Received: 9 April 2020 | Revised: 24 July 2020 | Accepted: 6 August 2020

DOI: 10.1002/csr.2034

Corporate Social Responsibility and Environmental Management

WILEY

RESEARCH ARTICLE

Economic policy uncertainty, stakeholder engagement, and environmental, social, and governance practices: The moderating effect of competition

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Abstract

This paper investigates the effect of the economic policy uncertainty (EPU) on corporate environmental, social, and governance practices (ESG), using 6,562 firm-year observations from 15 developed European countries covering the period from 2004 to 2017. The results show that during periods of high uncertainty, firms increase their overall ESG performance, corporate environmental performance, and performance in governance. The relationship is valid for emission, resource use, workforce, management, and corporate social responsibility (CSR) strategy subdimensions of ESG. Furthermore, during periods of high uncertainty, firms operating in concentrated industries increase their overall ESG activities and corporate environmental performance. These results suggest that firms use ESG practices as risk-reducing activities like insurance, during high periods of uncertainty. Overall, consistent with the stakeholder theory, the results indicate that firms increase their ESG practices not only to reduce corporate risk-taking but also to follow value-increasing activities during periods of high uncertainty, implying an improved stakeholder engagement.

KEYWORDS

competition, economic policy uncertainty, environmental, ESG, Europe, governance performance, social, stakeholder engagement

1 | INTRODUCTION

Environmental, social, and governance (ESG) practices have become a crucial issue for society, policy-makers, regulators, and academics in recent years. The importance of being environmentally and socially responsible has been realized once again with the COVID-19 pandemic. During this pandemic, we started to comprehend the importance of the impact of a company's operations on the environment, keeping employees safe, rapidly taking actions against an unexpected crisis (not necessarily a financial/economic crisis), and at the same time, preserving the core business operations.

As the three main pillars of sustainability, ESG practices have drawn great attention of academic studies over the last decade. Researchers mostly focus on the relationship between the level of ESG practices and corporate policies. For instance, studies mainly focus on how the firm's ESG engagement affects the firm risk (Albuquerque, Koskinen, & Zhang, 2019; Benlemlih, Shaukat, Qiu, & Trojanowski, 2018; Bouslah, Kryzanowski, & M'Zali, 2013; Cai, Cui, & Jo, 2016; Sassen, Hinze, & Hardeck, 2016), firm value (Borghesi, Chang, & Li, 2019; Ferrell, Liang, & Renneboog, 2016; Jo & Harjoto, 2011; Lee, Byun, & Park, 2018; Li, Gong, Zhang, & Koh, 2018), firm performance (Javeed, Latief, & Lefen, 2020; Lee, Ni, & Ratti, 2016), the cost of debt (Eliwa, Aboud, & Saleh, 2019; Erragragui, 2018), or cost of equity (Gupta, Raman, & Shang, 2018). Most of the studies focus on how the environmental and social responsibility influences the firm level variables, such as firm value, performance, firm risk, cost of debt, or equity. There is limited research on how the macroeconomic conditions impact firm's ESG engagement. Although, some studies document the moderating effect of economic conditions and uncertainty on the link between the

corporate social responsibility and firm value (Borghesi et al., 2019; Lee, Singal, & Kang, 2013), the direct effect of EPU on ESG engagement has not been analyzed. With this research, we aim to fill this gap by investigating the relationship between a firm's ESG engagement and uncertainty in the economy.

Despite the growing literature on the effect of the EPU on various corporate decisions (Bonaime, Gulen, & Ion, 2018; Drobetz, El Ghoul, Guedhami, & Janzen, 2018; Gulen & Ion, 2016; Kang, Lee, & Ratti, 2014; Nguyen, Kim, & Papanastassiou, 2018; Phan, Nguyen, Nguyen, & Hegde, 2019; Vural-Yavaş, 2020; etc), there is limited research on the link between the corporate ESG engagement and the policy-related uncertainty. Prior studies document that policy-related uncertainty impacts the corporate investment and financing policies; however, far too little attention has been paid to the influence of uncertainty on the corporate ESG engagement. In fact, to the best of our knowledge, there is no study investigating the link between the ESG engagement and the EPU in the European context with cross-country analyses. Moreover, as far as we know, there is no research on the moderating effect of competition on the relationship between the corporate ESG performance and the uncertainty. This paper aims to fill the gap in literature by providing a comprehensive understanding in the link between the EPU and the ESG performance.

There are several reasons why EPU affects corporate ESG activities. First, during periods of high uncertainty, firms reduce corporate risk-taking (Vural-Yavaş, 2020), and the ESG engagement of a firm is a way of mitigating risk-taking. Although the EPU reduces corporate investment level (Gulen & Ion, 2016; Kang et al., 2014), firms increase their ESG practices, which in turn alleviate firm risk (Albuquerque et al., 2019; Benlemlih et al., 2018; Cai et al., 2016; Sassen et al., 2016). Second, through trust between a firm and its stakeholders, firms can be better-off regarding stock return, profit, growth, and sales especially when there is a shock in the financial markets, which harms the overall trust levels (Lins, Servaes, & Tamayo, 2017). The trust between a corporation and its stakeholders can be built through increasing corporate social capital (Lins et al., 2017). Therefore, firms may prefer to enhance their ESG engagement during periods of high uncertainty to build trust. Moreover, the EPU increases a firm's information disclosure (Nagar, Schoenfeld, & Wellman, 2019), which enhances transparency, accountability, and also stakeholder trust, which in turn reduces the cost of debt (Eliwa et al., 2019). External financing will be costlier when the policy-related uncertainty is high (Kim, 2019; Liu & Zhong, 2017; Pástor & Veronesi, 2012, 2013). Hence, to reduce their cost of debt, managers may prefer to increase their ESG engagement during periods of high uncertainty. Finally, managers may increase corporate ESG initiatives since these activities serve as insurance during periods of high uncertainty (Borghesi et al., 2019). In fact, the positive relation between the firm value and socially responsibility practices is enhanced when uncertainty in the economy is high (Borghesi et al., 2019), which may encourage managers to engage in ESG practices.

Using 6,562 firm-year observations from 15 developed European countries covering the period from 2004 to 2017 and using industry-year fixed effect panel data estimation, we examine the relationship between corporate ESG engagement and the EPU. Besides the overall ESG performance, we deepen our understanding by examining the subcategories of ESG, namely, corporate environmental performance (CEP); corporate social performance (CSP); and performance in governance (CGP); the subdimensions of each subcategory, namely, emissions, resource use, and environmental innovation (the subdimensions of CEP); workforce, human rights, community, and product responsibility (the sub-dimensions of CSP); and management, shareholders, and corporate social responsibility (CSR) strategies (the subdimensions of CGP). The findings indicate that policy-related uncertainty enhances the overall ESG, corporate environmental, and corporate governance performances. When we deepen the investigation into the subdimensions of each category of ESG, we document that the EPU positively impacts resource use, emissions, management, and CSR strategy scores. Interestingly, for the CSP, the findings indicate that there is a positive link between uncertainty and workforce score, yet a negative link between uncertainty and community score. These two opposite directions may cause an insignificant effect of uncertainty on the overall CSP. When we consider the product market competition, the positive influence of uncertainty on ESG performance changes, regarding the competition level in the industry. The EPU has a statistically significant effect on the overall ESG and environmental performances at least at 0.05 significance level when the firms are not in a competitive industry. But, the CGP increases during periods of high uncertainty for all competition levels. These findings are consistent with the risk-taking behavior of firms. Firms reduce their risk-taking in concentrated industries (Vural-Yavaş, 2020). Thus, the increase in ESG practices supports the argument that firms use ESG activities to reduce their risk especially when the industry is not competitive. When we consider the subdimensions of ESG, the findings demonstrate that the positive effect of policy-related uncertainty on emissions, resource use, and management scores are not valid when a firm operates in a highly competitive industry. However, the positive effect of uncertainty on the workforce and CSR strategy is valid for all competition levels. Similarly, the adverse effect of uncertainty on community score is significant regardless of the competition level.

This study contributes to the literature in several ways. The main contribution of the paper is to explore the relationship between corporate ESG performance and the EPU. Next, this study will provide a full examination of the effect of EPU on ESG performance by investigating the relation for overall corporate ESG performance, CEP, CSP, and corporate governance performance, as well as the subdimensions of ESG practices such as emissions, resource use, environmental innovation, workforce, human rights, community, product responsibility, management, shareholders, and CSR strategy. Furthermore, to the best of our knowledge, this will be the first cross-country study examining the effect of EPU on the corporate ESG performance in the European context. Last, we extend our understanding of how the policy-related uncertainty impacts corporate ESG performance by investigating the relation under product market competition.

The rest of the paper is organized as follows. The following section reviews the related literature. Section 3 describes the data, the variables, and the empirical model. Section 4 presents the results

of the empirical analyses, and Section 5 provides the robustness checks. Section 6 concludes the paper.

2 | LITERATURE REVIEW

There are two general views on CSR and ESG issues. One of them is the "good management/governance theory, "which argues that environmentally and socially responsible firms can possess value-increasing governance practices. This line of argument supports both the resource-based view and the stakeholders theory. Resource-based view argues that environmentally or socially responsible practices attract more qualified employees (John, Qadeer, Shahzadi, & Jia, 2019; Korschun, Bhattacharya, & Swain, 2014). Also, consistent with the stakeholder theory, some argue that the value maximization should incorporate stakeholder value and not only shareholder value (Edmans, 2011). On the other hand, the opposite view about the effect of CSR goes back to the American economist Milton Friedman. He states that "the only responsibility of corporations is to make profit" (Friedman, 1970). He argues that social responsibility brings limited financial benefit to the corporations. Following this view, many researchers claim that CSR creates agency problems in a way that managers engage in socially responsible activities at the expense of shareholders (Borghesi, Houston, & Naranjo, 2014; Krüger, 2015; Masulis & Reza, 2015). The agency view argues that CSR activities are time-consuming for managers and, in fact, are not in the interest of the shareholders (Jensen, 2001), leading to the misallocation of limited financial resources of a company (Di Giuli & Kostovetsky, 2014; Friedman, 1970).

