

Environmental, Social and Governance (ESG) Performance of Firms in the Era of Geopolitical Conflicts

Abstract

Do geopolitical conflicts matter for the environmental, social, governance and overall ESG performance of firms? We answer this question by studying the impact of geopolitical conflict of a country on the ESG performance, separately and collectively, of firms of that country. We use data from Refinitiv and UCDP/PRIO (Uppsala Conflict Data Program/International Peace Research Institute, Oslo) databases for the period from 2002 to 2021 for 79 countries and we use fixed effects regression as our main methodology. We find that if a country is in geopolitical conflict, their firms are impacted in the form of lower E, S and G performance and overall ESG performance, with stronger effects for developed countries. This comes on top of the direct costs of geopolitical conflicts. Our results are robust to country, year and firm fixed effects as well as robust to endogeneity as we use Lewbel (2012) estimator to eliminate any chances of endogeneity. We provide first evidence on this topic and it has geopolitical and socioeconomical implications.

JEL codes: Q50, A13, G34, E44, H56, N41, H81

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1. Introduction

Geopolitical conflicts pose challenges to world peace, the global economy, and efforts to tackle climate change. These geopolitical conflicts have a severe impact on the ecological environment and biodiversity, with the Russia-Ukraine conflict causing pollution of soil and groundwater resources and damage to wildlife habitats and human living environments. The achievements of global environmental governance have been partially damaged by these geopolitical conflicts, making it harder to tackle global environmental and climate issues. Furthermore, the use and production of military equipment during geopolitical conflicts can increase carbon emissions, and post-war reconstruction efforts might further exacerbate the warming effect. In the context of global geopolitical conflicts, achieving the decarbonization goal worldwide has become more uncertain. Understanding the environmental problems arising from geopolitical conflicts and their consequences is crucial to formulate optimal environmental policies. However, our knowledge of these issues is limited, and we need scientific evidence to understand their impacts on global environmental management and efforts to tackle climate change. Against this backdrop, we study the impact of geopolitical conflicts on firms during these ecological challenges. Specifically, we study whether geopolitical conflicts in a country have any impact on their firms in terms of their environmental performance. For comparison we also study the impact of geopolitical conflict in a country on their social and corporate governance performance as well as overall ESG performance. Despite the importance of ecological challenges and particularly during geopolitical conflicts, this issue has not been studied and we are the first ones to explore this issue in this paper.

ESG stands for environmental, social and governance, and it refers to a set of criteria that measure a company's performance on sustainability issues. ESG was a phrase first coined by the United Nations in their 2004 report "Who Cares Wins" to encourage more ethical investment practices.¹ The ESG framework encompasses three key pillars: environmental, social, and governance considerations. It is a strategic tool for assessing corporate conduct and evaluating prospective financial outcomes. Its primary objective is quantifying the sustainability and societal influence of business operations (Li et al, 2021). Environmental, social, and governance factors are the three pillars of corporate sustainability (Barkemeyer et al., 2014). Firms are ranked in different league tables based on their ESG score; this score shows their commitment to the ESG agenda (Wong et al., 2020). Therefore, ESG challenges are becoming ever more important to stakeholders; consequently, stakeholders require action from firms to meet the demands of corporate sustainability. To address this, firms have begun to implement policies that incorporate ESG concerns, including environmental externalities, employee well-being, social diversity, and inclusion. Hence, companies are providing disclosure of ESG-related activities in their financial statements (Buallay et al., 2020). Governance in ESG focuses on a firm's management, audits,

¹ https://www.unepfi.org/fileadmin/events/2004/stocks/who_cares_wins_global_compact_2004.pdf

executive compensation, efficacy of internal controls, and protection of shareholder interests. These factors can influence strategic goals, operational execution, and the disclosure of sustainable business practices to key stakeholders. ESG criteria have also become essential in the corporate landscape as firms adopting these practices improve their environmental and social impact while also enhancing financial prospects Kim and Li (2021). Investors prioritize ESG-compliant companies due to their commitment to sustainability, and adherence to global ESG reporting standards allows firms to access diverse funding sources and attract socially conscious investors, ultimately shaping investment decisions and fostering a more transparent and resilient global economy (Kramer and Pfitzer, 2022; Raut et al., 2023).

Previous research has explored a multitude of factors influencing ESG ratings and their effects on economic performance of firms. These include environment-related factors, such as emission reduction (Cankaya and Sezen, 2019), product and service innovation via eco-innovation (Fernando et al 2019), waste management (Gull et al. 2022); social responsibility issues, such as human rights, bribery and corruption (Elkington 2006), employee-friendly policies (Liang et al 2020), employee health and safety, training and development (Ferrez and Vazquez 2016), workforce diversity and progression opportunities (Bristy et al 2021), relationships with local communities (Prayogo 2013); governance issues such as board diversity (Gull et al 2023), executive incentivization linked to sustainability goals (Chouaibi et al 2021), employee board representation (Nekhili et al 2021), shareholders rights (Morrison 2021), and climate change strategy (Bose et al 2022).

The literature on geopolitical conflicts is abundant exploring a range of macroeconomic factors. These macroeconomic factors include measuring the economic costs of war and geopolitical conflicts (Abadie and Gardeazabal; 2003), exploring the relationship between war and stock returns (Verdickt, 2018), studying the link between ethnic divisions and geopolitical conflict (Esteban, et al., 2012; Yanagizawa-Drott, 2014), identifying the association between state capacity, democracy and trade with geopolitical conflict (Gennaioli and Voth, 2015; Baliga et al., 2011; Rohner et al., 2013) and measuring the relationship between population and geopolitical conflicts (Acemoglu et al., 2020). Some other researchers explore the link between conflicts and foreign direct investment (Li, 2006; Li and Vashchilko, 2010; Kim, 2016).

We use ESG data from Refinitiv (formerly Asset4), geopolitical conflict data from the PRIO Database and other firm characteristics data from Compustat Global for the period from 2002-2021. Our findings show that a geopolitical conflict in a country has negative impact on the E, S, G and Overall ESG performance of firms. Our complete model shows that a geopolitical conflict in a county is likely to reduce the environmental scores of firms by 7.6%, social scores by 7.4%, corporate governance scores by 4% and overall ESG scores by 8.2%. The magnitudes are quite big and it shows that a geopolitical conflict has a negative bearing on the ecological environment, social security and governance structure of firms. Our subsample analysis shows that the negative relationship between E, S, G and overall ESG performance come mainly from the developed and G8plus2 countries. These are

important findings as it makes the relevant authorities aware of the consequences of conflicts in the form of ESG performance of firms.

