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Assessing the business impacts of the COVID-19 pandemic and the Russia–Ukraine war: the role of corporate sustainability and financial performance

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Abstract

Purpose – This study aims to examine whether corporate sustainability practices act as a shield ensuring financial performance in times of crisis.

Design/methodology/approach – Data from 471 European firms during 2018–23 were categorized into three periods: (1) before the COVID-19 pandemic, (2) during the pandemic and (3) during the Russia–Ukraine War. In this regard, pooled ordinary least squares, two-step generalized method of moments, Kruskal–Wallis and Mann–Whitney non-parametric tests were performed to examine the impact of crises and whether corporate sustainability practices act as a shield to ensure financial performance.

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Findings – The proponents of the resource-based view (RBV) have argued that corporate sustainability practices create additional valuable resources that might work as a shield for ensuring financial performance even in times of crisis. While many studies have examined the impact of the recent pandemic, few compare the impacts of the war's repercussions on business performance. This study found a distinction between natural (Covid) and human-induced crises (war) on corporate financial performance. The results suggest that sustainability practices might work as a shield during a natural crisis but not during a human-induced one.

Practical implications – The authors observed that throughout the COVID-19 period, policymakers extended assistance to businesses, but during the subsequent European geopolitical crisis, their ability to offer such support has been absent. This absence might have a negative impact on corporate financial performance as government support increases investor confidence which artificially boosts market valuations. In addition, with the experience of COVID-19, investors might consider issues other than corporate sustainability practices when evaluating the market value of a firm. Even though we have seen an increasing trend in sustainability practices since the start of COVID-19 and continuing through the Russia–Ukraine war, these practices are not significantly reflected in or valued by investors.

Originality/value – This study sheds light on the comparative impact of the COVID-19 pandemic and the Russia–Ukraine War upon business performance and raises the bar on the theoretical understanding through a RBV.

Keywords Geopolitical crisis, Russia, Ukraine, War, COVID-19, ESG, Corporate social responsibility (CSR), Financial performance, Sustainability

Paper type Research paper

1. Introduction

The COVID-19 pandemic and the Russia–Ukraine War have unquestionably had a significant negative impact on business operations and prospects. The world economy has surely been affected by both crises; many renowned corporations even closed their operations or ceased their expansion due to economic stagnation. According to estimates by Liadze *et al.* (2023) and Maliszewska *et al.* (2020) the gross domestic product (GDP) of the European Union (EU) shrunk by approximately 3.4% in 2020 due to the pandemic and by more than 1% in 2022 because of geopolitical crises. Clearly, the Russia–Ukraine War has had significant repercussions on the European economy; indeed, many European countries broke off trade relationships with Russia and imposed trade-related sanctions. The severity is high for Europe; Russia had been considered a strategic partner before the crisis (Samson, 2002). Now, the ensuing conflict has intensely impacted Europe and highlighted the continent's vulnerability due to its heavy reliance on a now geopolitical adversary (Kuzemko *et al.*, 2022).

So far, several studies have been conducted to examine the two crises' impacts individually on market efficiency (Gaio *et al.*, 2022), market or investor reaction (Yousaf *et al.*, 2022), global trade relocation (Steinbach, 2023) and business resilience (Fiorillo *et al.*, 2024; Li *et al.*, 2021; Lu *et al.*, 2024; Attah-Boakye *et al.*, 2023). Yet however, research examining the comparative impact of these two crises of the firm-level financial performance remains scarce – particularly within the European context. There is a dearth of research examining the COVID-19 pandemic and the comparative impacts of the Russia–Ukraine War on business performance within the European context. It has been argued that businesses practicing sustainability are more resilient than others in times of crisis (Lu *et al.*, 2022; Pizzutilo, 2023). If so, then a corporation's market value (as a measure of financial performance) should reflect this resilience in a time of crisis. Our current knowledge in this area remains limited, and more scientific evidence is necessary to comprehend the issue fully. Therefore, to help shed light on the dynamics, this study aims to examine whether sustainability practices do indeed act as a shield ensuring financial performance in times of crisis.

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In particular, although sustainability – through environmental, social and governance (ESG) practices – has been associated with stronger crisis management and stakeholder trust (Rahi *et al.*, 2023; Saharti *et al.*, 2024), recent crises show mixed and even contradictory effects. Prior studies by Pizzutilo (2023) and Rahi *et al.* (2023) argued that sustainability might work like a corporate vaccine in times of crisis. In addition, according to a resource-based view (RBV), sustainability practices create valuable resources and resource slack – both of which provide safeguards during a crisis (Rahi *et al.*, 2023). For instance, Saharti *et al.* (2024) found that firms in geopolitical hotspots experienced reduced ESG and deteriorated financial performance during the war. Here, sustainability encompasses ESG practices. These inconsistencies raise critical questions about whether ESG-based sustainability practices provide equally strong protection in different types of crises. Three elements represent a comprehensive and dedicated approach to fulfilling environmental responsibilities, actively engaging in social initiatives and fostering interactions that contribute to establishing effective (good) governance and management mechanisms within organizations (Rahi *et al.*, 2023; Saharti *et al.*, 2024).