Both of these opposite views on CSR have grounds with the empirical findings. For example, Masulis and Reza (2015) provide evidence that corporate charity donations are in the interest of CEOs and cause the misallocation of corporate resources leading to a reduction in firm value. Moreover, Di Giuli and Kostovetsky (2014) show that firms with high CSR score experience lower profitability and negative future stock returns implying that social responsibility comes at the expense of shareholder value. In fact, Borghesi et al. (2014)'s findings demonstrate that the higher level of CSR is associated with firms that are more likely to have agency problems (large firms with a high level of free-cash flow). Meanwhile, higher institutional ownership, which is commonly accepted as a control mechanism reducing information asymmetry, and hence agency conflicts, is associated with lower levels of CSR (Borghesi et al., 2014). Furthermore, sales performance of firms decreases with CSR activities (Han, Zhuangxiong, & Jie, 2018). These findings question the validity of the argument that CSR activities increase shareholder value.

On the other hand, many papers demonstrate that there is a positive relationship between firm value and CSR engagement (Albuquerque et al., 2019; Borghesi et al., 2019; Ferrell et al., 2016; Lee et al., 2018; Lee, Cin, & Lee, 2016; Li et al., 2018). Also, environmental responsibility increases a firm's performance measured by profitability (Javeed et al., 2020; Lee, Cin, & Lee, 2016). Moreover, financial institutions value the CSR or ESG activities and reduce the cost of debt of socially responsible firms (Eliwa et al., 2019; Erragragui, 2018). Also, not only the cost of debt, but the cost of equity reduced by the CSR activities (Dhaliwal et al., 2011; Edmans, 2011; El Ghoul, Guedhami, Kwok, & Mishra, 2011). Edmans (2011) document that employee satisfaction enhances shareholder return. He claims that socially responsible investing can improve investment return. In fact, Benlemlih and Bitar (2018) demonstrate that CSR activities reduce the investment inefficiencies. Moreover, Nguyen, Kecskes, and Mansi (2020) provide evidence that CSR activities increase shareholder value when long-term investors monitor managers. All in all, there are many studies supporting the argument that ESG activities are value-enhancing for not only shareholders but also for stakeholders.

Although present literature largely supports the positive relationship between ESG practices and firm value, there is still not a consensus. Notwithstanding, investors expect companies to make ESG disclosure. The ESG disclosure improves transparency and accountability which ameliorates shareholder trust (Eliwa et al., 2019). With the Directive 2014/95/EU, the EU companies with more than 500 employees are required to provide nonfinancial and diversity information in their annual reports since 2018. Heretofore, companies voluntarily disclose their ESG practices to improve their accountability and reputation which in turn enhances firm value (Cucari, Esposito De Falco, & Orlando, 2018; Cui, Jo, & Na, 2018; Forcadell & Aracil, 2017). In fact, managers use CSR activities to build a good reputation which enhances the adverse relationship between information asymmetry and CSR practices (Cui et al., 2018) especially in high-risk firms.

2.1 | The economic policy uncertainty and ESG

Concerning decision-making, present literature largely addressed that the corporate financial and investment decisions are highly affected by economic uncertainty (Bonaime et al., 2018; Gulen & Ion, 2016; Jens, 2017; Kang et al., 2014; Nguyen & Phan, 2017; Nguyen et al., 2018; Phan et al., 2019). Researchers use various methods to measure uncertainty. For example, election dummy is used to proxy political uncertainty (Akey & Lewellen, 2016; Jens, 2017). Jurado, Ludvigson, and Ng (2015) measure economic uncertainty as the volatility of a large group of important macroeconomic and financial indicators. Recently, Baker, Bloom, and Davis (2016) developed an economic policy uncertainty (EPU) index based on news coverage.

With the development of the EPU index, a growing body of literature has started to use the index as a measure of policy-related uncertainty. The studies demonstrate that policy-related uncertainty has a negative impact on the macroeconomy and stock markets. There will be a reduction in the employment rate, firm investment, and production levels (Baker et al., 2016; Gulen & Ion, 2016). Moreover, the adverse impact of policy-related uncertainty on the banking activities, bond, and equity markets is well-documented in the literature (Bakas & Triantafyllou, 2018; Baker et al., 2016; Bernal, Gnabo, & Guilmin, 2016; Bordo, Duca, & Koch, 2016). For example, the EPU causes a reduction in the bank-level credit growth and liquid fund

production (Berger, Guedhami, Kim, & Li, 2017; Bordo et al., 2016). Also, the EPU increases the stock and commodity price volatility and decreases the stock prices (Antonakakis, Chatziantoniou, & Filis, 2013; Bakas & Triantafyllou, 2018; Baker et al., 2016; Kang et al., 2014). During periods of high uncertainty, firms increase their cash-holding (Phan et al., 2019) and decrease their merger and acquisition activities (Bonaime et al., 2018). Also, to be on the safe side, firms reduce their risk-taking (Vural-Yavaş, 2020) and increase their financial derivative usage (Nguyen et al., 2018).

Although there is a growing body of literature examining the link between EPU and corporate policies (Bonaime et al., 2018; Drobetz et al., 2018; Gulen & Ion, 2016; Kang et al., 2014; Nguyen et al., 2018; Phan et al., 2019; Vural-Yavaş, 2020; etc), research on how the ESG engagement is influenced when firms face uncertain economic conditions is scarce. Existing literature mostly focuses on the moderating effect of EPU instead of the direct effect of uncertainty on environmental and social responsibility. For example, recently, using a cross-country evidence, Rjiba, Jahmane, and Abid (2020) have shown that the CSR engagement mitigates the negative impact of EPU on firm performance. Consistent with the view that investing in CSR activities serve as an insurance, Borghesi et al. (2019) document that socially responsible firms preserve value during periods of high uncertainty. Ongsakul, Jiraporn, and Treepongkaruna (2019) provide evidence for the insurance-like function of CSR engagement by examining the effect of managerial ownership on CSR under uncertainty. Their findings reveal that firms with a higher managerial ownership tend to invest more in CSR during periods of high uncertainty. Moreover, Zhang, Kong, Qin, and Wu (2018) demonstrate that, for Chinese firms, there is a positive link between EPU and CSR engagement. Their findings imply that firms signal to the stakeholders by getting involved in CSR activities during periods of high uncertainty.

All in all, existing literature mostly supports the view that environmental and social responsibility serve as an insurance during periods of high uncertainty (Borghesi et al., 2019; Ongsakul et al., 2019; Rjiba et al., 2020). Supporting the good management/governance theory, we expect that during periods of high uncertainty, firms increase their ESG engagement to benefit from the insurance-like protection of ESG activities. Accordingly, the following hypothesis will be tested:

Hypothesis 1 The economic policy uncertainty will positively influence firms' ESG performance levels.

2.2 | Market competition and ESG

Besides the unconditional impact of the EPU on corporate ESG practices, we also examine how the product market competition affects the relationship between the corporate ESG and the policy-related uncertainty. Competition puts pressure on management and reduces agency conflicts among stakeholders (Allen & Gale, 2000). In fact, competition is a more effective monitoring mechanism than institutional investors and the market for corporate control (Allen & Gale, 2000). Furthermore, corporate governance has no value-enhancing effect in a competitive environment (Giroud & Mueller, 2010), which supports the governance role of competition.

Leong and Yang (2019) demonstrate that product market competition increases the overall social performance for the US firms. In fact, competition enhances a firm's social strengths while it reduces social concerns (Leong & Yang, 2019). Fernández-Kranz and Santaló (2010) document a positive link between competition and firms' social ratings.

In addition to the direct effect of competition on CSP, existing literature also addresses the moderating effect of competition on the link between CSR and firm value (or firm performance). For instance, Sheikh (2019) provides evidence that, for the US firms, the positive relationship between CSR and firm value is valid only in competitive industries. Also, Han et al. (2018) show that CSR activities reduce sales performance only in noncompetitive industries for Chinese firms. Contrary to the findings of positive influence of competition on CSR, for Korean firms, Lee et al. (2018) document an adverse effect of competition on CSR activities. Also, they show that competition mitigates the positive link between firm value and CSR activities for Korean firms.

All in all, product market competition is expected to moderate the link between ESG practices and the EPU. Accordingly, the following hypothesis will be tested:

Hypothesis 2 Product market competition will positively moderate the relationship between the EPU and firms' ESG performance levels.

3 | METHODOLOGY

3.1 | Data

This paper questions the effect of EPU on the ESG performance of a firm in the context of developed European countries. The sample covers 15 developed European economies for the years 2004–2017. We work in the European context for the following reasons. First, there is limited research focusing on the link between ESG and EPU within the European context, and evidence on European firms remains relatively scarce. Second, the awareness of people from Europe on the importance of ESG practices is stronger than the rest of the globe (Dyck, Lins, Roth, & Wagner, 2019). In fact, European firms are leaders of social responsibility compared to other companies around the world from other geographic areas (Ho, Wang, & Vitell, 2012). Moreover, with several directives, the European Union tries to promote ESG disclosure among European firms such as Directive 2014/95/EU. Finally, the sample covers countries having different legal origins and business environments, which allows us to understand the impact of EPU on the ESG performance.

The data come from four different databases. First, we use Thomson Reuters Eikon (Thomson Reuters Asset4) database to gather the ESG data. Second, the firm-level financial data are obtained from Thomson Reuters Datastream. Furthermore, we use the World Bank Development Indicators database to obtain the country-level

variables. Finally, the Economic Policy Uncertainty website is used to get the index data developed by (Baker et al., 2016).

Although Thomson Reuters Eikon and Datastream databases cover many more companies, the sample comprises 638 publicly traded European firms due to the availability of ESG information. Firms whose primary business code is a financial sector (SIC code between 6,000 and 6,999) are excluded due to their specificity of operational activity. The final sample consists of 6,562 firm-year observations distributed in eight different industries according to the three-digit Standard Industrial Classification (SIC) code as follows: agriculture, forestry, fishing (0.16%), mining (8.38%), construction (4.19%), manufacturing (48%), transportation, communications, electric, gas and sanitary service (17.29%), wholesale trade (2.61%), retail trade (3.84%), and services (14.92%). Table 1 presents the country list and the number of firms from each country.

The firms from the United Kingdom constitute about 23.5% of the sample, which suggests that the results may be influenced by English firms. Therefore, we perform additional analyses to check whether the findings are robust when we exclude the United Kingdom from the sample.

3.2 | Variables

3.2.1 | Measuring environmental, social, and governance performance

The main focus of this paper is to explore the link between the overall ESG performance of a company and the EPU. Thus, the main dependent variable is the firm's overall ESG performance which is the overall ESG score of Thomson Reuters ASSET4 database.