We contribute to the literature in the following several ways: First, to the best of our knowledge this is the first paper that explores the impact of conflicts on ESG performance of firms. The vast majority of previous work focusses on the financial performance of firms with a strong ESG agenda, (Abadie and Gardeazabal; 2003; Verdickt, 2018; Esteban, et al., 2012; Yanagizawa- Drott, 2014; Chaudhry et al., 2023). The effect of geopolitical conflicts on actual ESG behaviour remains unexplored. Second, we also study E, S and G separately as this provides granular insight into the three factors as they essentially focus on different aspects of sustainability. For example, environmental factor assesses how a firm manages its resources and its overall environmental sustainability. Social factor reflects a firm's commitment to ethical practices and social responsibility and governance factor measures the quality of a firm's management and its adherence to ethical and legal standards. Hence, we reckon these factors provide opportunities for a targeted intervention by doing a comparative analysis. Third, most of the previous work on effects of geopolitical conflicts was concerned with the one and same event, the Russia-Ukraine war in 2022. No earlier study looks at all the conflicts and explore their impact on the ESG performance of firm. This study fills this gap as well. Finally, we split the sample into developed and non-developed countries as defined by the United Nations and into G8plus2 countries as such subsample analysis has not been done earlier in the literature.

The policy implications of our findings are significant as geopolitical conflicts have far-reaching consequences for the global environment and climate governance, including biodiversity loss, ecological damage, social and governance issues, and economic impacts, which necessitate urgent action to reduce conflicts and achieve climate change goals, social equality, and good governance for firms. ESG challenges are increasingly important to stakeholders, leading to a need for firms to take action to meet sustainability demands. Firms are addressing this by implementing policies that incorporate ESG concerns and disclosing their ESG-related activities in financial statements, which in turn influences their strategic goals, operational execution, and sustainable business practices.

The remainder of this paper is structured as follows: Section 2 reviews the literature, Section 3 identifies the data and methodology, Section 4 presents the estimated results and associated discussions, and finally, Section 5 concludes the paper and provides some policy implications.

2. Literature review

ESG literature is built upon three core theories: stakeholder theory, signalling theory and legitimacy theory (Santamaria et al., 2021). Stakeholder theory emphasizes the importance of engaging with various stakeholders to achieve long-term success (Orlitzkey et al., 2003). The signalling theory, proposed by Spence, addresses the imbalance of knowledge between two parties and the decision-making process regarding information disclosure (Spence, 1973). Under the legitimacy theory (Suchman 1995), a firm must fulfil the respective society's values and expectations and gain legitimacy. Consequently, a firm's investment into sustainability is expected to increase levels of trust and motivation of employees, enhance customer loyalty, strengthen its reputation with suppliers and society in general, thus eventually improving its organizational performance overall. Today, a considerable body of empirical research has been accumulated that confirms that there is indeed a link between financial performance and ESG commitments: environmentally and socially responsible firms tend to create more value for their stakeholders, than companies without an environmental and social sustainability agenda (for recent meta-analyses of the literature on the topics, see Huang 2021; Velte 2022).

In this context, it would be useful to understand how international crises such as financial crises, pandemics and armed conflicts, affect the ESG effort. On the one hand, such economic shocks may provide opportunities for firms with a strong ESG commitment to consolidate their leading positions at the expense of firms who do not prioritise their social and environmental roles. On the other hand, major crises can potentially cause firms to de-emphasize ESG activities in their agenda in order to minimise the risk of failure in the short term. Furthermore, while there is now ample literature on the effects of financial crises and pandemics, there is relatively little prior research into the impact of geopolitical crises on firms' ESG practices. There has also been only a limited number of studies into the effects of crises on individual components of the ESG agenda. In the following sections, we will review existing literature on this topic, with an emphasis on studies of geopolitical crises, in particular.

2.1. Composite measures of ESG performance

The overall sustainability of firms, as measured via a composite ESG index, during financial crises and COVID-19 has been extensively researched. Numerous studies have shown that during the global financial crises of 2008-2009, high-ESG firms do well (Lins et al., 2017; Lu et al., 2022). Similarly, many studies report that the COVID-19 pandemic resulted in a more resilient financial performance of such firms compared to that of low-ESG ones (Albuquerque et al., 2020; Garel and Petit-Romec, 2021; Rubbaniy et al., 2022; Lu et al., 2022). These findings however are contradicted by Demers et al (2021), which find that high ESG scores do not offer any safe haven during COVID-19, and Wang et al. (2023), who examine how unpredictability of changes in the market trading environment, i.e., sudden changes in market demand, technology, policy, or suppliers, affects ESG performance, and find that these changes hurt ESG performance.

A similar effect is reported for armed conflicts by Ligorio et al. (2022), who study US-listed foreign firms during the Russia-Ukraine conflict and find that better sustainability performance helped to cope with the market quality deterioration associated with the outbreak of the war. Rather than analysing the financial performance, Alandejani and Al-Shaer (2023) study the relationship between ESG performance and economic and political instability directly, by using the latter as independent variables in a model of firms' ESG ratings. The economic and political instability is represented in terms of the number of articles published in major newspapers in the US, China and UK that contained terms that refer to corresponding themes. Their results show that during times of economic or political uncertainty, companies are more likely to engage in ESG activities, thus suggesting that ESG practices represent risk-averse activities. However, the opposite effect is described by Ahmed et al (2022): on the data on European companies from the STOXX 600 index, they conclude that high ESG scores offered no protection against negative stock returns.

2.2. Environment

There seems to be an emerging consensus among empirical studies about the effect of the COVID-19 pandemic on environmentally sustainable firms: they tend to fare better financially during the pandemic; the crisis also appears to have accelerated the transition towards environmental sustainability (Broadstock et al., 2021; Lehmann et al., 2021; Wan et al., 2021). On the other hand, these conclusions have been contradicted by Folger-Laronde et al. (2020), who did not find that higher levels of the sustainability performance protect against financial losses during the pandemic.

Long-term negative repercussions of geopolitical risks for financial performance are well-documented (e.g., Frey and Kucher, 2001; Schneider and Troeger, 2006, Yousaf et al., 2022; Bounou and Yatié, 2022). When contrasting high and low ESG-rated firms, many studies report that during severe geopolitical crises the green sector companies and firms with high environmental sustainability ratings attain better financial results than traditional energy firms. With its major impact on the global economy, the Russian invasion of Ukraine in 2022 attracted a considerable attention of researchers in sustainability. Umar et al. (2022) study cumulative abnormal returns during this conflict to determine its impact on the metals, conventional energy, and renewable energy markets. They find a significant increase in the anomalous returns that are associated with the renewable energy industry, while apart from the gas oil index, none of the conventional energy or metals markets exhibited large abnormal returns on the event day. Chishti et al. (2023) employ the cross-quantilogram technique to reveal the asymmetric effects of the Russia-Ukraine war on various markets, including energy, metals, and agriculture. Their analysis indicates that all the commodities receive significant losses due to the war and recommend diversification of energy and agricultural commodities to reduce geopolitical risks. Mohammed et al. (2023) investigate how renewable energy markets reacted to the Russia-Ukraine war and compared this effect to traditional energy sources, using the event study method within CAPM and an analysis of network connectedness in a VAR model. Their findings confirm that compared to the

traditional energy sector, renewable energy markets have positive and significant cumulative abnormalities, which seems to be explained by their greater abilities to provide diversification and hedging tools. Jiang et al. (2023) analyse time-frequency connectedness among traditional/new energy, green finance and ESG within the VAR framework to examine how the Russia-Ukraine war affects the transmission of returns spillover among these sectors. One of their main findings is that new energy, ESG, and green stocks are main risk transmitters, while the oil market becomes more vulnerable to other markets, changing from a net transmitter to a net receiver during the war. Similarly, to Jiang et al. (2023), El Khoury et al. (2023) develop a TVP-VAR model to study the connectedness between different industry market indices during the Russia-Ukraine war. Their analysis shows that fintech, ESG, and Morgan Stanley Capital International (MSCI) indices are net transmitters in developed countries, whereas gold and renewable energy are net receivers pre- and during war periods. ESG and MSCI are net transmitters in emerging countries, while fintech, renewable energy, and gold become net receivers in both periods.