Reflecting on recent history, studies on the financial crisis of 2008–10 and the European sovereign debt crisis during 2010–12 highlight that financial firms with high ESG scores have performed well and have been less prone to risk compared to their counterparts who do not practice ESG (Chiaramonte *et al.*, 2022; Danisman and Tarazi, 2024). ESG factors are also closely connected to corporate social responsibility (CSR). While CSR involves businesses aligning their operations with ethical, social and environmental considerations, ESG factors define sustainability and serve as a foundation for CSR initiatives. In this regard, previous literature asserts that CSR yields contingent advantages and favorable perception by external stakeholders (Doh *et al.*, 2010; Lu *et al.*, 2024; Vashchenko, 2017), such as consumers (Sen *et al.*, 2016) and communities (Luning, 2012; Qiu *et al.*, 2021). This further ensures a firm's reputation and reduces uncertainties by moderating market reactions (Flammer, 2013; Yuan *et al.*, 2022). A recent study by Rahman *et al.* (2023), for instance, identified that CSR practices reduced the financial distress of Chinese firms during the COVID-19 period. Moreover, engaging in CSR seems to enhance a company's social capital, reinforcing its capacity to navigate financial crises by strengthening support from stakeholders (Lins *et al.*, 2017). It strengthens a firm's ability to overcome crises and enhances financial performance (Mattera and Soto, 2022).

Nevertheless, based on the literature search, conflicting or contradictory results do persist. For example, Saharti *et al.* (2024) highlight that during a geopolitical crisis, firms within the geopolitical area experienced reduced ESG, a long-run crisis and thus reduced financial performance. Additionally, Khraiche *et al.* (2023) identified that stock market development is adversely affected by the geopolitical crisis, which consequently impacts corporate growth. Moreover, high debt interest rates, low consumption, price inflation and unemployment severely affect a firm's ability to achieve better financial performance. Despite the above research, there is still more to uncover in the European context: the comparative impact and the role of sustainability on financial performance. Therefore, the authors pose the following two research questions:

RQ1. During a crisis, does corporate sustainability serve as a buffer in ensuring financial performance?

RQ2. Pandemic (natural crisis) versus war (human-induced crisis): which has a greater negative impact on business performance?

To examine the phenomena and answer the above two research questions, we used ESG scores and Tobin's Q as a proxy for corporate sustainability and financial performance,

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respectively. Data were collected from publicly listed European firms that disclose their ESG score in the Eikon database on a continuous basis. We selected four industries – energy, financial, real estate and technology – which are considered the most economically sensitive during crises (Astrov *et al.*, 2022; Laborda and Olmo, 2021). The rationale for choosing economically sensitive industries is that if those industries can withstand the negative impacts of crises due to their sustainability practices, then the other industries are more likely to do so as well. To answer the research questions, this study used both static and dynamic econometrics models. The outcome of the study suggests that sustainability practices do serve as a buffer and ensure financial performance in times of natural crisis, but that same protection is not as evident during a human-induced crisis. Therefore, natural and human-induced crises have different and distinct impacts on corporate financial performance.

This study contributes to the literature in three ways. First, to the best of the authors' knowledge, this is the first paper that explores the role of sustainability as it relates to the comparative impact of natural crisis versus human-induced crisis on a firm's financial performance in Europe. Second, from a theoretical perspective, the issue was conceptualized with a RBV. Our findings highlighted suggest that the RBV-framework may be insufficient for explaining firm responses to distinct crisis types, thus opening a new avenue for theoretical refinement. Third, the findings of the paper shed light on policy-level insights, helping to understand how different types of crises affect corporate and economic performance, with implications for regulatory bodies, investors and sustainability practitioners.

The remainder part of this article is structured as follows: Section 2 aims to conceptualize the issue through a RBVs lens, exploring a discussion on the merits of existing literature. Section 3 deals with variables, data and methodology. The results are presented and discussed in Section 4. Finally, the article concludes by discussing the findings in the light of theory, emphasizing policy implications and addressing the study's limitations in Section 5.

2. Theoretical framework, literature review and hypothesis development

The RBV has long been a foundational theory in sustainability accounting and finance as well as strategic management literature (e.g. Barney, 1991; Clulow *et al.*, 2003; Weigel and Hiebl, 2023). It argues that firms can achieve a competitive advantage by cultivating valuable, rare, inimitable and non-substitutable resources – such as strong capabilities or sustainability practices (Aragón-Correa *et al.*, 2008; Barrutia and Echebarria, 2015). In this view, corporate sustainability practices, particularly those reflected in ESG dimensions, are considered internally developed assets that can shield firms from external shocks and ensure long-term financial performance (Russo and Fouts, 1997; Rahi *et al.*, 2023). However, while RBV has helped explain how firms build resilience through sustainability investments, its application has come under scrutiny in contexts characterized by high volatility and exogenous shocks. Scholars have proposed extensions such as the VRIO model to refine the RBVs explanatory scope (Haan-Cao, 2023). However, other researchers argue that RBV does not adequately account for the temporality of crises or the role of external environments in shaping organizational outcomes (e.g. Priem and Butler, 2001; Armstrong and Shimizu, 2007).