Besides the overall ESG score, we also examine the impact of uncertainty on the subcategories of ESG, namely environmental, social, and governance practices (ESG), and the subgroups of the environmental ones (emissions, resource use, environmental innovation), social ones (workforce, human rights, community, product responsibility), and governance issues (management, shareholders, CSR strategy). The CEP is the average of resource use, emissions, and environmental innovation scores. Similarly, the CSP is the average of workforce, human rights, community, and product responsibility scores. The performance in governance (CGP) is the average of management, shareholders, and CSR strategy scores.

We use Thomson Reuters Eikon to get a company's ESG performance.[1] Table 2 presents the definitions of ESG variables provided by the Thomson Reuters Eikon database. Table 3 presents the evaluation of the variables and some examples of the usage of these variables from the existing literature.

3.2.2 | Measuring economic policy uncertainty

The EPU is estimated by using the index constructed by (Baker et al., 2016).[2] The EPU index is based on newspaper articles. For each country (Baker et al., 2016), take two newspapers and count the number of articles containing uncertainty terms for every month. Then, they scale the EPU count for each newspaper by the number of total articles in the same newspaper for each month and standardize each monthly series to unit standard deviation prior to 2011. Finally, they

TABLE 1 Sample description

Country	Firm-Years	Firms	% of sample	Ave. EPU	EPU shock
Austria	118	9	1.80	5.010	0.134
Belgium	217	22	3.31	5.010	0.134
Denmark	216	20	3.29	5.010	0.134
Finland	316	26	4.82	5.010	0.134
France	924	86	14.08	5.220	0.172
Germany	758	79	11.55	4.921	0.188
Ireland	74	8	1.13	4.870	0.219
Italy	393	42	5.99	4.642	0.153
Netherlands	343	33	5.23	4.527	0.157
Norway	227	22	3.46	5.010	0.134
Portugal	105	10	1.60	5.010	0.134
Spain	369	31	5.62	4.613	0.189
Sweden	469	49	7.15	4.460	0.067
Switzerland	492	46	7.50	5.010	0.134
The UK	1,541	155	23.48	5.240	0.172
Total	6,562	638	100.00		

Note: This table displays the sample descriptions including the number of firms, firm-year observations, the average EPU shock, and the average of the natural logarithm of the weighted average of last 3 months EPU index for the countries.
Abbreviation: EPU, economic policy uncertainty.

TABLE 2 ESG variable definitions

ESG score	Categories (#of data pt.)	Definition
Environmental	Emissions (47)	Commitment and effectiveness toward reducing environmental emission in the production and operational processes.
	Resource Use (37)	Performance and capacity to reduce the use of materials, energy, or water and to find more eco-efficient solutions by improving supply chain management.
	Environmental Ino.(30)	Capacity to reduce the environmental costs and burdens for its customers and thereby creating new market opportunities through new environmental technologies and processes or eco-designed products.
Social	Workforce (64)	Effectiveness toward job satisfaction, healthy, and safe workplace, maintaining diversity and equal opportunities, and development opportunities for its workforce.
	Human Rights (14)	Effectiveness toward respecting the fundamental human rights conventions.
	Community (37)	Commitment toward being a good citizen, protecting public health, and respecting business ethics.
	Product Responsibility(54)	Capacity to produce quality goods and services integrating the customer's health and safety, integrity, and data privacy.
Governance	Management (64)	Commitment and effectiveness toward following best practice corporate governance principles.
	Shareholders (48)	Effectiveness toward equal treatment of shareholders and the use of antitakeover devices.
	CSR Strategy (11)	Practices to communicate that it integrates the economic (financial), social and environmental dimensions into its day-to-day decision-making processes.

Note: This table presents the environmental, social, and governance performance variable definitions. These are the definitions from Thomson Reuters Eikon database. The overall ESG performance is estimated by Thomson Reuters Eikon. We estimate the environmental, social, and governance performances by averaging the scores of subcategories of each category (e.g., environmental performance is the average of emissions, resource use, and environmental scores). This table presents the definition of the subcategories of ESG.
Abbreviations: CSR, corporate social responsibility; ESG, environmental, social, and governance practices.

take the average across two newspapers in each country and normalize it to a mean of 100 prior to 2011.

For the purpose of our paper, following Nguyen and Phan (2017), we use the natural logarithm of the weighted average of the last 3 months EPU index values which can be expressed as,

$$EPU_{yeart} = 3EPU_{yeart,month12} + 2EPU_{yeart,month11} + EPU_{yeart,month10} \quad (1)$$

In the robustness analysis, we check the validity of our findings under different estimation techniques. The results are robust under different EPU measures.

3.2.3 | Product market competition

This paper examines the moderating effect of competition in the link between ESG performance and EPU. Following the literature, we use Herfindahl–Hirschman Index (HHI) to estimate market competition. HHI is calculated by the sum of squared market shares of firms in the industry.[3] Market share of a firm is the ratio of its net sales to the total sales in the industry that the firm operates. We use a three-digit SIC code for industry classification in order not to be either too coarse or too narrow a partition. HHI is estimated for each three-digit SIC code industry within each country in the sample for the corresponding year.

After computing HHI values, we define competition dummies to make interpretation easier in the empirical analyses. We use three competition dummies with respect to HHI terciles: high, medium, and low competition. HHI ranges from 0 to 1. As HHI approaches 1, the industry is concentrated, and competition is low. Thus, low HHI values constitute a high competition dummy, whereas high HHI values constitute a low competition dummy, and the middle tercile represents the medium competition dummy.

3.2.4 | Control variables

We also use some controls for firm- and country-level variables, which are shown as effective on corporate ESG performance. Table 3 presents the list of key variables and their brief description.

The first firm-level control variable is firm size. Large firms are more aware of environmental responsibility (Kassinis, Panayiotou, Dimou, & Katsifaraki, 2016). Moreover, the positive impact of size on environmental performance is documented by many studies (Burkhardt et al., 2020; Cuadrado-Ballesteros, Martínez-Ferrero, & García-Sánchez, 2017; García Martín & Herrero, 2020; McGuinness, Vieito, & Wang, 2017; Ortas et al., 2019). Following the literature, we expect a positive relationship between firm size and ESG performance.

Second, we control for financial profitability by return on assets (ROA). Consistent with the findings of Kassinis et al. (2016) that there is a positive correlation between profitability and environmental consciousness of a firm, we expect a positive impact of ROA on the firm's ESG performance. Moreover, Borghesi et al. (2014) document a strong positive effect of profitability on CSR. Although we expect a positive effect, some studies document a negative link between profitability and ESG performance. For example, Ortas et al. (2019) find an

TABLE 3 Variables

Variable Panel A: Corporate main ESG variables	Definition	Literature
Overall ESG performance	Overall ESG performance score	(Borghesi et al., 2019; Brogi & Lagasio, 2019; Di Tommaso & Thornton, 2020; Eliwa et al., 2019)
Environmental performance	The average of resource use, emissions, and environmental innovation scores.	(Benlemlih et al., 2018; Brogi & Lagasio, 2019; Burkhardt, Nguyen, & Poincelot, 2020; Dyck et al., 2019; Eliwa et al., 2019; García Martín & Herrero, 2020; Ortas, Gallego-Álvarez, & Álvarez, 2019; Rjiba et al., 2020)
Social performance	The average of work force, human rights, community, and product responsibility scores.	(Benlemlih et al., 2018; Brogi & Lagasio, 2019; Burkhardt et al., 2020; Dyck et al., 2019; Eliwa et al., 2019; Ortas et al., 2019; Rjiba et al., 2020)
Governance performance	The average of management, shareholders, and CSR strategy scores.	(Benlemlih et al., 2018; Brogi & Lagasio, 2019; Burkhardt et al., 2020; Dyck et al., 2019; Eliwa et al., 2019; Ortas et al., 2019)
Panel B: Firm-level control variables		
Size	Natural logarithm of total assets	(Benlemlih et al., 2018; Borghesi et al., 2019; Burkhardt et al., 2020; Dyck et al., 2019; Eliwa et al., 2019; Ferrell et al., 2016; García Martín & Herrero, 2020; Ortas et al., 2019; Rjiba et al., 2020)
Leverage	Total debt/total asset	(Benlemlih et al., 2018; Borghesi et al., 2019; Dyck et al., 2019; Eliwa et al., 2019; Ferrell et al., 2016; García Martín & Herrero, 2020; Rjiba et al., 2020)
Profitability	Return on asset	(Benlemlih et al., 2018; Borghesi et al., 2019; Burkhardt et al., 2020; Dyck et al., 2019; 2019; Ferrell et al., 2016; García Martín & Herrero, 2020; Ortas et al., 2019)
Sales growth	The growth of net sales	(Ferrell et al., 2016)
Financial slack	(Cash and short-term investments)/total assets	(Garcia, Mendes-Da-Silva, & Orsato, 2017)
Financial constraint	KZ index (Kaplan & Zingales, 1997; Lamont, Polk, & Saaá-Requejo, 2001)	(Di Giuli & Kostovetsky, 2014)
Competition (industry level)	Herfindahl–Hirschman Index (HHI) according the eqn	(Fernández-Kranz & Santaló, 2010; Han et al., 2018; Lee et al., 2018; Leong & Yang, 2019; Sheikh, 2019)
Panel C: Country level variables		
EPU	The natural logarithm of the weighted average of the last 3 months EPU index values	(Nguyen & Phan, 2017)
Real GDP per capita growth	Annual percentage growth rate of GDP per capita	(Borghesi et al., 2019; Ferrell et al., 2016; Rjiba et al., 2020)
Population growth	Annual percentage growth rate of population	(Pearce et al., 1991)

Note: This table presents the list of key variables, their brief description, and some examples of their usage in literature. The dependent variables in this paper are overall ESG performance, corporate environmental performance, corporate social performance, and performance in governance. Also, we use the subcategories of environmental, social, governance: Resource use, emissions, environmental innovation, workforce, human rights, community, product responsibility, management, shareholders, and CSR strategy scores. The main independent variable is EPU. Industry concentration is the moderating variable. We also include firm- and country-level control variables.

Abbreviations: CSR, corporate social responsibility; ESG, environmental, social, and governance practices; GDP, gross domestic product.

insignificant negative effect of ROA on environmental performance but a negatively significant impact of ROA on CGP. Similarly, Burkhardt et al. (2020) find an insignificant negative effect of profitability on environmental scores. McGuinness et al. (2017) use return on equity as a profitability measure and document a negatively significant effect on CSR of Chinese firms.