As with the effect of COVID, the bulk of research on the topic supports the conclusion that commitment to sustainability policies provides a protection against negative stock returns during the war. However, several studies obtained results that were at odds with this notion. Studying the stock performance of firms during the Russia-Ukraine war, Deng et al. (2023) construct an asset pricing model of companies that have different degree of exposure to the low-carbon economy. They find that stocks with a lower exposure to the green economy fared better, which suggested a slowdown of the net-zero transition. This effect was stronger with US firms than with European ones, which were anticipated to benefit from energy policy support.

2.3. Society

Research into social sustainability during the financial crises and the COVID pandemic seems to collectively report a similar effect to that observed for environmental sustainability. Lins et al. (2017) investigate how the Global Financial Crisis of 2008-2009 impacted firms with high social sustainability ratings and find that during the crisis their stock returns were four to seven percentage points higher than firms with low social capital; high-CSR firms also experienced higher profitability, growth, and sales per employee relative to low-CSR firms, and they raised more debt. Bouslah et al. (2018) examine if the financial crises of 2008-2009 changed the relation between a firm's risk and social performance on a sample of non-financial U.S. companies. One of their key findings is that social performance was not associated with any risk reduction before the crisis, but after its onset it started to play a significant role in reducing risk. Studying the stock returns of Chinese companies during COVID-19, Broadstock et al. (2021), on the contrary, find that high social sustainability scores lead to decreased returns. Uribe Bohorquez and Garcia Sanchez (2023) report that COVID-19 harmed female employment in a large sample of multinational companies.

The consequences of the Russia-Ukraine war for socially responsible firms were analysed in Mattera and Soto (2022). The authors examine the behaviour of the Spanish IBEX-35 index during the conflict and show that long-term CSR commitments significantly impact a firm's ability to overcome crises and improve financial performance.

2.4 Governance

Broadstock et al. (2021) analyse the governance scores as an independent variable in a model of cumulative abnormal returns of Chinese firms during COVID-19. The study finds that strong performance in policy, overseas tax commitments, board diversity, auditor independence, whistleblowing and managing negative incidents regarding governance ensure overall financial stability of a firm and offer an improved resilience to the economic shock of COVID-19. To our knowledge, the effects of geopolitical crises on governance sustainability have not been examined in isolation before, but only as part of a composite ESG index. Several studies have in fact omitted the governance performance indicators from their composite sustainability index (Albuquerque et al., 2020, Demers et al., 2021).

Previous work seems to collectively suggest that different types of crises, and geopolitical conflicts in particular, act as a stimulus for the uptake of ESG practices, as they appear to serve as a tool for diversification and hedging against financial losses, although a small number of studies contradict this conclusion (Abadie and Gardeazabal; 2003; Verdickt, 2018; Esteban, et al., 2012; Yanagizawa- Drott, 2014). With regards to geopolitical conflicts, most of the previous work on the topic focused on the financial performance of firms with a strong ESG agenda, while the effect of wars on actual ESG behaviour remains unexplored. Moreover, the impact of armed conflicts on the environment sustainability of firms has been actively discussed, but there is very little research on other components of ESG, social and governance sustainability. However, there is literature on governance for sustainability which is opposite of conflicts. For example, Elkington (2006) underscores the imperative of incorporating sustainability considerations into governance and emphasizes the increasing intricacy of this matter while Loorbach et al. (2011) concentrate on the function of governance in facilitating transitions. Ullah and colleagues (2021) posit a comprehensive framework for the governance of sustainable smart cities through the lens of risk management. In their study, they meticulously outline 56 distinct risks and systematically classify them into three overarching categories: technological, organizational, and external risks. Clementino and Perkins (2021) find that companies in Italy respond to ESG ratings in various ways, influenced by their beliefs about the benefits and their alignment with corporate strategy.

Another related issue of geopolitical importance is the sustainability governance around oil spill and hydrogen. Elsayed et al. (2020) examine the emergence of sustainability governance through the progressive hybridization procedure between corporate governance and corporate social responsibility

and find that sustainability governance was established as a socially constructed method to oversee the process of re-legitimisation after the Gulf of Mexico oil spill whereas Van de Graaf et al. (2020) explore the geopolitical dynamics of hydrogen developments and show that the trade in hydrogen can impact geopolitical relations among countries. Overall, most of the previous work on effects of geopolitical crises was concerned with the one and same event, the Russian invasion of Ukraine in 2022; these studies often limited their attention to firms in specific countries (e.g., only US, China, or EU). It remains to be seen if similar conclusions can be drawn about other geopolitical conflicts in the past, and how these conclusions generalise to different geographical regions. This leads to the following research questions:

Hypothesis 1: The geopolitical conflict of a country has an impact on the Environmental Performance of Firms.

Hypothesis 2: The geopolitical conflict of a country has an impact on the Social Performance of Firms.

Hypothesis 3: The geopolitical conflict of a country has an impact on the Corporate Governance Performance of Firms.

Hypothesis 4: The geopolitical conflict of a country has an impact on the overall ESG Performance of Firms.

3. Data and Empirical Strategy

3.1. Data

To evaluate the impact of geopolitical conflict on E, S, G and overall ESG performance of firms, we use a panel dataset of 79 countries from 2002 to 2021. The data is compiled from three different sources. The ESG scores come from Refinitiv (formerly ASSET4) dataset, while the data on geopolitical conflict and other control variables are collected from Uppsala Conflict Data Program/International Peace Research Institute, Oslo (UCDP/PRIO) and Compustat Global dataset respectively.