This debate is particularly relevant when distinguishing between natural crises (e.g. pandemics) and human-induced crises [e.g. wars and geopolitical conflicts (GPC)]. Each imposes different demands on firms' internal resources and risk strategies. The literature also shows mixed findings regarding the effectiveness of sustainability practices depending on the type of crisis (e.g. Broadstock *et al.* (2021); Sharma *et al.* (2022) Zulkiffli *et al.* (2022); Laszlo and Zhexembayeva, 2017). For instance, ESG initiatives may yield strategic value

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under certain conditions but face limitations in rapid evolving [1]. Mhlanga and Ndhlovu (2023) have shown that due to the Russia–Ukraine conflict, global disruptions – such as halted grain exports – have jeopardized the achievement of sustainable development goals, including ending poverty and hunger, especially in Africa. This underscores how geopolitical crises produce ripple effects that extend well beyond firm-level operations. At the firm level, Saharti *et al.* (2024) found that companies in G8 + 2 countries faced negative consequences from geopolitical tensions, such as operational hindrances and breakdowns in risk management. Additionally, Fiorillo *et al.* (2024) observed that such conflicts often lead to heightened market instability, including frequent stock price crashes. These studies illustrate the kinds of exogenous pressures that RBV is not well-equipped to address on its own. Building on this theoretical discussion, our study critically engages with RBV to explore whether its assumptions hold equally across different crisis types. Rather than proposing a new theory, we position our contribution as a refinement of RBV by integrating insights from the literature on organizational resilience and environmental uncertainty. In doing so, we join calls to reassess RBVs applicability and augment their framework to better reflect the complexity of modern crises. Based on this theoretical grounding and literature review, the study tests the following hypotheses:

H1. There is a positive relationship between sustainability and financial performance in times of crisis.

H2. The impact of a war (human-induced crisis) on business performance is more intense than the impact of a pandemic (natural crisis).

To test these hypotheses, we categorize crises as either natural or human-induced and investigate their comparative impact on financial performance among European firms.

3. Data and methodology

This study investigates the role of sustainability practices in ensuring financial performance during crises. To do so, data were collected from the Eikon database from the years 2018–2023, and 471 publicly listed European firms were found across four industries – financial, energy, real estate and technology. The rationale for selecting these four industries is twofold. First, they are considered economically sensitive, meaning they are highly responsive to macroeconomic fluctuations, especially in crisis contexts (Astrov *et al.*, 2022; Laborda and Olmo, 2021). Second, they are also ESG-relevant sectors where sustainability issues significantly influence investor perception, stakeholder expectations and regulatory compliance. Financial firms are at the center of ESG disclosure regulation and are directly exposed to credit risk (Gholami *et al.*, 2022). Energy is one of the most scrutinized sectors in environmental and climate change policy. Real estate faces high exposure to environmental standards, energy use and urban resilience requirements. Technology firms are under increasing pressure to integrate social responsibility and governance transparency.

While financial and non-financial firms differ in structure and regulation, we argue that their inclusion is appropriate here given the focus on ESG performance rather than capital structure or sector-specific governance mechanisms. During both the COVID-19 pandemic and the Russia–Ukraine war, all four industries were highly affected – albeit via different channels (e.g. credit markets for finance vs supply chains for real estate and energy). Moreover, prior studies have also used mixed-industry samples to explore ESG-financial performance links and crisis impacts (e.g. Akhtaruzzaman *et al.*, 2021; Szczygielski *et al.*, 2022; Rahi *et al.*, 2023). In the sample, we included companies that have an ESG score of 40 or above for at least two consecutive years during the study period. This implies that a

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company might have an ESG score of 40 or above in 2018 and 2019 (or in 2022 and 2023), but the same company could have a lower ESG score of 39 or below in other years (either preceding or following two years). This indicates that selected companies in the sample might have ESG scores below 40 as well. Summary statistics will provide detailed information. Companies that have an ESG score of 40 or above for two consecutive years (out of four) can be considered as real "sustainability-striving" firms. This allows us to examine the "real sustainability-practicing" firm's phenomenon during the different types of crises. If other firms were included, the result might be blurred. The selection of 16 European countries was based on their extensive collaboration within the frameworks of the EU, European Economic Area (EEA) or through special or bilateral agreements. Table 1 provides a synopsis of the sample used in this article. The final data set consisted of 471 firms from four economically sensitive industries (see Table 1) for the years 2018–2023.