Next, we control the financial leverage. Leverage impacts the firm's access to external finance (Almeida & Campello, 2007), so it would influence the corporate decisions. Borghesi et al. (2014) and McGuinness et al. (2017) report a strongly negative effect of leverage on CSR. On the other hand, Ortas et al. (2019) document a negative impact only for CSP and insignificant effect on CEP and CGP. Similarly, Husted and Sousa-Filho (2019) demonstrate an insignificant leverage effect on ESG disclosure of Latin American firms.

Later, we control the cash and short-term investments, namely financial slack, to capture the possible agency problems between managers and shareholders. It is a generally accepted fact that managers with higher cash flow in hand can use it for nonpecuniary benefits to maximize their utility (Jensen, 1986) and undertake value-decreasing projects (Jensen, 1986). On the other hand, Garcia et al. (2017) document a positive relationship between free-cash flow and CEP. Thus, we expect a positive impact of financial slack on ESG performance.

Following the literature, we also control the firms' financial constraints by using KZ index developed by Kaplan and Zingales (1997). Consistent with the findings of Di Giuli and Kostovetsky (2014), we expect an adverse effect of financial constraints on ESG performance.

The last firm-level control variable is the sales growth which proxies the growth opportunities of a firm. Firms with higher growth opportunities invest more to capture the positive net present value projects, which can lead companies to disregard the ESG performance. In fact, Ferrell et al. (2016) document a significantly negative effect of sales growth on corporate environmental and social ratings. Hence, we expect a negative link between the sales growth and ESG performance.

In addition to firm-level control variables, we also use county-level control variables since the data includes countries across Europe. First, we control for gross natural product growth, namely GDP growth, to capture the firm's growth opportunities in the country. We also use population growth as a country-level control variable.

3.3 | Methodology

With the aim of investigating the relationship between EPU and environmental, social, and governance performance of a company, we use the following model:

$$\mathrm{ESG}_{i,c,t} = \beta_0 + \beta_1 \mathrm{EPU}_{c,t-1} + \sum_{k=1}^{8} \beta_{2,k} \mathrm{Controls}_{k,i,c,t-1} + \sum \beta_{3,j\times t} \left(\mathrm{Industy}_j \times \mathrm{Year}_t\right) + \epsilon_{i,c,t} \quad (2)$$

where the ESG is the environmental, social, and governance score of a firm. In addition to the ESG rating, we also use subcategories of ESG score: emissions, resource use, environmental innovation, workforce, human rights, community, product responsibility, management, shareholders, and CSR strategy. Subscripts i, c, and t are for firms, countries, and years, respectively. Controls represent firm and country level control variables: size, profitability, leverage, financial slack, KZ index, sales growth, GDP growth, and population growth.

Next, the moderating effect of product market competition is examined by adding interaction terms of three competition dummies with the economy policy uncertainty shock variable. This model will also include the two competition dummies. The model can be expressed as follows:

$$\begin{aligned}\mathrm{ESG}_{i,c,t} = \beta_0 &+ \sum_{h=1}^{3} \beta_{1,h} \left(\mathrm{EPU}_{c,t-1} \times \mathrm{Competition}_h\right) \\ &+ \sum_{k=1}^{8} \beta_{2,k} \mathrm{Controls}_{k,i,c,t-1} + \sum_{h=1}^{2} \beta_{3,h} \mathrm{Competition}_h \\ &+ \sum \beta_{4,j\times t} \left(\mathrm{Industry}_j \times \mathrm{Year}_t\right) + \epsilon_{i,c,t}\end{aligned} \quad (3)$$

where $\mathrm{Competition}_h$ stands for the vector of three competition dummies: high, medium and low competition. Also, the model 3 includes two competition dummies to capture the direct effect of product market competition on the ESG performance. The coefficients of the interaction terms between the three competition dummies and EPU will give the slope of EPU for different competition levels.

Model 2 and 3 are estimated by using fixed effects panel data analysis technique, which is confirmed by the Hausman tests. To capture the heterogeneity across the industries for the corresponding year, we use industry × year dummies. By including industry × year dummies, we aim to mitigate the possible omitted variable problems associated with the unobserved industry-level differences for each year. Moreover, we use one-period lagged independent variables to deal with a possible reverse causality problem. Furthermore, to deal with a possible heterogeneity problem, the standard errors are clustered at the firm level, and Huber-White standard errors are used.

3.4 | Summary statistics

Table 4 provides the descriptive statistics such as mean, median, standard and deviation, 25th and 75th percentiles for both dependent and independent variables. The mean and median of corporate governance scores are lower than both the environmental and social performance scores. Within the subdimensions of governance performance, shareholders have the lowest mean and median values, whereas CSR strategy score has a little bit higher values than shareholders and management scores.

Table 1 illustrates the sample descriptions such as the number of firms, firm-year observations, and average of natural logarithm of the weighted average in the last 3 months' EPU index for each country in the sample. Sweden has the lowest weighted average of last 3 months EPU index, whereas the United Kingdom has the highest EPU value.

TABLE 4 Descriptive statistics

	Obs.	*M*	Median	*SD.*	p25	p75
Panel A: Environmental, social, governance measures						
ESG	6,562	59.00	60.06	15.95	48.00	71.13
Environmental	6,562	62.14	64.03	19.81	47.14	77.84
Resource use	6,562	65.35	70.10	25.21	46.15	86.69
Emissions	6,562	63.10	67.84	26.01	43.50	85.21
Env. innovation	6,562	57.97	50.45	24.43	40.65	80.00
Social	6,562	61.45	62.81	19.86	46.25	77.50
Workforce	6,562	66.30	71.47	24.79	49.11	87.19
Human rights	6,562	67.55	75.62	25.56	42.31	90.74
Community	6,562	53.25	53.74	29.27	28.22	79.55
Product respon.	6,562	58.72	61.17	27.58	36.17	83.33
Governance	6,562	52.34	52.78	18.21	39.65	65.28
Management	6,562	51.74	52.04	28.50	27.46	76.79
Shareholders	6,562	51.10	51.26	28.96	26.14	76.63
CSR strategy	6,562	54.17	55.79	27.65	30.19	78.57
Panel B: Firm-level control variables						
Size	6,545	15.59	15.51	1.59	14.45	16.86
Leverage	6,545	0.25	0.24	0.17	0.13	0.35
Profitability	6,518	0.12	0.12	0.11	0.08	0.17
Financial slack	6,545	0.12	0.09	0.11	0.05	0.15
Sales growth	6,521	1.07	1.05	0.29	0.98	1.13
KZ index	6,259	−7.24	−2.15	43.03	−9.07	0.59
Panel C: Country-level variables						
EPU	6,562	5.02	5.05	0.54	4.60	5.35
GDP growth	6,562	1.41	1.79	2.21	0.89	2.45
Population growth	6,562	0.55	0.57	0.44	0.39	0.78

Note: This table reports the descriptive statistics. Panel A presents summary statistics for corporate environmental, social, and governance performance and its subcategories and subdimensions of each category. Panel B provides descriptive statistics for firm-level control variables. Panel C provides information on country-level variables. The description of the variables is given in Tables 2 and 3.
Abbreviations: CSR, corporate social responsibility; EPU, economic policy uncertainty; ESG, environmental, social, and governance practices.

Table A1 in the Appendix provides the pairwise correlation coefficients of the key variables. The highest correlation coefficient is 0.52 which is between size and ESG. So, we also control the variance inflation factor (VIF) for the independent variables. All the VIF values lower than 2 implying that multicollinearity is less likely for the analysis.

4 | RESULTS AND DISCUSSIONS

4.1 | ESG and EPU

Table 5 reports the results of the empirical model given by Equation 2 regarding the link between the corporate ESG performance and the EPU which tests the Hypothesis 1. Specification (1) presents the results for the overall ESG performance, whereas Specifications (2)–(4) report the subcategories of the overall ESG: Environmental performance, social performance, and performance in governance.

The findings given in Table 5 indicate that the EPU increases the overall ESG performance, CEP, and CGP. The coefficients are positive and statistically significant with at least 5% significance level. Moreover, in terms of economic significance, one standard deviation increase in the EPU causes a 2.063 unit increase in the overall ESG performance; a 2.193 unit increase in the CEP; and a 2.976 unit increase in CGP. On the other hand, the policy-related uncertainty effect on CSP is statistically insignificant. Hence, with these results, we cannot reject Hypothesis 1 for overall ESG, environmental performance, and performance in governance.

According to the results in Table 5, consistent with the claim of (Kassinis et al., 2016), large firms are more conscious about the environmental responsibility. The firm size has a statistically significant positive effect on the overall ESG performance, CEP, and CGP.

TABLE 5 ESG performance and EPU

Variables	(1) ESG	(2) Environmental	(3) Social	(4) Governance
EPU_{t-1}	3.821*** (1.311)	4.061** (1.644)	0.474 (1.593)	5.512*** (1.701)
$Size_{t-1}$	5.934*** (0.327)	6.860*** (0.400)	7.022*** (0.375)	4.189*** (0.408)
$Leverage_{t-1}$	−3.497 (2.986)	−5.048 (4.076)	0.860 (3.631)	−3.751 (3.487)
$Profitability_{t-1}$	6.590* (3.798)	1.400 (4.974)	8.575* (4.768)	6.036 (4.491)
Fin $slack_{t-1}$	3.954 (4.234)	5.290 (5.416)	5.421 (5.211)	1.826 (4.554)
Sales $growth_{t-1}$	−2.670** (1.072)	−3.657*** (1.181)	−3.785*** (1.193)	−1.196 (1.346)
KZ $index_{t-1}$	0.004* (0.002)	0.002 (0.002)	0.006 (0.004)	0.004 (0.003)
GDP $growth_{t-1}$	−0.477** (0.195)	−0.549** (0.251)	−0.507* (0.264)	−0.052 (0.219)
Population $growth_{t-1}$	−1.315 (0.846)	−0.457 (1.080)	−2.036* (1.059)	−0.182 (0.989)
Constant	−47.893*** (8.927)	−58.573*** (11.338)	−45.374*** (10.446)	−38.702*** (10.870)
Observations	5,834	5,834	5,834	5,834
R-sqr	0.385	0.360	0.382	0.195
Adj. R-sqr	0.328	0.302	0.326	0.121

Note: This table reports the effect of EPU on corporate ESG performance. The dependent variables are overall ESG performance, CEP, CSP, and CGP. Environmental, social and governance performances are estimated by averaging the scores of subdimension of each category (e.g., CEP is the average of emissions, resource use, and environmental innovation scores). The description of the key variables is given in Table 3. We use one-period lagged independent variables to mitigate the impact of reverse causality and industry-years fixed effects in all the regressions. Error terms are clustered on the firm-level. Robust standard errors in parentheses.