For E, S, G and overall ESG performance, we employ data from Refinitiv ESG. Refinitiv is managing firm level ESG for 4000 global companies and very popular among corporate finance researchers (El Ghoul et al., 2017; Kölbl, Busch, and Jancso, 2017; Liang and Renneboog, 2017). Refinitiv ESG data is mainly consisted of three main dimensions: Environmental, Social and Governance. These dimensions are an accumulation of 250 different objective indicators. More specifically, we use all three different categories of ESG, namely Environmental, Social and Corporate Governance, separately and collectively (called as Overall Score) as our dependent variables. These four are our dependent variables. The environmental pillar shows the firm effective strategies and management practices to generate sustainable shareholders value. Environmental performance (Environmental Score) is based on the attributes such as the effect of firm practices on land, water and air including both living and

non-living creatures along with ecosystem (i.e., resources reduction, emission reduction, and product innovation benefiting the environment). Second, the *Social Score* is based on attributes such as employment quality, health & safety, training and development, diversity and opportunities, human rights, community and product responsibility. Finally, the *Corp. Governance Score* is based on attributes such as board structure, compensation policy, board functions, shareholders rights, and vision and strategy. All the scores are scaled from 0% (hostile) to 100% (friendly).²

Our primary variable of interest, independent variable, is the geopolitical conflict dummy that takes the value 1, if a country has experienced a geopolitical conflict in a given year and 0 otherwise. In line with the extant literature, we control for variety of variables that can potentially influence environmental, social and corporate governance scores of firms (Jizi, 2017; Chaudhry et al., 2021; Aguilera et al., 2021). These include return on assets, natural log of total assets, debt to assets, natural log of cash, dividend dummy, operating income growth, sales growth and assets growth. Table 1 provides definition of all these variables together with their data sources and Table 2 provides the list of the countries that are used in this paper.

[Insert Tables 1 & 2 here]

3.2. Summary Statistics

The summary statistics of the sample used is provided in Table 3. The data is divided into three sub-samples: "Geopolitical conflict," "No geopolitical conflict," and "Full sample." The mean, minimum and maximum and standard deviations in parentheses are presented in columns (1), (2), and (3) respectively. Environmental Score, Social Score, Governance Score and Overall Score represent different measures of ESG separately and as an index. The mean and standard deviation for the "Geopolitical conflict" sample is the lowest compared to other two sub-samples giving an early indication that there is a negative relationship between conflicts and ESG. For most of the control variables, the mean values for conflict sub-sample are the highest, which is intuitive as countries with no conflict are expected to do better in terms of different firm characteristics.

Table 4 provides the correlation matrix together with their statistical significance. Three asterisks indicate that the result is statistically significant at the 1% level of significance ($\alpha = 0.01$), two asterisks signify that the result is statistically significant at the 5% level of significance ($\alpha = 0.05$), and one asterisk suggests that the result is statistically significant at the 10% level of significance ($\alpha = 0.10$). All our explanatory variables have very low correlation with each other except natural log of assets and natural log of cash that has very high correlation. We run our results without natural log of cash and our results remain the same with and without inclusion of natural log of cash. As argued by Allison (2012)

² For detail on the ESG scores see

https://my.refinitiv.com/content/dam/myrefinitiv/productdoc/Asset4ESGProfessional_Guide.pdf

that the collinearity of two control variables is not a concern and both natural log of cash and natural log of assets are control variables in our model. Nevertheless, O'Brien (2017) asset that dropping highly collinear variables from the model is generally not a good idea. Furthermore, our sample size is very large and according to Franke (2012) collinearity poses fewer problems if the sample size is large. This argument of Franke (2012) is evident from the results in Table 6 as the results of our main variables of interest are even stronger with the exclusion of natural log of cash and. Furthermore, a comparison of Table 5 and Table 6 reveals that the estimated coefficients of other control variables remain stable. Therefore, inclusion of natural log of cash does not pose any problem and we decide to keep this variable in our regression.

[Insert Tables 3 & 4 here]

3.3 Methodology

The design of four research models enables our study of the impact of conflict on ESG as a separate component and as an overall index.

$$\text{Environmental Score}_{it} = \beta_0 + \beta_1 \text{Geopolitical conflict}_{it} + \theta Z_{it} + \gamma_i + \varepsilon_{it} \quad (1)$$

$$\text{Social Score}_{it} = \beta_0 + \beta_1 \text{Geopolitical conflict}_{it} + \theta Z_{it} + \gamma_i + \varepsilon_{it} \quad (2)$$

$$\text{Governance Score}_{it} = \beta_0 + \beta_1 \text{Geopolitical conflict}_{it} + \theta Z_{it} + \gamma_i + \varepsilon_{it} \quad (3)$$

$$\text{Overall ESG Score}_{it} = \beta_0 + \beta_1 \text{Geopolitical conflict}_{it} + \theta Z_{it} + \gamma_i + \varepsilon_{it} \quad (4)$$

where $\text{Environmental Score}_{it}$, Social Score_{it} , $\text{Governance Score}_{it}$ and $\text{Overall ESG Score}_{it}$ are the Environmental Score, Social Score, Corporate Governance Score and Overall ESG Score for firm i in year t in equations (1) to (4) respectively; $\text{Geopolitical conflict}_{it}$ is the geopolitical conflict variable for country i in year t in all the equations; Z_{it} is the vector of control variables; γ_i represents country, year and firm fixed effects and ε_{it} is the idiosyncratic error term assumed to be independently and identically distributed (i.i.d.) in all the equations.

4. Estimated Results

4.1. Baseline estimates

Table 5 exhibits the baseline results by estimating equation using the four measures of firm level Environmental, Social, Corporate Governance and Overall ESG Score. The standard errors are clustered at the firm level to control cross-sectional dependence (Boubaker et al., 2020). We also control for country fixed effects. The impact of geopolitical conflict on the various ESG proxies is quite strong. We find that the countries that are in a geopolitical conflict are negatively impacted as far as their Environmental, Social, Corporate Governance and Overall ESG scores are concerned and these results are provided in columns 1-4 in Table 5. The relationships are statistically significant at the one percent significance level. In terms of the magnitude, if a country is in a geopolitical conflict, the firms in that country are likely to have 19% lower Environmental Scores, 12% lower Social Scores, 7% lower corporate governance scores and 15% overall ESG scores. We reject all our hypotheses 1 to 4 that a geopolitical conflict in a country does not have impact on the environmental, social, governance and overall ESG performance of firms. Our results confirm the legitimacy theory of Suchman (1995) theory and are in line with Lu et al (2022) and in contrast with Lins et al (2017) who study the ESG and CSR performance in the context of Global Financial Crisis of 2008-2009 and in contrast with Alandejani and Al-Shaer (2023) who study ESG performance during economic and political instability. Our results differ from Lins et al. (2017) and Alandejani and Al-Shaer (2023) because they study ESG and CSR in a specific context like global financial crisis and during economic and political instability. Our results are broader and are not specific to any event.

[Insert Table 5 here]

In our baseline model we do not control for country, year and firm fixed effects. In Table 6 we include all the fixed effects and rerun our regression models. We observe the magnitudes of the coefficients is smaller compared to our results in Table 5. However, they are still quite big particularly for the environmental and social scores (about 7%) and about 8% in case of overall ESG scores. With regards to the control variables, we don't find any significant impact of return on assets on the ESG Scores separately and collectively. However, we find positive impact of the natural log of total assets, debt to assets ratio, natural log of cash and dividend pay-out dummy. These results are intuitive and in line with the literature (Jizi 2017; Chaudhry et al., 2021; Aguilera et al., 2021). Including country, year and firm fixed effects and significantly improved the goodness of fit of our models as the R-square increase from the range of 0.08-0.2 in Table 4 to the range of 0.624-0.734. This shows it is important to include all the fixed effects in our model. Overall, we reject all our hypotheses 1 to 4 that a geopolitical conflict in a country does not have impact on the environmental, social, governance and overall ESG performance of firms. The results are reported in Table 6.