The data are grouped as follows. The period 2018–19 is called "*before the Covid and Russia-Ukraine crises*," 2020–21 as "*during Covid"* and 2022–2023 as "*during the Russia-Ukraine War.*" Data were sourced from the Eikon database, chosen for its comprehensive and recognized reliability as supported by previous literature (Nadeem *et al.*, 2020; Rahi *et al.*, 2022; Velte, 2017), ensuring the trustworthiness of the collected information. Focusing on the variables, the ESG score was used as a proxy of corporate sustainability. Tobin's Q was selected as a robust measure of market-based financial performance consistent with previous research (Rahman *et al.*, 2024; Zhou *et al.*, 2022). In addition, several key firm-specific control variables were established to control the relationship. Control variables included beta (systematic risk), leverage and firm size (log of total assets). Table 2 provides a summary of the variables used in the analysis.

To reveal the comparative business impact due to Covid (natural crisis) and war (human-induced crisis), we applied a combination of pooled ordinary least squares (POLS), two-step system generalized method of moments (GMM) and non-parametric tests (Kruskal–Wallis and Mann–Whitney) to assess the relationships and control for unobserved firm-level heterogeneity and endogeneity concerns. First, we used POLS; second, the robustness of the outcome was further tested with a two-step GMM. The underlying assumption of applying POLS is that four similar economically sensitive industries were considered over a short period (two years), which assumes a constant relationship over time. Furthermore, GMM was applied to control for unobserved confounders and reverse causality in the relationship. Although GMM is typically applied to longer panels, it remains suitable for short panels with large cross-sections, particularly when properly instrumented. Our panel consists of a large number of firms (a total of 471) and two years for each in every panel, which fits the conditions for applying system GMM under appropriate controls. We constructed internal instruments using the lagged dependent variable, consistent with the Arellano-Bover and Blundell-Bond system GMM estimator (Blundell and Bond, 1998; Arellano and Bover, 1995), which combines equations in first differences and levels and is specifically designed to handle short panels where traditional difference GMM may suffer from weak instruments. We report Hansen *p*-value and ensure the number of instruments remains below the number of groups to avoid overfitting. Our approach aligns with precedent in the literature where GMM has been applied to similarly structured datasets (e.g. Farzana *et al.*, 2024; Gkypali *et al.*, 2012). Endogeneity is particularly relevant in our context due to possible reverse causality (e.g. financially stronger firms may invest more in ESG), and GMM provides a means to mitigate such bias. Although the inclusion of financial firms introduces variation in regulatory structure, we performed diagnostic checks and robustness tests that did not show sector-driven bias in results. Hansen tests indicated instrument validity, and no significant autocorrelation was detected in the differenced residuals.

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Table 1. Studied countries and industries with the number of firms and their corresponding percentage

Name of countries	Number of firms	Corresponding (%)
Austria	16	3
Belgium	13	3
Denmark	13	3
Finland	20	4
France	44	9
Germany	83	18
Greece	9	2
Ireland	9	2
Italy	36	8
Luxembourg	12	3
Netherlands	29	6
Norway	28	6
Poland	19	4
Spain	20	4
Tab	75	16
Switzerland	45	10
Total	471	100
Industries		
Energy	41	9
Financial	142	30
Real estate	79	17
Technology	209	44
Total	471	100

Source(s): Authors' own work

Table 2. List of variables in the current study

Variable	Types	Description
Tobin's Q	Dependent	Total market value/total asset value
ESG	Independent	Corporate sustainability practice score on firm's environmental, social and governance activities, graded by Thomson Reuters
Beta	Control	Beta factor for a firm's systematic risk
Leverage	Control	Total debt/equity
Size	Control	Natural logarithm of total assets

Source(s): Authors' own work

Finally, Kruskal–Wallis and Mann–Whitney non-parametric tests were performed to understand the group dynamics. The rationale for choosing non-parametric tests is that data, a typical characteristic of secondary data, are not normally distributed and failed in the homogeneity test. Therefore, considering the scenario, the non-parametric tests were performed.

The tests mentioned above are designed as follows:

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$$\text{Tobin's } Q_{it} = \alpha + \beta_1 \text{ESG}_{it} + \beta_2 \text{B}eta_{it} + \beta_3 \text{Leverage}_{it} + \beta_4 \text{Firm size}_{it} + \varepsilon_{it} \quad (1)$$

$$\text{Tobin's } Q_{it} = \alpha + \gamma \vartheta i,\ t-1 + \beta_1 \alpha + \beta_1 \text{ESG}_{it} + \beta_2 \text{B}eta_{it} + \beta_3 \text{Leverage}_{it} + \beta_4 \text{Firm size}_{it} + \varepsilon_{it} \quad (2)$$

$$\text{Kruskal} - \text{Walli} = 12/(\text{N} * (\text{N}+1)) * \sum(\text{Ni} * ((\text{R}i/\text{Ni} - (\text{N}+1)/2))\wedge 2) \quad (3)$$

$$\text{Mann} - \text{Whitney U} = \text{N1} * \text{N2} + (\text{N1} * (\text{N1}+1))/2 - \text{R1} \quad (4)$$

Where, αi = constant term,
$\gamma\ \vartheta_{\text{i,t-1}}$ = lag value of dependent variables,
ε_{it} = error term. For $i = 1, \ldots, n;\ t = 1, \ldots T$
N = Total number of observations across all groups;
Ni = Number of observations in group i;
Ri = Sum of the ranks for group i;
N 1 = Number of observations in sample 1 (control);
N 2 = Number of observations in sample 2 (treatment); and
R 1 = Sum of the ranks for the observations in sample 1.

