					
	POLS		FE		RE	
	(1)		(2)		(3)	
CS	0.073**	(0.030)	0.049**	(0.020)	0.056***	(0.021)
CS x COV	-0.049	(0.045)	0.014	(0.026)	0.001	(0.030)
CS x GFC	0.034**	(0.014)	0.004	(0.010)	0.010	(0.011)
COV	-0.043***	(0.014)	-0.047***	(0.010)	-0.048***	(0.010)
GFC	0.032	(0.021)	0.011	(0.012)	0.017	(0.014)
SIZE	0.002***	(0.001)	-0.004	(0.003)	0.002*	(0.001)
LEV	-0.198***	(0.014)	-0.222***	(0.016)	-0.246***	(0.016)
R&D	0.743*	(0.402)	0.009	(0.379)	0.599	(0.384)
RISK	-0.185***	(0.020)	0.509***	(0.018)	0.356***	(0.018)
Constant	0.049***	(0.014)	0.266***	(0.058)	0.140***	(0.023)
Firms	207		207		207	
Observations	1,546		1,546		1,546	
Diagnostic tests						
Adjusted R^2	0.188		0.760		0.453	
F test	40.83***		131.73***			
LM test					695.13***	
Hausman test					407.67***	
AIC	-2864.04		-4969.66			
BIC	-2810.61		-4916.22			

Note: This table presents the comparison of three panel methods. ROA is return-on-assets. Corporate sustainability-CS is proxied by Environment, Social, and Governance Score (ESG). Diagnostic tests that are R-squared, F test, Lagrange Multiplier-LM test, Hausman test, Akaike Information Criterion-AIC, Bayesian Information Criterion-BIC show the explanatory power of models. Variables are described in Table 2. ***, ** and * signify significance at 1%, 5% and 10%.

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