[Insert Table 6 here]

As we observe very high correlation between natural log of assets and natural log of cash. We rerun all of our four models without natural log of cash in our models and present the results in Table 7. Our results remain the same and sometimes they are stronger both economically and statistically. As we do not find any significant differences in our regressions with the natural log of cash. We keep this as a control variable in all our models.

[Insert Table 7 here]

4.2. Additional Robustness Check

4.2.1 Endogeneity

Although we provide robustness of our results in the form of including the three E, S and G separately in our models, we provide additional robustness check to eliminate any possibility of endogeneity. Since conflicts are often blamed on scarce resources (as well as environmental degradation), the question of conflicts being endogenously determined within baseline regression estimates in Table 4 and Table 5 may arise (Theisen, 2008). Consequently, we re-estimate model (1) using Lewbel's (2012) heteroscedasticity identified endogenous variable regression estimator and present results in Table 8. As can be seen in Table 8, conflict still has negative and statistically significant effects on the four categories of E, S, G and ESG. at the one percent levels of significance. The magnitudes of the coefficients from the Lewbel (2012) method, are even greater than that of the fixed effects regression estimators (in Tables 4, 5 and 6). The internally generated instruments under the Lewbel (2012) estimator pass the identification tests: as the Kleibergen-Paap under-identification test and the Hansen over-identification test are both rejected. Overall, the above results corroborate the finding that the occurrence of conflict in a country decreases the E, G, G and ESG performance of firms in that country.

[Insert Table 8 here]

4.2.2. Subsample Analysis

As there might be differences across difference countries with respect to the impact of geopolitical conflict on the environmental, social, governance and overall ESG performance of firms, we split our sample into developed and non-developed countries. We follow United Nation's classification of developed vs. non-developed countries.³ We find that our results are mainly driven by developed countries as we find negative and significant impact of geopolitical conflicts on the

³ The developed countries as per United Nations are Australia, Austria, Belgium, Bulgaria, Croatia, Canada, Czech Republic, Cyprus, Denmark, Estonia, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Japan, Latvia, Lithuania, Luxembourg, Malta, Netherlands, New Zealand, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, United Kingdom, United States of America,

governance and overall ESG performance of firms for developed countries. The impact is negative on the environmental and social performance is also negative but not significant at 10% level of significance. We find similar results for non-developed countries. To dig further into this, we run regressions only on G8plus2 countries. We include China and India in addition to G8 countries as these are big economies and big polluters. We find consistent negative and significant impact of geopolitical conflicts on environmental, social, governance and overall ESG performance of firms for G8plus2 countries. However, the impact of G8plus2 countries is mostly positive. These results are in consistent with Jiang et al. (2023), El Khoury et al. (2023). The results are provided in Tables 8 and 9 in the updated version of the paper.

[Insert Tables 9 & 10 here]

4.3. Discussion

The previous assessments reveal the detrimental effect of geopolitical conflict on businesses, exacerbating environmental, social, corporate governance, and overall ESG scores. The economic dynamics behind this phenomenon are intricate, involving geopolitical conflict, resource scarcity, and the allocation of resources to engage in or mitigate geopolitical conflict. Geopolitical conflicts inevitably lead to increased military spending, requiring a shift between civilian and military economic priorities. This results in reduced resource availability and diminishes productive capacity for businesses, restricting research and development opportunities. Consequently, geopolitical conflict worsens firms' ESG performance by limiting available resources.

The relationship between natural resources and geopolitical conflict is significant as well. Studies by Theisen (2008), Nillesen & Bulte (2012), Koubi et al. (2014), and Vesco et al. (2020) have shown that both scarcity and abundance of natural resources, including renewables like biomass, are linked to escalating geopolitical conflicts. This holds true for both internal and external geopolitical conflicts affecting states. DiGiuseppe et al. (2012) have observed that improved access to credit mitigates internal conflict, underscoring the importance of resource distribution and empowerment of various societal groups in determining conflicts and, consequently, energy poverty. Armed conflicts result in societal disputes over energy access and availability, emphasizing the need for policies addressing conflict root causes, such as resource distribution and credit accessibility. Such policies could help alleviate conflict's impact on energy poverty. Moreover, addressing energy poverty may reduce conflicts, as energy access can enhance economic opportunities and decrease societal tensions.

In addition to economic repercussions, geopolitical conflicts have significant environmental consequences. Geopolitical conflict often leads to environmental degradation, including deforestation, soil erosion, and water pollution. These impacts worsen existing environmental challenges like climate change and exacerbate energy poverty. Hence, addressing geopolitical conflict is crucial not only for economic reasons but also for environmental sustainability and social well-being. Furthermore, geopolitical conflict's impact on businesses extends beyond ESG scores. It can disrupt supply chains, damage infrastructure, and increase operational costs, negatively affecting a firm's financial performance and long-term sustainability. Consequently, businesses must consider geopolitical conflict's potential impact on their operations and formulate strategies to manage this risk.

In conclusion, geopolitical conflict significantly affects the environmental, social, corporate governance, and overall ESG scores of businesses. The intricate interplay between geopolitical conflict, resource scarcity, and resource allocation to engage in or mitigate geopolitical conflict underscores the complexity of the issue. Natural resource scarcity and abundance are also crucial factors in escalating geopolitical conflicts. Policies addressing geopolitical conflict root causes, such as resource distribution and credit accessibility, are vital to mitigating geopolitical conflict's impact on firms' ESG performance.

5. Conclusion

In the light of the challenges explained in the discussion section, this paper studies the impact of conflicts of a country on the E, S, G and overall ESG performance of firms. We find very strong negative impact of conflicts on the E, S, G and overall ESG performance of firms both economically and statistically. Our results are robust to the inclusion of country, year and firm fixed effects. We also eliminate any possibility of endogeneity with Lewbel (2012) estimators. Our subsample analysis shows that the negative relationship between E, S, G and overall ESG performance come mainly from the developed and G8plus2 countries.

Our results have strong policy implications as the occurrence of geopolitical conflicts has far-reaching implications for the global environment and climate governance. The loss of biodiversity and damage to the ecological environment, as well as the ripple effect on the global economy in the form of social and governance issues, are significant challenges that need to be addressed. The use and production of military equipment during conflicts have a significant impact on the environment, have social cost for the society and governance cost for the firms. Achieving the decarbonisation goal together with equality for the public and improved governance structure for firms worldwide in the context of global conflicts has become more uncertain, and there is a pressing need to reduce geopolitical conflicts for tackling climate change and achieving social equality and good governance for firms. Furthermore, it informs the policy makers that geopolitical conflicts often result in

environmental destruction due to warfare, which affects ecosystems and biodiversity. Additionally, conflicts can lead to human rights violations, making it challenging to maintain high social governance standards. Conflicts also fragment societies along various lines. Moreover, geopolitical conflicts may prompt regulatory adjustments, which could lead to stricter ESG compliance or a decline in ESG standards. Finally, a negative relationship implies that nations embracing strong ESG practices are more likely to engage in international cooperation. ESG considerations foster collaboration between nations, encouraging dialogue and conflict resolution mechanisms.