4. Data analysis and result

4.1 Summary statistics

Summary statistics on the variables are presented in Table 3 below and categorized based on three scenarios such as (1) before Covid and the Russia–Ukraine War, (2) during Covid and (3) during the Russia–Ukraine War. This categorization aims to facilitate understanding and comparison of the distribution of individual variables within the sample. Furthermore, the analysis reveals patterns in the data across these three distinct scenarios. The summary statistics indicate that corporate financial performance (Tobin's Q) has exhibited lower mean value of 1.10 during the Russia–Ukraine War compared to preceding two scenarios. This suggests a decline in corporate financial performance during the Russia–Ukraine War. Interestingly, corporate sustainability (ESG) practices have exhibited a higher mean value of 58.72 during the Russia–Ukraine War compared to the preceding two scenarios. This indicates that despite the crises, companies have focused more on sustainability practices. On the other hand, the mean value of leverage significantly decreased to 68.93 during the Russia–Ukraine War, compared to the preceding two scenarios. This could indicate a reduction in the use of debt by firms during the war, which might negatively impact their ability to generate a strong financial performance.

Upon closer examination of Scenarios 2 and 3, it becomes evident that the impact of ESG practices has improved in Scenario 3 (mean comparison). However, the marginal effect on financial performance (Tobin's Q) has worsened in Scenario 3. This univariate analysis implies that a human-induced crisis creates more volatility in corporate financial performance than a natural crisis like a pandemic. Nevertheless, for more robust outcomes, both univariate and multivariate analyses were conducted.

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Table 3. Distribution of variables by summary statistic

Variables and scenarios	Min.			Max.			Mean			Std. Deviation		
	1	2	3	1	2	3	1	2	3	1	**2**	**3**
Tobin's Q	0.01	0.01	0.01	12.98	23.00	28.70	1.11	1.27	1.10	1.32	1.84	1.80
ESG	10.24	2.85	4.03	95.74	95.21	95.51	55.89	57.10	58.72	15.37	18.92	18.27
Beta	−0.65	−0.01	−0.11	2.96	3.81	3.08	0.87	1.08	1.09	0.46	0.51	0.46
Leverage	0.00	0.00	0.00	1377.33	58245.83	9673.68	103.37	177.61	68.93	140.48	1903.71	343.13
Size	15.28	14.95	15.38	28.34	28.54	28.61	21.90	21.98	22.24	2.44	2.49	2.39
N	$n = 942$											

Note(s): Before the Covid pandemic (Scenario 1), During Covid (Scenario 2), During the Russia–Ukraine War (Scenario 3)
Source(s): Authors' own work

4.2 Correlation

Before conducting the multivariate analysis, we performed bivariate analyses – specifically, the correlation matrix shown in Table 4 – to primarily assess the relationships between the two variables used in the analyses. The analyses indicate a predominantly negative relationship between the dependent and independent variables. However, the negative correlation strength appears to have increased during the pandemic but returned to a level close to the pre-pandemic period during the geopolitical crisis (i.e. −0.172**, −0.190** and −0.176**). It is important to note that drawing conclusions based solely on bivariate analyses might be problematic, as the relationship may not be linear and there is a potential risk of endogeneity issues (Achen, 2005; Balcaen and Ooghe, 2006; Maiga and Jacobs, 2011; Rahi *et al.*, 2023). Therefore, several multivariate analyses have been conducted to reach a more accurate conclusion.

4.3 Pooled OLS, generalized method of moments and non-parametric tests result

To examine whether corporate sustainability serves as a buffer in ensuring better financial performance during crises, we first conducted POLS as a baseline analysis and then cross-checked the robustness of the outcomes by applying two-step GMM. The results in Table 5 suggests that during a natural crisis such as a pandemic, sustainability practices appear to be a neutralizer in ensuring financial performance. The result is positive and significant at the 1% levels for both POLS and GMM (coefficients 0.015 and 0.239), respectively. The result is consistent in both POLS and GMM. Focusing on the model fit criterion, R^2 of the POLS