Abbreviation: EPU, economic policy uncertainty; ESG, environmental, social, and governance practices.

*$p < .1$.

**$p < .05$.

***$p < .01$.

Similarly, profitability has a statistically significant positive impact at 1% significance level on the overall ESG score. On the other hand, consistent with our expectations, the variables that we use to proxy for the growth opportunities, namely sales growth and GDP growth, have an adverse effect on overall ESG, environmental, and social performances, implying that firms with higher growth opportunities can disregard the ESG practices to catch up with the investment opportunities.

In addition to the three main dimensions of ESG, we also test the Hypothesis 1 for the subdimensions of each ESG category. Table 6 presents the results for the empirical model given by Equation 2 for the subdimensions. The results given in Table 6 enable us to understand through which channel the EPU affects the CEP, CSP, and CGP.

Specifications (1)–(3) give the results for the subdimensions of CEP. There is a statistically significant positive relationship between the EPU and the resource use score. During periods of high uncertainty, firms improve their supply chain management to find more eco-efficient solutions in their production process so that they can increase their reduction in the use of materials, energy, or water. Moreover, the positive effect of policy-related uncertainty on the firm emission score supports the firms' willingness to reduce environmental emissions in the production and operational processes. On the other hand, the EPU does not affect the firm's capacity to reduce environmental costs and burdens to its customers by creating new market opportunities through new environmental technologies and eco-design products. During periods of high uncertainty, firms do not attempt to create new market opportunities through new environmental technologies which may be costly and risky for a firm. In fact, the emissions and the resource use subdimensions, in a way, have a reduction in their definitions, whereas environmental innovation covers creation of new market opportunities through new technologies which may seem as a risky investment by the management, especially during periods of high uncertainty. Accordingly, the results indicate that we cannot reject Hypothesis 1 for resource use and emission scores.

Although the EPU has an insignificant effect on the overall CSP, Table 6 documents that the coefficient for the EPU is positive and significant at 1% level for workforce score. On the other hand, the coefficient for the EPU is negative and significant at 1% level for community score. In terms of economic significance, one standard deviation increase in the EPU causes a 3.995 unit increase in the workforce score and a 3.732 unit decrease in community score. These results reveal that during periods of high uncertainty, (a) companies increase their effectiveness toward job satisfaction and a safe workplace, maintaining diversity and equal opportunities, and development opportunities for its workforce; on the other hand and (b) companies reduce their commitment toward being a good citizen protecting public health and respecting business ethics. These two opposite effects of uncertainty on the subdimensions of CSP may cause the insignificance of the total impact of EPU on the overall CSP. Accordingly, the findings reveal that we cannot reject Hypothesis 1 for the workforce score.

TABLE 6 ESG subcategories and EPU

	Environmental			Social				Governance		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Variables	Resource use	Emissions	Env.ino.	Workforce	Human rights	Community	Product Response	Management	Shareholders	CSR strategy
EPU_{t-1}	5.586*** (2.053)	5.717*** (2.110)	0.879 (2.290)	7.399*** (2.028)	1.059 (1.870)	−6.912*** (2.444)	0.351 (2.485)	6.407** (2.596)	1.887 (2.676)	8.241*** (2.330)
$Size_{t-1}$	7.664*** (0.519)	7.928*** (0.501)	4.987*** (0.498)	5.967*** (0.469)	8.167*** (0.456)	7.959*** (0.584)	5.995*** (0.564)	4.428*** (0.623)	0.185 (0.669)	7.954*** (0.536)
$Leverage_{t-1}$	−4.498 (4.793)	−6.398 (5.509)	−4.249 (4.903)	−8.795* (4.793)	−6.256 (4.820)	3.075 (5.188)	15.419*** (5.444)	−6.364 (5.740)	1.023 (5.595)	−5.912 (5.422)
$Profitability_{t-1}$	4.452 (6.180)	15.752** (6.707)	−16.004** (6.465)	20.861*** (6.035)	4.356 (6.594)	2.111 (7.478)	6.970 (6.985)	6.051 (7.430)	3.488 (7.212)	8.571 (7.503)
$Fin\ slack_{t-1}$	1.760 (6.860)	3.476 (7.682)	10.632* (6.452)	0.357 (6.949)	−0.302 (6.522)	−1.047 (8.395)	22.677*** (7.152)	1.988 (8.030)	3.677 (7.047)	−0.186 (7.669)
$Sales\ growth_{t-1}$	−4.366** (1.739)	−2.032 (1.553)	−4.573*** (1.153)	−1.316 (1.652)	−4.821*** (1.689)	−5.323*** (1.697)	−3.681** (1.638)	−1.441 (1.830)	1.558 (1.875)	−3.704** (1.818)
$KZ\ index_{t-1}$	0.005** (0.003)	−0.001 (0.003)	0.000 (0.002)	0.001 (0.005)	−0.000 (0.005)	0.008* (0.005)	0.013*** (0.004)	0.011*** (0.004)	−0.007** (0.003)	0.009** (0.004)
$GDP\ growth_{t-1}$	−0.773** (0.311)	−0.722** (0.340)	−0.151 (0.322)	−0.118 (0.319)	−0.643* (0.339)	−0.085 (0.409)	−1.180*** (0.388)	−1.085*** (0.332)	0.519 (0.382)	0.411 (0.329)
$Population\ growth_{t-1}$	0.264 (1.462)	−1.017 (1.466)	−0.618 (1.277)	−3.865*** (1.327)	0.325 (1.355)	−1.153 (1.551)	−3.452** (1.473)	−1.298 (1.592)	−0.139 (1.556)	0.891 (1.424)
Constant	−74.796*** (14.304)	−84.800*** (14.601)	−16.125 (14.665)	−59.508*** (13.292)	−56.916*** (12.692)	−29.671* (16.893)	−35.398** (15.955)	−44.355** (17.713)	34.984* (17.884)	−106.736*** (14.981)
Observations	5,834	5,834	5,834	5,834	5,834	5,834	5,834	5,834	5,834	5,834
R-sqr	0.311	0.301	0.212	0.221	0.321	0.270	0.233	0.152	0.100	0.316
Adj. R-sqr	0.248	0.237	0.14	0.149	0.259	0.203	0.163	0.075	0.018	0.253

Note: This table reports the effect of EPU on the corporate ESG subcategories for environmental, social, and governance. The dependent variables are resource use, emissions, environmental innovation scores for CEP; workforce, human rights, community, and product responsibility scores for CSP; management, shareholders, and corporate social responsibility strategy scores for CGP. The description of the dependent variables is given in Table 2, and the key independent variables are given in Table 3. We use one-period lagged independent variables to mitigate the impact of reverse causality and industry-years fixed effects in all the regressions. Error terms are clustered on the firm-level. Robust standard errors in parentheses.

Abbreviations: CSR, corporate social responsibility; GDP, gross domestic product; EPU, economic policy uncertainty; ESG, environmental, social, and governance practices.

*$p < .1$.

**$p < .05$.

***$p < .01$.

Specifications (8)–(10) in Table 6 present the results for the subdimensions of CGP. The findings demonstrate that policy-related uncertainty positively impacts the management and CSR strategy scores. These findings indicate that during periods of high uncertainty, companies enhance (a) their commitment and effectiveness toward following the best practice corporate governance principles and (b) their practices to communicate that firm integrates the economic, social, and environmental dimensions into its day-to-day decision-making. In terms of economic significance, the uncertainty has the highest economic effect on CSR strategy. One standard deviation increase in the EPU causes a 4.45 unit increase in CSR strategy score. Hence, we cannot reject Hypothesis 1 for management and CSR strategy scores.

Our findings demonstrate that there is a positive association between the corporate ESG practices and the EPU, implying that during periods of high uncertainty, managers prefer to enhance their ESG engagement. ESG practices are risk-reducing activities for firms (Albuquerque et al., 2019; Benlemlih et al., 2018; Cai et al., 2016; Ongsakul et al., 2019; Sassen et al., 2016; Zhou, Liu, Zeng, & Chen, 2018). Moreover, during periods of high uncertainty, studies document that firms increase their financial derivative usage to mitigate their exposure to policy-related risk (Nguyen et al., 2018). Based on our results, we support the idea that ESG practices serve an insurance-like function (Benlemlih et al., 2018; Cai et al., 2016; Ongsakul et al., 2019; Sassen et al., 2016). All in all, we can conclude that firms increase their ESG practices to benefit from the insurance-like protection of ESG during periods of high uncertainty.

In addition to the overall ESG performance, we examine the link between the policy-related uncertainty and the corporate performance for the subcategories of ESG: environmental, social, and governance issues. We document that the EPU positively affects the CEP and CGP. The findings indicate that during periods of high uncertainty, firms increase their workforce practices to enhance employee satisfaction, which in turn increases shareholder return (Edmans, 2011).