Our study provides the following direction for future research. First and foremost, an analysis at a granular level is an emerging trend and more research on synthesizing the components of E, S and G will advance further knowledge around this field. Second, there is a potential to consider a more extended time frame to capture the evolving dynamics in this relationship. Separating short-term and long-term effects could provide valuable insights into how the relationship between conflict and ESG performance changes over time. Finally, another theme that seems plausible are the studies around different regions or types of conflicts could help identify region-specific policy recommendations. Investigating potential policy interventions or corporate strategies that can mitigate the adverse effects of conflict on ESG performance could have practical implications for businesses and policymakers aiming to promote sustainability in conflict-affected regions.

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Table 1: Definitions and sources of variables

Summary Statistics	Definition	Source
Environmental Score	Values range from 1-100 for firms according to environmental criteria of ESG index in a given year	REFINITIV
Social Score	Values range from 1-100 for firms according to social criteria of ESG index in a given year	REFINITIV
Corporate Governance Score	Values range from 1-100 for firms according to corporate governance criteria of ESG index in a given year	REFINITIV
ESG Score	An aggregated ESG index with values ranges from 1-00	REFINITIV
Geopolitical conflict	Dummy equal to 1 if a firm is from a country that has experienced a geopolitical conflict in a given year and 0 otherwise	UCDP/PRIO
Return on Assets	Return on assets of a firm	Compustat Global
Ln(Total Assets)	Natural log of total assets of a firm	Compustat Global
Debt to Assets	Debt to assets ratio of a firm	Compustat Global
Ln(Cash)	Natural log of cash of a firm	Compustat Global
Dividend Dummy	Dummy equal to 1 if a company is paying dividend in a current year and 0 otherwise	Compustat Global
EBIT Growth	Growth of earnings before interest and taxes of a firm	Compustat Global
Sales Growth	Growth of sales of a firm	Compustat Global
Assets Growth	Assets growth of a firm	Compustat Global

Table 2: List of Countries

Sr No.	Country	Sr No.	Country	Sr No.	Country	Sr No.	Country
1	Argentina	21	Georgia	41	Luxembourg	61	Russian Federation
2	Australia	22	Germany	42	Macao, SAR China	62	Saudi Arabia
3	Austria	23	Gibraltar	43	Malaysia	63	Singapore
4	Bahrain	24	Greece	44	Malta	64	Slovenia
5	Belgium	25	Hong Kong, SAR China	45	Mexico	65	South Africa
6	Bermuda	26	Hungary	46	Morocco	66	Spain
7	Brazil	27	Iceland	47	Netherlands	67	Sri Lanka
8	British Virgin Islands	28	India	48	New Zealand	68	Sweden
9	Cambodia	29	Indonesia	49	Nigeria	69	Switzerland
10	Canada	30	Ireland	50	Norway	70	Taiwan, Republic of China
11	Cayman Islands	31	Isle of Man	51	Oman	71	Thailand
12	Chile	32	Israel	52	Pakistan	72	Turkey
13	China	33	Italy	53	Panama	73	Uganda
14	Colombia	34	Japan	54	Papua New Guinea	74	Ukraine
15	Cyprus	35	Jersey	55	Peru	75	United Arab Emirates
16	Czech Republic	36	Jordan	56	Philippines	76	United Kingdom
17	Denmark	37	Kazakhstan	57	Poland	77	United States of America
18	Egypt	38	Kenya	58	Portugal	78	Viet Nam
19	Finland	39	Korea (South)	59	Qatar	79	Zimbabwe
20	France	40	Kuwait	60	Romania		

Table 3: Summary statistics

Summary Statistics	Geopolitical conflict			No geopolitical conflict			Full Sample		
	Mean (St Dev)	Min	Max	Mean (St Dev)	Min	Max	Mean (St Dev)	Min	Max
ESG Score	0.515 (0.361)	0.016	0.984	0.694 (0.262)	0.012	0.987	0.661 (0.291)	0.122	0.987
Environmental Score	0.562 (0.335)	0.080	0.969	0.687 (0.247)	0.080	0.975	0.664 (0.270)	0.080	0.975
Social Score	0.504 (0.334)	0.019	0.989	0.651 (0.261)	0.017	0.993	0.624 (0.282)	0.017	0.993
Governance Score	0.325 (0.301)	0.101	0.978	0.420 (0.240)	0.008	0.983	0.403 (0.255)	0.008	0.983
Conflict	1.000 (0.000)	1.000	1.000	0.000 (0.000)	0.000	0.000	0.185 (0.388)	0.000	1.000
Return on Assets	0.000 (0.005)	-0.058	0.325	0.007 (0.036)	-3.041	4.947	0.006 (0.033)	-3.041	4.947
Ln(Total Assets)	10.973 (1.902)	-3.244	22.934	10.020 (2.887)	-6.908	19.871	10.197 (2.756)	-6.908	22.934
Debt to Assets	0.170 (0.128)	0.000	3.325	0.157 (0.541)	-0.005	3.500	0.159 (0.491)	-0.005	3.500
Ln(Cash)	7.931 (1.831)	-5.521	20.700	7.376 (2.906)	-6.908	17.974	7.479 (2.747)	-6.908	20.700
Dividend Pay-out Dummy	0.001 (0.030)	0.000	1.000	0.010 (0.101)	0.000	1.000	0.008 (0.092)	0.000	1.000
EBIT Growth	0.510 (11.039)	-2.030	100.606	0.095 (5.966)	-2.003	101.716	0.172 (7.182)	-2.003	101.716
Sales Growth	0.688 (14.823)	-1.000	101.657	0.177 (6.606)	-2.453	101.961	0.271 (8.732)	-2.453	101.961

Assets Growth	0.630	-1.000	101.657	0.119	-1.000	100.622	0.213	-1.000	101.657
	(10.779)			(4.912)			(6.418)		
Observations	48513			213766			262279		

Note: The numbers in parenthesis are standard deviations.