Table 4. Correlation matrix

Variables	Tobin's Q	ESG	Beta	Leverage	Size
Correlations (before the Covid pandemic)					
Tobin's Q	1				
ESG	−0.172**	1			
Beta	0.010	0.160**	1		
Leverage	−0.229**	0.079**	0.022	1	
Size	−0.490**	0.474**	0.182**	0.303**	1
Observations			942		
Correlations (during Covid)					
Tobin's Q	1				
ESG	−0.190**	1			
Beta	−0.107**	0.153**	1		
Leverage	−0.040	0.020	0.085**	1	
Size	−0.413**	0.659**	0.149**	0.007	1
Observations			942		
Correlations (during the Russia–Ukraine War)					
Tobin's Q	1				
ESG	−0.176**	1			
Beta	0.056*	0.138**	1		
Leverage	−0.040	0.001	0.046	1	
Size	−0.346**	0.631**	0.056*	0.019	1
Observations			942		

Note(s): ** Correlation is significant at the 0.01 level (two-tailed); * Correlation is significant at the 0.05 level (two-tailed)
Source(s): Authors' own work

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Table 5. Pooled OLS and GMM estimations

Dependent	Before the covid pandemic				During covid				During the Russia-Ukraine war			
	Tobin's Q											
	Pooled OLS		*GMM*		*Pooled OLS*		*GMM*		*Pooled OLS*		*GMM*	
	Coeff.	S. E	Coeff.	Corrected S. E	Coeff.	S. E	Coeff.	Corrected S. E	Coeff.	Std. Dev.	Coeff.	Corrected S. E
L. Dependent	-		0.225*	(0.118)			0.131	(0.103)	-		−0.693***	(0.161)
ESG	0.005*	(0.003)	0.191	(0.121)	0.015***	(0.004)	0.239***	(0.078)	0.006	(0.004)	0.052	(0.039)
Beta	0.272***	(0.0823)	−0.056	(0.513)	−0.187*	(0.108)	−10.375	(6.361)	0.277**	(0.121)	0.400*	(0.237)
Leverage	−0.001***	(0.000)	−0.015***	(0.005)	−0.000	−0.000	0.000	(0.000	−0.000	(0.000)	0.000	(0.001)
Size	−0.277***	(0.018)	−0.673*	(0.346)	−0.372***	(0.029)	−2.632***	(0.805)	−0.291***	(0.0297)	−1.051***	(0.297)
R-squared	0.26		–		0.19		–		0.13		-	
Mean VIF	1.22		–		1.40		–		1.35		-	
Hansen *p*- value	–		0.38		–		0.39		-		0.43	
Observations	942		941		942		941		942		941	

Note(s): Standard errors in parentheses ***$p < 0.01$. **$p < 0.05$. *$p < 0.1$; Constant is included (not reported for brevity)
Source(s): Authors' own work

models are 26% (Before the Covid pandemic), 19% (During Covid) and 13% (During the Russia–Ukraine War), respectively [2]. In addition, across all the GMM models, the Hansen *p*-values are insignificant, indicating that the instruments used for the GMM test are valid (Blundell and Bond, 1998; Nuber and Velte, 2021; Rahman *et al.*, 2019).

This indicates the instruments' sufficient explanatory power (Larcker and Rusticus, 2010). The outcome is partly aligned with previous literature that sustainability practices ensure financial performance during COVID-19 (e.g. Broadstock *et al.*, 2021; Pizzutilo, 2023; Sharma *et al.*, 2022). We emphasized the GMM outcome over the POLS because GMM accounts for endogeneity and unobserved confounders while determine the relationship.

The variance inflation factor's (VIF) mean value below the max tolerance level indicates that our model does not have an issue concerning multicollinearity. Furthermore, the results indicate that for a human-induced crisis such as the Russia–Ukraine War, sustainability practices do not seem to act as a shield ensuring financial performance (nonsignificant coefficients in both models, see Table 5). The GMM models allow us to incorporate lagged value of the dependent variable, which shows a dynamic relationship over time with the dependent variable Tobin's Q, as the coefficient indicates a drastic change from being positively significant (Scenario 1) to non-significant (Scenario 2) and then negatively significant (Scenario 3). This change in the coefficient highlights a significant downward shift in the nature of the relationship over time for the financial performance variable.

To find a deeper insight and to check the robustness of the findings as well as to identify differences between types of crises, Kruskal–Wallis and Mann–Whitney non-parametric tests were also performed (see Appendix). The Kruskal–Wallis test results confirm that there is a significant difference between groups both for ESG and for Tobin's Q. While looking closely to identify group differences within ESG with the help of Mann–Whitney tests, we found the significant mean rank difference between the control group and the treatment group in Case 1, Case 2 and Case 3 (see Table 6 and Appendix for details). The findings of the Mann–Whitney tests indicate that companies in the sample have increased positive efforts toward sustainability (ESG) when compared to the control group.

While focusing on the mean rank difference for Tobin's Q, we did not find any significant difference in Case 1, but Cases 2 and 3 mean rank differences were significant (see also Appendix). The outcome of the Mann–Whitney tests for Tobin's Q indicates that despite increasing sustainability efforts, financial performance tends to decrease when compared with the control group.