4.2 | The moderating effect of market competition

Table 7 presents the results for the empirical model given by the Equation 3, which explores the moderating effect of competition in the link between the policy-related uncertainty and ESG performance and tests the Hypothesis 2. The positive relationship between the

TABLE 7 ESG performance, EPU, and competition

Variables	(1) ESG	(2) Environmental	(3) Social	(4) Governance
EPU_{t-1} * high comp $_{t-1}$	2.620* (1.494)	2.716 (1.887)	−0.189 (1.843)	5.229*** (1.993)
EPU_{t-1}* medium $comp_{t-1}$	4.612*** (1.682)	5.311*** (2.012)	0.444 (2.015)	5.525** (2.187)
EPU_{t-1}* low $comp_{t-1}$	3.587** (1.395)	4.055** (1.877)	0.896 (1.744)	4.608** (1.853)
$Size_{t-1}$	5.959*** (0.326)	6.842*** (0.402)	7.036*** (0.374)	4.264*** (0.411)
$Leverage_{t-1}$	−3.633 (2.995)	−5.109 (4.066)	0.770 (3.639)	−3.896 (3.484)
$Profitability_{t-1}$	6.800* (3.795)	1.492 (4.993)	8.672* (4.734)	6.299 (4.538)
Fin $slack_{t-1}$	3.717 (4.251)	5.354 (5.444)	5.091 (5.225)	1.507 (4.533)
Sales $growth_{t-1}$	−2.648** (1.062)	−3.624*** (1.170)	−3.783*** (1.186)	−1.196 (1.353)
KZ $index_{t-1}$	0.005** (0.002)	0.002 (0.002)	0.006 (0.004)	0.005* (0.003)
GDP $growth_{t-1}$	−0.464** (0.193)	−0.545** (0.249)	−0.496* (0.262)	−0.035 (0.218)
Population $growth_{t-1}$	−1.340 (0.850)	−0.397 (1.083)	−2.072* (1.062)	−0.298 (0.984)
High $comp_{t-1}$	11.629 (7.775)	12.119 (9.586)	5.143 (9.389)	4.805 (10.095)
Low $comp_{t-1}$	6.274 (7.058)	6.194 (8.720)	−0.240 (8.705)	5.426 (9.251)
Constant	−53.063*** (10.326)	−64.366*** (12.628)	−46.654*** (12.200)	−40.961*** (12.656)
Observations	5,834	5,834	5,834	5,834
R-squared	0.386	0.361	0.384	0.198
Adj. R-squared	0.33	0.302	0.328	0.124

Note: This table reports the moderating effect of competition (industry concentration) on the relationship between EPU and the corporate ESG performance. High comp, medium comp, and low comp are three competition dummies for low HHI, medium HHI, and high HHI values, respectively. The dependent variables are overall ESG performance, CEP, CSP, and CGP. Environmental, social, and governance performances are estimated by averaging the scores of subdimensions of each category (e.g., CEP is the average of emissions, resource use, and environmental innovation scores). The description of the dependent variables and the key independent variables is given in Table 3. We use one-period lagged independent variables to mitigate the impact of reverse causality and industry-years fixed effects in all the regressions. Error terms are clustered on the firm-level. Robust standard errors in parentheses.
Abbreviations: EPU, economic policy uncertainty; ESG, environmental, social, and governance practices.
*$p < .1$.
**$p < .05$.
***$p < .01$.

overall ESG and the EPU is valid with at least a 5% significance level when the competition level is not high in the industry in which the firm operates. The pattern is similar for the CEP. During periods of high uncertainty, the CEP increases only when the firms do not operate in a competitive industry. Consistent with the previous findings, the EPU has no significant effect on the overall CSP. On the other hand, the positive relationship between the EPU and the overall CGP is valid under all competition levels. Accordingly, the results indicate that we cannot reject Hypothesis 2 for the overall ESG and CEP.

Table 8 reports the results for the moderating effect of competition on the link between the uncertainty and subdimensions of ESG. Similar to the findings for the CEP, the policy-related uncertainty enhances the resource use and the emission scores only when the firm does not operate in a competitive industry. Although the economic and statistical significance are higher when the industry is moderately competitive, firms continue to increase their environmental responsibility activities regarding the resource use and emissions, implying that Hypothesis 2 cannot be rejected for resource use and emission scores.

Despite the insignificant effect of uncertainty on the overall CSP, the EPU positively impacts the workforce practices no matter what the level of competition is in the industry. Moreover, the negative relationship between the uncertainty and community practices is valid for all competition levels as well.

For the subdimensions of the CGP, no matter what the level of competition is, firms increase their CSR strategy practices when the policy-related uncertainty is high. Although the positive link between CSR strategy and the EPU is valid under all competition levels, the economic significance is the highest when firms operate in competitive industries. One standard deviation increase in the EPU index causes a 5.155 increase in CSR strategy score in a competitive industry, whereas a 3.613 increase in CSR strategy in a noncompetitive industry.

Supporting the argument that competition is a substitute governance mechanism Ammann, Oesch, and Schmid (2013) and Giroud and Mueller (2010), the positive relationship between the ESG and the EPU is significant and more pronounced for firms operating in concentrated industries. Competition is a powerful disciplinary mechanism which enforces pressure on management to follow value-enhancing activities (Allen & Gale, 2000; Giroud & Mueller, 2010). Firms operating in highly competitive industries already follow these value-increasing activities such as ESG. On the other hand, firms operating in concentrated industries are free from the disciplinary force of competition and do not need to engage in ESG activities. However, during periods of high uncertainty, firms try to engage in risk-reducing activities, and those firms with a high pricing power start to increase their ESG engagement as a risk-reducing insurance activity.

5 | ROBUSTNESS ANALYSES

5.1 | Endogeneity issues

The EPU index may include policy-unrelated uncertainty, which may cause an error-in-measurement problem. Hence, we need to address the endogeneity problem caused by the error-in-management problem in the measurement of the EPU. Following Gulen and Ion (2016), we conduct a 2SLS estimation analysis to reduce the endogeneity problem.[4] In line with the argument of Gulen and Ion (2016), we use the EPU index of the United States to extract the economic policy's unrelated part of the EPU index of developed European countries since developed European countries and the USA are closely related to each other. By using the US EPU index, we aim to mitigate the error-in-measurement problems. Hence, following Gulen and Ion (2016), in the first-stage regression, EPU will be regressed on the natural logarithm of the average US EPU index and control variables. The control variables will be the country average of Tobin's Q, cash flows, and sales growth and to proxy for the growth opportunities of a country, the gross domestic product growth per capita (Gulen & Ion, 2016). In the second-stage regression, we take the residuals of the first-stage regression and use these residuals instead of the EPU variable. Specification (1) in Table 9 presents the result for the endogeneity analysis. The positive impact of EPU on the ESG performance is still valid with 2SLS estimations. The findings support the robustness under endogeneity concerns.

In addition to 2SLS, we also use the dynamic panel data model suggested by Arellano and Bond (1991) to deal with possible omitted-variable bias, measurement error, and endogeneity (Bond, Hoeffler, & Temple, 2001). We use a two-step generalized method of moments (GMMs) with robust standard errors.[5] The results given in specification (6) in Table 9 demonstrate that the positive impact of EPU on ESG is still valid under the GMM estimation method. Following Arellano and Bond (1991), we use the Hansen test for over-identification for the overall validity of instruments. We cannot reject the null hypothesis that all the instruments as a group are exogenous since Hansen test statistics is insignificant. Moreover, the error terms of the difference equation are not serially correlated at the second-order as the AR(2) test statistics is statistically insignificant. Furthermore, the unreported analyses results for the subcategories of ESG support our previous findings.

5.2 | Alternative measure of EPU

The frequency of the EPU index developed by Baker et al. (2016) is monthly. To analyze the impact of the policy-related uncertainty on the ESG performance, we use the EPU defined by the natural logarithm of the weighted average of the last 3 months of the EPU index values in the main empirical analyses. On the other hand, in the corporate finance literature, researchers use many different ways to match the firm's annual financial variables and monthly EPU index, such as arithmetic average of EPU index values over a year (Phan et al., 2019), the natural logarithm of the arithmetic average of EPU index (Drobetz et al., 2018; Gulen & Ion, 2016), and the EPU shock (Kang et al., 2014; Vural-Yavaş, 2020).We use two alternative estimations of the EPU index. One is the natural logarithm of the average change in EPU index over the corresponding year, and the other one is the EPU shock.

TABLE 8 ESG subcategories, EPU, and competition

	Environmental			Social				Governance		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Variables	Resource Use	Emissions	Env.no.	Workforce	Human Rights	Community	Product Response	Management	Shareholders	CSR strategy
EPU_{t-1} *High comp $_{t-1}$	3.740 (2.464)	3.777 (2.589)	0.632 (2.684)	5.169** (2.592)	1.012 (2.483)	−6.142** (2.838)	−0.795 (2.963)	4.177 (3.100)	1.962 (3.213)	9.547*** (2.626)
EPU_{t-1}*Medium comp$_{t-1}$	6.844*** (2.574)	7.136*** (2.555)	1.955 (2.704)	8.364*** (2.619)	0.643 (2.263)	−7.129** (3.013)	−0.100 (3.120)	8.519*** (3.184)	0.663 (3.291)	7.392** (2.917)
EPU_{t-1}*Low comp$_{t-1}$	5.338** (2.341)	5.541** (2.509)	1.286 (2.762)	7.306*** (2.211)	2.394 (2.136)	−7.780*** (2.827)	1.665 (2.844)	5.189* (3.021)	1.943 (3.181)	6.690** (2.698)
$Size_{t-1}$	7.683*** (0.519)	7.945*** (0.498)	4.897*** (0.508)	6.021*** (0.465)	8.119*** (0.458)	7.998*** (0.594)	6.007*** (0.564)	4.486*** (0.624)	0.260 (0.674)	8.047*** (0.546)
$Leverage_{t-1}$	−4.583 (4.795)	−6.582 (5.518)	−4.162 (4.828)	−8.980* (4.825)	−6.247 (4.827)	2.976 (5.169)	15.329*** (5.477)	−6.717 (5.716)	1.004 (5.539)	−5.975 (5.447)
$Profitability_{t-1}$	4.580 (6.180)	16.029** (6.716)	−16.134** (6.512)	21.114*** (6.028)	4.257 (6.529)	2.323 (7.441)	6.993 (6.976)	6.654 (7.485)	3.482 (7.233)	8.762 (7.522)
Fin $Slack_{t-1}$	1.990 (6.877)	3.192 (7.772)	10.878* (6.440)	0.228 (6.985)	−0.628 (6.482)	−1.545 (8.429)	22.310*** (7.159)	1.210 (8.057)	3.707 (6.996)	−0.396 (7.730)
Sales $growth_{t-1}$	−4.334** (1.737)	−1.993 (1.542)	−4.544*** (1.140)	−1.290 (1.648)	−4.827*** (1.678)	−5.328*** (1.694)	−3.688** (1.638)	−1.383 (1.797)	1.525 (1.887)	−3.729** (1.842)
KZ $index_{t-1}$	0.006** (0.003)	−0.000 (0.003)	−0.000 (0.002)	0.002 (0.005)	−0.000 (0.004)	0.009* (0.005)	0.013*** (0.004)	0.012*** (0.004)	−0.007** (0.003)	0.009** (0.005)
GDP $growth_{t-1}$	−0.759** (0.310)	−0.707** (0.335)	−0.171 (0.318)	−0.091 (0.318)	−0.647* (0.335)	−0.084 (0.408)	−1.162*** (0.383)	−1.063*** (0.335)	0.538 (0.381)	0.419 (0.326)
Population $growth_{t-1}$	0.290 (1.461)	−1.017 (1.471)	−0.463 (1.269)	−3.910*** (1.333)	0.358 (1.367)	−1.245 (1.553)	−3.491** (1.475)	−1.369 (1.581)	−0.258 (1.553)	0.732 (1.416)
High $comp_{t-1}$	14.920 (12.579)	18.426 (12.961)	3.012 (12.475)	18.027 (13.541)	−1.404 (11.954)	−1.838 (14.142)	5.789 (14.706)	26.400* (15.253)	−4.427 (16.538)	−7.558 (13.532)
Low $comp_{t-1}$	6.375 (11.391)	9.530 (12.071)	2.677 (11.655)	6.025 (12.207)	−6.040 (10.362)	5.011 (12.969)	−5.956 (13.714)	19.966 (13.936)	−6.777 (15.251)	3.091 (12.780)
Constant	−80.817*** (16.226)	−93.148*** (16.516)	−19.132 (15.955)	−65.903*** (15.359)	−55.255*** (14.311)	−30.541 (19.017)	−34.916* (18.676)	−58.178*** (19.873)	39.712** (19.963)	104.418*** (17.427)
Observations	5,834	5,834	5,834	5,834	5,834	5,834	5,834	5,834	5,834	5,834
R-squared	0.312	0.302	0.215	0.222	0.323	0.271	0.235	0.157	0.101	0.318
Adj. R-squared	0.249	0.238	0.142	0.15	0.261	0.204	0.165	0.079	0.018	0.255