Table 4: Correlation matrix

	Geopolitical conflict	Return on Assets	Ln(Total Assets)	Debt to Assets	Ln(Cash)	Dividend Dummy	EBIT Growth	Sales Growth	Assets Growth
Geopolitical conflict	1								
Return on Assets	-0.0778***	1							
Ln(Total Assets)	0.134***	-0.154***	1						
Debt to Assets	0.0101***	-0.0338***	-0.0184***	1					
Ln(Cash)	0.0785***	-0.163***	0.924***	-0.0481***	1				
Dividend Dummy	-0.0393***	-0.0155***	-0.119***	0.00463*	-0.129***	1			
EBIT Growth	0.0225***	0.0000914	0.0149***	0.000794	0.00906***	-0.000581	1		
Sales Growth	0.0227***	-0.00260	0.000317	0.00121	-0.00493*	0.000797	0.122***	1	
Assets Growth	0.0309***	-0.00270	0.0184***	0.00177	0.00987***	0.00231	0.419***	0.102***	1

Note: ***, **, & * indicate statistical significance at the 1, 5, & 10 levels of significance

Table 5: Effect of geopolitical conflicts on environmental, social, governance and overall ESG scores of firms without fixed effects

VARIABLES	(1) Environmental Score	(2) Social Score	(3) Governance Score	(4) ESG Overall
Geopolitical conflict	-0.194*** (0.00189)	-0.122*** (0.00172)	-0.0725*** (0.00146)	-0.147*** (0.00165)
Return on Assets	1.224*** (0.137)	1.141*** (0.128)	-0.658*** (0.0682)	1.042*** (0.118)
Ln(Total Assets)	0.000787 (0.000632)	-0.0238*** (0.000516)	-0.0503*** (0.000822)	-0.0250*** (0.000590)
Debt to Assets	0.0220** (0.0104)	0.00418** (0.00206)	0.0325* (0.0182)	0.0129** (0.00631)
Ln(Cash)	0.0393*** (0.000721)	0.0492*** (0.000592)	0.0406*** (0.000897)	0.0560*** (0.000661)
Dividend Pay-out Dummy	0.0425*** (0.00606)	0.0393*** (0.00586)	0.206*** (0.00524)	0.0991*** (0.00626)
EBIT Growth	-8.61e-05 (8.00e-05)	-6.58e-05 (8.96e-05)	-7.39e-05 (8.79e-05)	-0.000158 (9.81e-05)
Sales Growth	-4.92e-05 (6.37e-05)	-4.89e-05 (7.11e-05)	0.000165** (6.88e-05)	-1.88e-05 (8.15e-05)
Assets Growth	-0.000125 (8.36e-05)	-0.000183* (0.000102)	4.59e-05 (8.88e-05)	-0.000229** (0.000106)
Constant	0.385*** (0.00400)	0.553*** (0.00371)	0.621*** (0.00302)	0.479*** (0.00364)
Observations	262,279	262,279	262,279	262,279
R-squared	0.200	0.123	0.082	0.152
Country FE	No	No	No	No
Time FE	No	No	No	No
Firm FE	No	No	No	No

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 6: Effect of geopolitical conflicts on environmental, social, governance and overall ESG scores of firms with fixed effects

VARIABLES	(1) Environmental Score	(2) Social Score	(3) Governance Score	(4) ESG Overall
Geopolitical conflict	-0.0759*** (0.0205)	-0.0742*** (0.0199)	-0.0403*** (0.0122)	-0.0816*** (0.0206)
Return on Assets	0.0200 (0.0945)	0.0817 (0.104)	-0.0610 (0.0573)	0.0893 (0.109)
Ln(Total Assets)	0.0722*** (0.00578)	0.0609*** (0.00433)	0.0440*** (0.00321)	0.0768*** (0.00448)
Debt to Assets	0.00848*** (0.00168)	0.00838*** (0.00157)	0.00925*** (0.00111)	0.00810*** (0.00264)
Ln(Cash)	0.0117* (0.00702)	0.0157*** (0.00452)	0.00936*** (0.00251)	0.0109** (0.00497)
Dividend Pay-out Dummy	0.120*** (0.0137)	0.0976*** (0.0128)	0.0547*** (0.0108)	0.118*** (0.0125)
EBIT Growth	-0.000221** (9.45e-05)	-0.000328*** (0.000126)	-0.000290*** (9.29e-05)	-0.000343*** (0.000119)
Sales Growth	-0.000195** (8.06e-05)	-0.000360*** (0.000102)	-0.000110 (0.000104)	-0.000255** (0.000107)
Assets Growth	-0.000747*** (0.000112)	-0.000997*** (0.000188)	-0.000597*** (0.000153)	-0.000974*** (0.000165)
Constant	-0.506*** (0.0514)	-0.527*** (0.0563)	-0.604*** (0.0408)	-0.738*** (0.0459)
Observations	262,279	262,279	262,279	262,279
R-squared	0.679	0.624	0.734	0.653
Country FE	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 7: Effect of geopolitical conflicts on Environmental, social, governance and overall ESG scores of firms without correlated variable of Cash

VARIABLES	(1) Environmental Score	(2) Social Score	(3) Governance Score	(4) ESG Overall
Geopolitical conflict	-0.0802*** (0.0204)	-0.0800*** (0.0202)	-0.0438*** (0.0123)	-0.0856*** (0.0207)
Return on Assets	0.0125 (0.0927)	0.0717 (0.101)	-0.0670 (0.0579)	0.0823 (0.107)
Ln(Total Assets)	0.0825*** (0.00311)	0.0747*** (0.00293)	0.0523*** (0.00281)	0.0864*** (0.00291)
Debt to Assets	0.00804*** (0.00212)	0.00779*** (0.00198)	0.00889*** (0.000968)	0.00769** (0.00307)
Dividend Pay-out Dummy	0.116*** (0.0134)	0.0925*** (0.0126)	0.0516*** (0.0108)	0.114*** (0.0124)
EBIT Growth	-0.000229** (9.62e-05)	-0.000339*** (0.000128)	-0.000296*** (9.50e-05)	-0.000351*** (0.000121)
Sales Growth	-0.000216*** (7.99e-05)	-0.000387*** (0.000102)	-0.000126 (0.000104)	-0.000274** (0.000106)
Assets Growth	-0.000779*** (0.000117)	-0.00104*** (0.000195)	-0.000622*** (0.000156)	-0.00100*** (0.000169)
Constant	-0.549*** (0.0547)	-0.585*** (0.0572)	-0.638*** (0.0413)	-0.778*** (0.0471)
Observations	262,279	262,279	262,279	262,279
R-squared	0.678	0.622	0.733	0.653
Country FE	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 8: Effect of geopolitical conflicts on Environmental, social, governance and overall ESG scores using Lewbel (2012) estimator

VARIABLES	(1) Environmental Score	(2) Social Score	(3) Governance Score	(4) ESG Overall
Geopolitical conflict	-0.553*** (0.00573)	-0.227*** (0.00459)	0.352*** (0.00480)	-0.236*** (0.00512)
Return on Assets	2.730*** (0.0944)	5.229*** (0.101)	0.653*** (0.0202)	4.378*** (0.0951)
Ln(Total Assets)	0.0743*** (0.000919)	0.0600*** (0.000747)	0.00124** (0.000622)	0.0480*** (0.000793)
Debt to Assets	0.0544*** (0.00807)	-0.0197*** (0.00574)	0.547*** (0.00715)	0.0252*** (0.00660)
Ln(Cash)	-0.00514*** (0.000987)	0.00559*** (0.000842)	0.0271*** (0.000678)	0.0174*** (0.000883)
Dividend Pay-out Dummy	0.133*** (0.00551)	0.206*** (0.00528)	0.406*** (0.00469)	0.239*** (0.00560)
EBIT Growth	8.04e-05 (0.000101)	-0.000258*** (9.70e-05)	-0.000584*** (0.000117)	-0.000305*** (0.000108)
Sales Growth	0.000378*** (6.98e-05)	0.000166** (7.53e-05)	-9.66e-05 (7.92e-05)	0.000140* (8.13e-05)
Constant	0.000440*** (0.000103)	-0.000307*** (9.40e-05)	-0.000937*** (0.000117)	-0.000336*** (9.82e-05)
Observations	262,279	262,279	262,279	262,279
R-squared	0.817	0.813	0.263	0.809
FE	Yes	Yes	Yes	Yes
Kleibergen-Paap rk	1.444***	1.444***	1.444***	1.444***
LM Test ^a				
Hansen J statistic ^b	2408.101***	4562.221***	1.114***	5548.208***