Table 6. Summary of Mann–Whitney tests

Summary of Mann-Whitney tests				
Variable names	Mean rank sig/non-Sig	Case 1 Sig	Case 2 Sig	Case 3 Sig
ESG	Control	912.98	878.91	917.57
	Treatment	972.02	1006.09	967.43
	Indication	+	+	+
	Sig/non-sig	Non-Sig	Sig	Sig
Tobin's Q	Control		989.34	971.75
	Treatment		895.66	913.25
	Indication		–	–

Source(s): Authors' own work

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From the findings, it can be inferred that during COVID-19, sustainability practices brought resilience and worked as a neutralizer to ensure financial performance. While also receiving benefits of sustainability practices, more and more companies started integrating the practice. But during the GPC, due to the different characteristics of crisis, such practices did not work as neutralizers. In addition, businesses received ample government support during the COVID-19 pandemic (Hoang *et al.*, 2022; Yeganeh, 2021) while such assistance has not been provided during the geopolitical crisis. This lack of government support might have contributed significantly to a negative outcome on financial performance.

5. Conclusion

This study set out to examine whether corporate sustainability practices – measured through ESG scores – act as a buffer to ensure financial performance during different types of crises. By analyzing the financial impacts of the COVID-19 pandemic and the Russia–Ukraine war on 471 European firms, we explored the effectiveness of sustainability practices in natural versus human-induced crises. Our findings confirm a positive relationship between sustainability and performance during the pandemic but not during the GPC. Results infer that (1) corporate sustainability practices might act as a buffer during a natural crisis such as COVID-19; however, (2) a human-induced crisis has a deeper negative impact on corporate performance. Indeed, a natural crisis may benefit from the phenomenon where people are psychologically prepared for an inevitable end, such as the end of a pandemic outbreak; whereas a human-induced crisis is not necessarily predictable and, therefore, more severely impacts business performance over the long term [3].

While the findings partially support previous literature (e.g. Pizzutilo, 2023; Rahi *et al.*, 2023), they also open a new Pandora's box regarding the limits of sustainability in the context of armed conflicts and political instability. The European economy has been severely affected by the war; therefore, an investor's valuation on the market value of a firm (as captured by Tobin's Q) might need to consider factors beyond sustainability practices alone. When there is a challenge to survival, sustainability might no longer be the strategic priority. Although ESG-practicing firms tend to possess better financial room and resilience, more empirical evidence is needed to unpack the actual benefits of ESG during crises of different types and durations. Theoretically, this study contributes to the refinement of the RBV. While RBV assumes that internal resources – such as sustainability practices – can provide competitive advantage and resilience, we argue that this assumption does not universally hold. The differential impact of the crisis challenges RBV's underlying premise that internally generated resource strength alone can buffer firms against external shocks. Our findings contradict the propositions made by Sharma *et al.* (2022) and Russo and Fouts (1997), particularly in geopolitical crisis contexts.

RBV's limitations stem from its relative inattention to dynamic, volatile and externally driven conditions. As prior critics have noted (Priem and Butler, 2001; Armstrong and Shimizu, 2007), RBV insufficiently addresses environmental turbulence, temporality and macro-level disruptions – factors central to the impact of geopolitical events. This critique is echoed in recent literature that emphasizes how external forces such as trade disruptions (Mhlanga and Ndhlovu, 2023), operational barriers (Saharti *et al.*, 2024) and stock market crashes (Fiorillo *et al.*, 2024) undermine firm performance during geopolitical crises. To extend RBV's applicability, we propose theoretical augmentation through contingency theory and dynamic capabilities theory. This integration aligns with the foundational work of Teece *et al.* (1997) on dynamic capabilities and the contingency perspectives of Donaldson (2001), both of which emphasize that strategic outcomes are shaped by external environments and adaptive capacities. In this, contingency theory posits that the effectiveness of strategies depends on contextual factors – such as crisis type and intensity – implying that the protective value of ESG is not static but contingent (Lawrence *et al.*, 1967; Donaldson, 2001). Meanwhile, dynamic capabilities theory stresses the

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importance of adaptability, reconfiguration and responsiveness, highlighting that resilience may depend more on process-based agility than static resource possession (Teece *et al.*, 1997; Teece, 2014; Eisenhardt and Martin, 2000).

This article also contributes to the corporate governance and risk management literature by demonstrating that internally generated values such as ESG can become insufficient in the face of systemic geopolitical threats. Alternative or complementary strategies – such as scenario planning, digitalization and stakeholder alliances – may be necessary. Although economic stagnation and weakened macroeconomic fundamentals constrain corporate maneuverability, firms can benefit from building collaborative networks with policymakers to navigate crises more effectively. In the absence of such collaboration, business survival is further jeopardized. It is worth noting that during the COVID-19 crisis, firms received extensive support from policymakers in many European countries. However, during the Russia–Ukraine war, such support has largely been absent – due to political preoccupation and economic strain. This divergence in state response may have exacerbated the differentiated effects observed in corporate financial performance across the two crises.