Note: This table reports the moderating effect of competition (industry concentration) on the relationship between EPU and the corporate ESG performance for subdimensions. High comp, medium comp, and low comp are three competition dummies for low HHI, medium HHI, and high HHI values, respectively. The dependent variables are resource use, emissions, environmental innovation scores for CEP, workforce, human rights, community and product responsibility scores for CSP, management, shareholders, and corporate social responsibility strategy scores for CGP. The description of the dependent variables is given in Table 2, and the key independent variables are given in Table 3. We use one-period lagged independent variables to mitigate the impact of reverse causality and industry-years fixed effects in all the regressions. Error terms are clustered on the firm-level. Robust standard errors in parentheses.

Abbreviations: EPU, economic policy uncertainty; GDP, gross domestic product; GMM, generalized method of moment.

*$p < .1$.

**$p < .05$.

***$p < .01$.

Following Kang et al. (2014), to understand how people get used to the past and react to the current change in uncertainty, we use EPU shocks instead of simple natural logarithm of average EPU change. This will allow us to better figure out the effect of current uncertainty on ESG performance. Uncertainty shocks are estimated by the GARCH (1, 1) model which gives the minimum Akaike Information Criteria (AIC) score among GARCH (p, q) models for $1 \le p, q \le 3$. To estimate the uncertainty shock, we apply the GARCH (1,1) model for the change in EPU index. GARCH (1,1) model includes both a mean equation and a conditional standard deviation equation for the change in EPU index. Following Kang et al. (2014), uncertainty shock is expressed as,

$$\text{EPUshock} = \sigma_{\text{EPU}} = \frac{u_{\text{EPU}}}{h^{u}_{\text{EPU}}} \quad (4)$$

where u_{EPU} and $h_{\text{EPU}}{}^{u}$ represent the mean and the conditional standard deviation for the change in EPU, respectively. We average the monthly EPU shocks across each county over a year to match with the annual panel data. According to the results given in the specifications (2) and (3) in Table 9, the positive link between the policy-related uncertainty and the corporate ESG performance is valid under different EPU measures.

5.3 | Alternative measure of competition

In the main analyses, we use the HHI measure to estimate the industry concentration. We also address the concern that the results are valid for different product market competition measures.

Following the literature, we use two different commonly used competition measures: the Lerner Index (LI), which estimates the pricing power of a firm, and the HHI calculated by the total assets, which estimates the industry concentration. Large firms can benefit the economies of scale more than the small firms (Bolton & Scharfstein, 1990).

TABLE 9 Robustness check: Endogeneity, alternative EPU measures, sample construction, and model specification

	2SLS	Alternative EPU		Alternative Sample	Hierarchical	GMM
Variables	(1) ESG	(2) ESG	(3) ESG	(4) ESG	(5) ESG	(6) ESG
l.Residual EPU	3.403** (1.652)					
l.ln(EPU)		13.452** (5.263)				
l.EPU shock			7.251*** (1.726)			
l.EPU				4.017*** (1.365)	4.345*** (0.316)	4.552*** (0.458)
l.Size	5.824*** (0.332)	5.823*** (0.332)	5.856*** (0.330)	6.056*** (0.377)	5.492*** (0.111)	4.437*** (0.574)
l.Leverage	−4.276 (2.988)	−4.292 (2.988)	−4.201 (2.979)	−4.996 (3.084)	−2.101* (1.091)	2.358 (3.456)
l.Profitability	6.678* (3.809)	6.607* (3.805)	6.733* (3.804)	5.586 (4.533)	6.190*** (1.760)	−3.077 (3.177)
l.Fin slack	4.061 (4.275)	3.975 (4.273)	4.123 (4.267)	6.157 (5.401)	4.651*** (1.762)	1.163 (4.625)
l. Sales gwth	−2.661** (1.085)	−2.688** (1.084)	−2.687** (1.086)	−2.818* (1.531)	−3.747*** (0.686)	−3.137*** (0.822)
l.KZ index	0.005* (0.002)	0.005* (0.002)	0.005* (0.002)	0.004** (0.002)	0.002 (0.002)	0.001 (0.002)
l.GDP gwth	−0.481** (0.194)	−0.481** (0.195)	−0.490** (0.192)	−0.609*** (0.232)	−0.141* (0.078)	−0.089 (0.071)
l.Population gwth	−1.204 (0.836)	−1.259 (0.843)	−1.169 (0.840)	0.061 (0.889)	−1.205*** (0.383)	−1.153 (0.755)
Constant	−26.992*** (5.615)	−26.998*** (5.609)	−28.678*** (5.578)	−50.025*** (9.853)	−44.077*** (2.682)	−28.982*** (9.287)
Observations	5,834	5,834	5,834	4,285	6,250	6,250
R-sqr	0.380	0.380	0.381	0.424	0.297	AR2 (p = .81)
Adj. R-sqr	0.323	0.323	0.325	0.356	0.296	Hansen (p = .77)

Note: This table reports the robustness analysis for endogeneity, alternative EPU measures, alternative sample construction, and alternative model specification. Specification (1) reports the results for the endogeneity analysis. The EPU variable is the residuals from the first-stage regression given by $\text{EUEPU}_t = \beta_0 + \beta_1\text{USEPU}_t + \beta_2\text{TobinsQ}_t + \beta_3\text{CashFlow}_t + \beta_4\text{SalesGrowth}_t + \beta_5\text{GDPGrowth}_t + \epsilon_t$. Specifications (2) and (3) report the results for alternative EPU measures. In specification (2), the EPU is measured by the natural logarithm of the average EPU index change over a year. In specification (3), we use EPU shock, which is estimated by the GARCH(1–1) model $\text{EPUshock} = \sigma_{\text{EPU}} = \frac{u_{\text{EPU}}}{h^{u}_{\text{EPU}}}$. In specification (4), we use an alternative sample excluding the United Kingdom which constitutes approximately 24% of the sample. In specification (5), we use the longitudinal hierarchical model as an alternative model specification to mitigate the effect of uneven sample distribution within the country level. The description of the key independent variables is given in Table 3. We use one-period lagged independent variables to mitigate the impact of reverse causality and industry-years fixed effects in all the regressions. Error terms are clustered on the firm-level. Robust standard errors in parentheses.

Abbreviations: EPU, economic policy uncertainty; GMM, generalized method of moment.

*p < .1.

**p < .05.

***p < .01.

Also, industries with large firms can create entry barriers for new entrants (Benoit, 1984). Thus, estimating the market share of a firm with its total assets is a commonly used method for the calculation of HHI. We use HHI (assets) as a second competition measure.

Our third competition measure will be the LI. The market pressure will be low for firms with a high pricing power (Lerner, 1934). Following Datta, Iskandar-Datta, and Sharma (2011), we estimate the LI by using price–cost margin as,

$$\text{PriceMargin}_{i,j,c,t} = \frac{\text{NetIncome}_{i,j,c,t}}{\text{Sales}_{i,j,c,t}} \quad (5)$$

where *i* represents for firm, *j* for industry, c for country, and *t* for year. We estimate the price margin of a firm for each year and then define three dummy variables for the competition level: high, moderate, and low competition. Low (high) pricing power indicates a high (low) competition level in the industry in which the firm operates.

Table 10 presents the results for analyses with alternative competition measures. The findings demonstrate that the positive link between ESG and uncertainty is still valid under both alternative competition measures when firms operate in industries with a low and moderate level of competition. Also, firms increase their environmental practices during periods of high uncertainty when they operate in