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 9: Effect of geopolitical conflicts on Environmental, social, governance and overall ESG scores using Lewbel (2012) estimator

VARIABLES	Developed Countries				Non Developed Countries			
	-1	-2	-3	-4	-5	-6	-7	-8
	Environmental Score	Social Score	Governance Score	ESG Overall	Environmental Score	Social Score	Governance Score	ESG Overall
Conflict	-0.00141	-0.0427	-0.187***	-0.0681***	-0.0854	-0.0854	-0.105**	-0.152***
	-0.03	-0.03	-0.02	-0.03	-0.06	-0.06	-0.05	-0.05
Return on Assets	1.076***	1.074***	-0.0692	1.182***	-0.696***	-0.688***	-0.0947*	-0.651***
	-0.199	-0.2	-0.173	-0.243	-0.189	-0.195	-0.0557	-0.181
Ln(Total Assets)	0.0662***	0.0448***	0.0414***	0.0704***	0.0317	0.0301	0.0358***	0.0421**
	-0.00498	-0.00426	-0.00342	-0.00365	-0.0272	-0.0205	-0.0114	-0.0194
Debt to Assets	-0.0945***	-0.0646**	0.015	-0.0844**	0.0151**	0.0147**	0.0121**	0.0136**
	-0.0276	-0.0286	-0.0334	-0.0334	-0.00699	-0.00676	-0.00582	-0.00538
Ln(Cash)	0.000823	0.0108***	0.00882**	0.0025	0.0608**	0.0555***	0.0219**	0.0538***
	-0.00415	-0.00371	-0.00351	-0.0035	-0.0277	-0.0197	-0.00854	-0.0188
Divident Dummy	0.0801***	0.0421***	0.0308***	0.0683***	0.073	0.127**	0.0628	0.106*
	-0.015	-0.013	-0.0107	-0.0132	-0.0565	-0.0517	-0.0607	-0.0614
EBIT Growth	1.72E-06	-1.07E-06	-2.19E-06	7.37E-07	4.34E-05	3.74E-05	1.79E-05	4.46E-05
	-1.26E-06	-1.44E-06	-1.35E-06	-1.37E-06	-3.32E-05	-4.43E-05	-3.14E-05	-3.94E-05
Sales Growth	-5.99E-05	-0.000198**	-8.93E-05	-0.000156	-0.000212	-0.000432**	-0.000222	-0.000310*
	-0.000104	-9.03E-05	-9.36E-05	-0.000113	-0.00014	-0.000174	-0.000186	-0.000185
Assets Growth	-0.000465***	-	-	-	-0.000629***	-	-	-
	-0.000133	0.000632***	0.000500***	0.000700***	0.000927***	0.000637**	0.000891***	0.000891***
Constant	0.173***	-0.00015	-0.000121	-0.000165	-0.000235	-0.00031	-0.000277	-0.000296
	-0.0259	0.219***	0.544***	0.124***	-0.0401	-0.0382	-0.293***	-0.264**
		-0.0278	-0.0244	-0.0268	-0.161	-0.142	-0.111	-0.131

Observations	86,643	86,643	86,643	86,643	175,709	175,709	175,709	175,709
R-squared	0.495	0.429	0.584	0.462	0.571	0.503	0.66	0.58
Country FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 10: Effect of geopolitical conflicts on Environmental, social, governance and overall ESG scores using Lewbel (2012) estimator

VARIABLES	G8Plus2				Non-G8Plus2			
	(1) Environmental Score	(2) Social Score	(3) Governance Score	(4) ESG Overall	(5) Environmental Score	(6) Social Score	(7) Governance Score	(8) ESG Overall
Geopolitical conflict	-0.110*** (0.0215)	-0.135*** (0.0229)	-0.136*** (0.0132)	-0.175*** (0.0242)	-0.00546 (0.0349)	0.0687** (0.0312)	0.0507** (0.0239)	0.0710** (0.0326)
Return on Assets	1.598*** (0.369)	1.516*** (0.356)	-0.482*** (0.127)	1.510*** (0.356)	-0.386*** (0.123)	-0.353*** (0.136)	0.0698 (0.0841)	-0.259* (0.143)
Ln(Total Assets)	0.0910*** (0.00428)	0.0596*** (0.00549)	0.0368*** (0.00381)	0.0835*** (0.00436)	0.0349** (0.0164)	0.0296** (0.0125)	0.0409*** (0.00629)	0.0496*** (0.0126)
Debt to Assets	-0.251*** (0.0343)	-0.207*** (0.0352)	-0.0573** (0.0223)	-0.286*** (0.0378)	0.0152** (0.0076)	0.0145* (0.00752)	0.0125** (0.00589)	0.0146** (0.00659)
Ln(Cash)	-0.00317 (0.0039)	0.0176*** (0.00461)	0.0218*** (0.00342)	0.0157*** (0.00391)	0.0388* (0.0203)	0.0339** (0.0156)	0.00826 (0.00835)	0.0238 (0.0157)
Dividend Dummy	0.0829*** (0.0144)	0.0471*** (0.0133)	0.0390*** (0.0107)	0.0813*** (0.0131)	0.058 (0.0468)	0.0969*** (0.0365)	0.0405 (0.0423)	0.0713 (0.0461)
EBIT Growth	0.0000019 (0.000013)	-0.0000040 (0.00002)	0.0000070 (0.00001)	-0.0000051 (0.000013)	-0.0000022 (0.0000055)	-0.0000002 (0.0000061)	-0.0000015 (0.000004)	0.0000017 (0.0000059)
Sales Growth	-0.000132 (0.00011)	-0.00024** (0.00010)	-0.000105 (0.000102)	-0.000134 (0.000109)	-0.000178 (0.000115)	-0.00038** (0.00015)	-0.000193 (0.000174)	-0.000304* (0.000163)
Assets Growth	-0.000665*** (0.000139)	-0.0008*** (0.000166)	-0.0006*** (0.000116)	-0.0009*** (0.000166)	-0.0005*** (0.000167)	-0.0008*** (0.000263)	-0.00059** (0.00025)5	-0.0008*** (0.000247)
Constant	-0.0654 (0.0703)	0.0586 (0.0557)	0.333*** (0.0653)	-0.0242 (0.0643)	0.0121 (0.1000)	0.0403 (0.0925)	-0.285*** (0.0694)	-0.218*** (0.0837)
Observations	92,805	92,805	92,805	92,805	169,547	169,547	169,547	169,547
R-squared	0.515	0.419	0.673	0.536	0.525	0.453	0.618	0.503

Country FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1