This study is not without limitations. First, ESG scores are used as a proxy for corporate sustainability, despite ongoing debates over their precision and comparability. Second, our analysis covers data up to 2023; given the continued evolution of the Russia–Ukraine conflict, future data could reveal additional trends. Third, the sequential occurrence of crises may have compounded firm-level vulnerabilities, a dynamic we did not explicitly model. Fourth; Although the inclusion of financial firms introduces variation in regulatory structure, we performed diagnostic checks and robustness tests that did not show sector-driven bias in results. Nonetheless, we now acknowledge this as a potential limitation and suggest that future research could isolate sector-specific effects. This methodological approach offers a balanced perspective on how sustainability interacts with financial outcomes in different crisis contexts while acknowledging the structural heterogeneity across sectors and crisis types.

Finally, future research should consider conducting inductive studies or longitudinal panels to reassess the theoretical relevance of RBV and explore how organizations dynamically adapt their resource strategies over time. In summary, this study highlights that sustainability is not a one-size-fits-all solution to crisis management. Instead, its role in ensuring financial resilience is conditional, context-sensitive and likely to be amplified when coupled with adaptive capabilities and external support systems.

Notes

1. In this research, we used the terms sustainability, CSR and ESG interchangeably.
2. In having only two years of data in an OLS model, due to limited variability, the R^2 value is low. However, to overcome this issue, GMM is further applied to check the robustness of findings.
3. The Spanish flu pandemic lasted for two years (1918–19); the main impact of the COVID-19 pandemic had a similar time span. In comparison, armed conflicts like those in Vietnam and Afghanistan involving the USA lasted for approximately 20 years each.

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Appendix. Kruskal–Wallis and Mann–Whitney non-parametric tests

Table A1. Kruskal–Wallis

	N	Mean	Std. Deviation	Min.	Max.
Descriptive statistics					
ESG	2826	57.2380	17.62149	2.85	95.74
Tobin's Q	2826	1.1573	1.67331	0.01	28.70
Groups	2826	2.00	0.817	1	3

Kruskal–Wallis test

Ranks

Groups		N	Mean rank
ESG	Before the covid pandemic	942	1320.39
	During covid	942	1418.09
	During the Russia–Ukraine war	942	1502.03
	Total	2826	
TobinsQ	Before the covid pandemic	942	1473.76
	During covid	942	1429.33
	During the Russia–Ukraine war	942	1337.41
	Total	2826	

Test statistics[a,b]

	ESG	Tobin's Q
Kruskal–Wallis H	23.413	13.685
df	2	2
Asymp. Sig.	0.000	0.001

Note(s): [a]Kruskal–Wallis test; [b]Grouping variable: Group**Source(s):** Authors' own work

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Table A2. Mann–Whitney Test

Comparison between Groups 1–2 (Case 1)

Ranks			
Groups		Mean rank	Sum of ranks
Tobin's Q	Before the covid pandemic	955.92	900477.00
	During covid	929.08	875193.00
ESG	Before the covid pandemic	912.98	860028.50
	During covid	972.02	915641.50
	Total	Obs. 942 × 2 groups = 1884	

Test statistics[a]

	Tobin's Q	ESG
Mann–Whitney U	431040.000	415875.500
Wilcoxon W	875193.000	860028.500
Z	−1.071	−2.360
Asymp. Sig. (2-tailed)	0.284	0.018

Comparison between Groups 1–3 (Case 2)

Ranks			
Groups		Mean rank	Sum of ranks
Tobin's Q	Before the covid pandemic	989.34	931956,00
	During the Russia–Ukraine war	895.66	843714,00
ESG	Before the covid pandemic	878.91	827930,00
	During the Russia–Ukraine war	1006.09	947740,00
	Total	Obs. 942 × 2 groups = 1884	

Test statistics[a]

	Tobin's Q	ESG
Mann–Whitney U	399561.000	383777.000
Wilcoxon W	843714.000	827930,000
Z	−3.737	−5.082
Asymp. Sig. (2-tailed)	0.000	0.000

Comparison between Groups 2–3 (Case 3)

Ranks			
Groups		Mean rank	Sum of ranks
Tobin's Q	During covid	971.75	915391.00
	During the Russia–Ukraine war	913.25	860279.00
ESG	During covid	917.57	864349.00
	During the Russia–Ukraine war	967.43	911321.00
	Total	Obs. 942 × 2 groups = 1884	

Test statistics[a]

	Tobin's Q	ESG
Mann–Whitney U	416126.000	420196.000
Wilcoxon W	860279.000	864349.000
Z	−2.334	−1.989
Asymp. Sig. (2-tailed)	0.020	0.047

Note(s): [a]Grouping Variable: Groups
Source(s): Authors' own work

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