TABLE 10 Robustness Checks: Alternative competition measures

	HHI(assets)				Price Margin			
Variables	(1) ESG	(2) Environ.	(3) Social	(4) Governance	(5) ESG	(6) Environ.	(7) Social	(8) Governance
EPU_{t-1} *High $comp_{t-1}$	3.460** (1.513)	3.169 (1.936)	0.701 (1.812)	6.338*** (2.014)	4.333*** (1.610)	4.279** (2.136)	1.733 (2.082)	6.399*** (2.136)
EPU_{t-1}*Medium $comp_{t-1}$	3.781** (1.617)	3.873** (1.942)	−0.052 (1.990)	4.901** (2.106)	4.920*** (1.575)	6.334*** (1.929)	0.351 (1.812)	7.095*** (1.975)
EPU_{t-1}*Low $comp_{t-1}$	3.799*** (1.434)	5.012*** (1.861)	0.883 (1.753)	4.405** (1.941)	3.054** (1.408)	2.840 (1.741)	0.178 (1.744)	4.422** (1.844)
$Size_{t-1}$	5.961*** (0.330)	6.839*** (0.408)	7.024*** (0.379)	4.305*** (0.416)	5.924*** (0.327)	6.866*** (0.397)	7.012*** (0.377)	4.204*** (0.410)
$Leverage_{t-1}$	−3.545 (3.000)	−4.970 (4.082)	0.882 (3.637)	−3.902 (3.457)	−3.598 (3.032)	−4.753 (4.115)	0.822 (3.676)	−3.738 (3.498)
$Profitability_{t-1}$	6.612* (3.799)	1.234 (5.005)	8.473* (4.758)	6.290 (4.501)	5.033 (4.775)	3.812 (6.352)	6.810 (5.782)	7.948 (5.489)
Fin $slack_{t-1}$	3.930 (4.237)	5.389 (5.450)	5.443 (5.218)	1.721 (4.522)	4.080 (4.225)	5.711 (5.395)	5.497 (5.204)	1.959 (4.540)
Sales $growth_{t-1}$	−2.668** (1.075)	−3.633*** (1.180)	−3.783*** (1.198)	−1.248 (1.365)	−2.722** (1.076)	−3.611*** (1.177)	−3.774*** (1.191)	−1.222 (1.348)
KZ $index_{t-1}$	0.004* (0.002)	0.002 (0.002)	0.006 (0.004)	0.004 (0.003)	0.004* (0.002)	0.002 (0.002)	0.006 (0.004)	0.004 (0.003)
GDP $growth_{t-1}$	−0.472** (0.196)	−0.538** (0.250)	−0.504* (0.265)	−0.060 (0.218)	−0.478** (0.195)	−0.546** (0.250)	−0.512* (0.263)	−0.049 (0.220)
Population $growth_{t-1}$	−1.347 (0.851)	−0.425 (1.078)	−2.040* (1.066)	−0.351 (0.981)	−1.310 (0.842)	−0.397 (1.073)	−2.039* (1.054)	−0.184 (0.988)
High $comp_{t-1}$	2.160 (7.501)	2.606 (9.297)	−3.555 (8.926)	−5.306 (10.081)	1.982 (7.959)	9.262 (9.559)	−7.656 (9.738)	3.623 (10.175)
Low $comp_{t-1}$	−0.184 (6.906)	−5.904 (8.438)	−4.437 (8.544)	1.363 (9.042)	9.364 (6.200)	15.827** (7.649)	1.334 (7.294)	12.735* (7.557)
Constant	−48.168*** (10.064)	−57.061*** (12.348)	−42.907*** (12.057)	−37.262*** (12.485)	−52.892*** (9.662)	−69.557*** (11.975)	−44.558*** (11.129)	−46.804*** (12.050)
Observations	5,834	5,834	5,834	5,834	5,832	5,832	5,832	5,832
R-squared	0.385	0.361	0.383	0.198	0.386	0.363	0.383	0.196
Adj. R-squared	0.328	0.302	0.326	0.124	0.329	0.304	0.326	0.122

Note: This table reports the moderating effect of alternative competition measures on the relationship between the EPU and the corporate ESG performance. High comp, medium comp, and low comp are three competition dummies. Specifications (1)–(4) present the results for HHI total asset dummies. Specifications (5)–(8) report the results for the Lerner Index competition dummies. The dependent variables are overall ESG performance, CEP, CSP, and CGP. The description of the variables is given in Table 2. We use one-period lagged independent variables to mitigate the impact of reverse causality and industry-years fixed effects in all the regressions. Error terms are clustered on the firm-level. Robust standard errors in parentheses.

Abbreviations: EPU, economic policy uncertainty; ESG, environmental, social, and governance practices; GDP, gross domestic product.

*$p < .1$.

**$p < .05$.

***$p < .01$.

industries with low- and moderate-level competition when competition is estimated by HHI (asset). Consistent with the previous findings, CGP is enhanced under all competition levels. The findings given in Table 10 indicate that the results are robust under alternative competition measures.

5.4 | Alternative sample construction

As mentioned above, the United Kingdom constitutes approximately 24% of the sample, which raises the question of whether firms from the United Kingdom dominate the empirical results. Thus, to ensure the validity of findings for other European countries in the sample, we exclude the United Kingdom from the sample and repeat the empirical analysis. According to the results given in the specification (4) in Table 9, our findings are robust under alternative sample construction.

5.5 | Alternative model specification

Following Li, Griffin, Yue, and Zhao (2013), we use a longitudinal hierarchical model which allows us to deal with the uneven sample distribution within the country level. Multilevel data structure of our data allows us to use the hierarchical model. The results are given in the specification (5) in Table 9. The findings support the positive impact of EPU on ESG issues. The R-square difference between the two models, model 1 (which does not include EPU) and model 2 (which includes EPU), is statistically significant at 1 % level. Accordingly, adding EPU to the regression improves the model.

6 | CONCLUSION

This paper aims to answer the question whether firms change their ESG engagement during periods of high uncertainty. In the European context, using an industry × year fixed effect panel data regressions, we provide evidence that there is a positive link between EPU and corporate overall ESG performance, environmental performance, and performance in governance. In fact, during periods of high uncertainty, firms exhibit higher resource use, emissions, workforce, management, and CSR strategy scores.

The results of this paper contributes to ESG and corporate governance literature by demonstrating that EPU influences the ESG score. Our results indicate that, during periods of high uncertainty, firms are more dedicated to the sustainability issues and attain higher level of ESG performance. This paper also contributes to literature by showing that the market competition positively moderates the relationship between uncertainty and ESG. Our findings are in line with the literature supporting the risk-reducing function of ESG practices (Benlemlih et al., 2018; Cai et al., 2016; Sassen et al., 2016).

The results are consistent with the stakeholder theory, which predicts environmental and socially responsible activities as value-enhancing practices for stakeholders. In fact, we find that firms facing policy-related uncertainty increase their overall ESG to gain from the insurance-like protection of ESG, which benefits all the stakeholders who have interest in the success and survival of the company. Our findings also support the resource-based view. Indeed, we find that when facing uncertainty, firms increase their workforce score, consistent with the prediction of resource-based view that firms use ESG practices to attract qualified employees (John et al., 2019; Korschun et al., 2014).

The results have interesting implications for governments, companies, society, and academics. First, the paper provides a comprehensive understanding about the behavior of companies during periods of high uncertainty. Although firms achieve a high level of overall ESG performance during periods of high uncertainty, when we dissociate the ESG dimensions, the results show that companies do not increase their environmental innovation, human rights, product responsibility, and shareholders scores. In fact, firms decrease their community practices. Adopting ESG strategies contributes to sustainability and society's well-being. Thus, especially during periods of high uncertainty, policy-makers should follow policies to foster companies' involvement in environmental innovation, human rights, product responsibility, and shareholder rights. Furthermore, our results have another implication for governments in that these incentive policies to promote firms' ESG engagement become more crucial for the all subdimensions of ESG when firms operate in highly competitive industries.

We need to mention the limitations of this study. First, this study only uses data for developed European countries. Thus, our results should be generalized to countries from other regions of the world and to developing countries with caution. Second, even though we include all the developed European countries, a limited number of firms provide ESG information. Further research might be conducted as more data become available for developing countries and for European countries and even for firms around the world. Another limitation of this study is that we use data from Thomson Reuters EIKON (ASSET4), which only includes listed firms. Publicly traded companies may not be a representative of all the firms in those countries. Finally, we use EPU index developed by Baker et al. (2016) to proxy for the policy-related uncertainty. There are other uncertainty measures used in literature such as election dummy (Akey & Lewellen, 2016; Jens, 2017) and the volatility of a large group of important macroeconomic and financial indicators (Jurado et al., 2015).

The limitations of the study present the future lines of research agenda. Future studies could include countries around the world including both developed and developing ones. Moreover, to include nonpublic companies and companies that do not provide ESG information, primary data collection can be employed through the survey method. Finally, to explore a more comprehensive understanding, other uncertainty measures can also be used to proxy uncertainty in the economy.

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ENDNOTES

[1] Thomson Reuters Eikon uses comprehensive data to assess the corporate ESG performance. The database uses ten subgroups to establish the three main categories, namely, environmental, social, and governance ones. The environmental performance is composed of three subgroups: emissions (47), resource use (37) and environmental innovation scores (30). The social performance is evaluated based on four subgroups: workforce (64), human rights (14), community (37), and product responsibility (54). The performance in governance is evaluated by using three subgroups: management (64), shareholders (48) and corporate social responsibility (CSR) strategy (11). The numbers given in the parenthesis are the total number of data points that Thomson Reuters Eikon use to evaluate the regarding ESG subgroup score.

[2] The EPU index constructed by Baker et al. (2016) is available on http://www.policyuncertainty.com/.

[3] HHI can be expressed as, $HHI_{j,c,t} = \sum_{i=1}^{n_j} s_{i,j,c,t}^2$ where $s_{i,j,c,t}$ is the market share of firm i, in industry j, in country c for the corresponding year t and n_j is the number of firms in the industy j.

[4] For the sample of the US firms, Gulen and Ion (2016) use the EPU index for Canada to extract the policy unrelated uncertainty from the EPU index of the US. They claim that these two economies are tightly related to each other due to high international trading activity.

[5] We use Roodman (2009)'s xtabond2 command in STATA.

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How to cite this article: Vural-Yavaş Ç. Economic policy uncertainty, stakeholder engagement, and environmental, social, and governance practices: The moderating effect of competition. *Corp Soc Responsib Environ Manag*. 2020;1–21. https://doi.org/10.1002/csr.2034

APPENDIX

TABLE A1 Correlations

	ESG	Environmental	Social	Governance	Size	Leverage	Profitability	Fin Slack	Sales Gwth	KZ index
Firm-level variables										
ESG	1									
Environmental	0.824[a]	1								
Social	0.855[a]	0.658[a]	1							
Governance	0.698[a]	0.353[a]	0.428[a]	1						
Size	0.521[a]	0.479[a]	0.519[a]	0.322[a]	1					
Leverage	0.053[a]	0.045[a]	0.098[a]	0.005	0.209[a]	1				
Profitability	0.002	−0.043[a]	−0.004	0.025	0.365[a]	−0.046[a]	1			
Financial slack	−0.103[a]	−0.085[a]	−0.113[a]	−0.057[a]	−0.292[a]	−0.328[a]	−0.247[a]	1		
Sales growth	−0.087[a]	−0.092[a]	−0.091[a]	−0.051[a]	−0.088[a]	−0.038[a]	−0.051[a]	0.089[a]	1	
KZ index	0.013	−0.004	0.014	0.020	−0.021	0.004	−0.047[a]	−0.002	−0.019[a]	1
	EPU		ln(EPU)		EPU shock		GDP Growth		Population Growth	
Panel B: Country-level variables										
EPU	1									
ln(EPU)	0.329[a]		1							
EPU shock	0.205[a]		0.803[a]		1					
GDP growth	−0.087		0.105[a]		0.167[a]		1			
Population growth	0.017[a]		0.025[a]		−0.014[a]		0.041[a]		1	

Note: This table reports the pairwise correlations between key variables. In Panel A, we report the correlations between firm-level variables, and in Panel B we report the correlations between country-level variables.

[a]Shows significance at the 0.01 level.