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Lean against the wind: The effect of policy uncertainty on a firm's corporate social responsibility strategy☆

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ABSTRACT

We examine the effect of policy uncertainty on firms' strategy of corporate social responsibility (CSR). During uncertain times, firms strategically increase their commitment to CSR causes. Policy uncertainty is positively associated with CSR performance regardless of the estimation method. CSR strategy can substitute for lobbying when firms attempt to manage policy uncertainty. Improved CSR performance can reduce firms' exposure to policy uncertainty which indicates that CSR commitment can deliver insurance-like benefits. The findings highlight the value of CSR commitments during uncertain times.

1. Introduction

Engaging in corporate social responsibility (CSR) has become a mainstream business strategy (Servaes and Tamayo, 2013), and the organizational environment in which firms operate deeply influences this strategy (Ioannou and Serafeim, 2012; Liang and Renneboog, 2017). The uncertainty that is related to changes in government policy is one of the most important exogenous factors that can affect that environment. The literature has well shown how policy uncertainty affects various corporate activities, such as firms' investment policy (Julio and Yook, 2012; Gulen and Ion, 2016; Jens, 2017), financing policy (Brogaard and Detzel, 2015; Colak et al., 2017), information disclosure strategies (Nagar et al., 2019), and other corporate policies (Bonaime et al., 2018). However, whether and how policy uncertainty affects firms' CSR commitments is unclear.

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The relationship between policy uncertainty and CSR is not apparent. On the one hand, policy uncertainty could adversely affect CSR performance because, according to the real option theory (Bernanke, 1983; Bloom, 2009), managers prefer to delay their long-run investments such as CSR until the economic environment becomes less uncertain (the real option view). In an international context, Jia and Li (2020) find that uncertainties related to economic policy, political instability, and climate change are negatively correlated with a firm's CSR performance. On the other hand, managers can strategically use a reinforced commitment to hedge against the negative effects of policy uncertainty (the hedging strategy view), especially when other hedging strategies do not work properly during periods with high policy uncertainty. Recent studies find that CSR performance, in general, can provide an insurance-like benefit to a firm (Godfrey et al., 2009; Albuquerque et al., 2018). The resources allocated to building mutual trust among firms' stakeholders can pay off during negative events (Choi and Wang, 2009). Consistent with this view, Lins et al. (2017) find that firms with better CSR performance in place before the onset of the financial crisis in 2007 enjoyed high stock returns during the crisis period.

In this study, we examine the relationship between policy uncertainty and CSR performance by using a sample of US firms for the period from 2003 to 2018. We use two proxies for policy uncertainty - the news-based economic policy uncertainty index (the EPU index) developed by Baker et al. (2016) and state-level gubernatorial elections. The first measure is calculated by referencing the frequency of articles related to economic and policy uncertainty in 10 leading US newspapers, and many studies have used it to measure economic policy uncertainty (e.g., Gulen and Ion, 2016; Bonaime et al., 2018). Gubernatorial elections are often used to capture the policy changes related to the turnover of political leadership at the state level that has a significantly negative association with a firm's investment and financing decisions (e.g., Colak et al., 2017; Jens, 2017). We use these two measures to better capture the different sources of policy uncertainty and their effects on firms' CSR performance.

We find that a higher level of policy uncertainty in the US is associated with better CSR performance. A one-standard-deviation increase in economic policy uncertainty results in a 0.60 increase in the CSR score, corresponding to a 1.08 standard deviation in the CSR score. Similarly, the overall CSR score increases by 0.048, on average, during the year of a gubernatorial election in the state where a firm is headquartered. These results are consistent with the view that firms undertake a strategic CSR to increase their reputations (i.e., as a hedging strategy) during uncertain times. A relatively better CSR score, in turn, can serve as a type of hedging strategy against the adverse effects of policy uncertainty (à la Lins et al., 2017).

To shed light on the ways that firms implement their CSR strategies, we test the effect of policy uncertainty on several aspects of CSR commitment as well as the effect of different components of policy uncertainty. First, we test the effect of policy uncertainty on CSR strengths as well as CSR concerns, respectively. Some studies find that CSR concerns (or corporate social irresponsibility) can do more to destroy social capital than CSR strengths do to enhance it (e.g., Kölbel et al., 2017). We find that firms indeed reduce their scores on CSR concerns significantly when faced with high economic or political policy uncertainty. They also increase their scores on CSR strengths when faced with economic policy uncertainty but do not during election periods. Second, we further look at the effect of policy uncertainty on the categorical CSR scores. We find that the positive relationship between policy uncertainty and CSR performance holds for most CSR subcategories, particularly for social CSR subcategories aimed at specific stakeholder groups such as the community and employees. Third, we also find that the economic policy uncertainties that are related to “Fiscal Policy”, “Government Policy”, “Regulation”, and “International Policy” have significantly positive effects on the CSR score.

We carry out several robustness tests, including employing an instrumental variable approach for the EPU index to eliminate the effects of unobserved national factors (Gulen and Ion, 2016; Bonaime et al., 2018), using election closeness to represent the different levels of election uncertainty (Julio and Yook, 2012; Jens, 2017; Colak et al., 2017), and using an alternative database for CSR. We continue to find a significantly positive relationship between policy uncertainty and CSR in all the robustness tests.

Firms can implement different strategies to manage policy uncertainty. We further analyze the relationship between CSR strategy and another important strategy studied in the literature: lobbying. The literature has found that political connections can mitigate the negative effect of policy risk (e.g., Bradley et al., 2016; Akey and Lewellen, 2017; Wellman, 2017; Pham, 2019). However, political strategies like lobbying are subject to high entry costs for firms during uncertain periods (e.g., Shang et al., 2021), and thus some firms may explore other strategies. We find evidence that during periods with a high level of policy uncertainty, the CSR strategy serves as an alternative (or substitute) strategy to lobbying.

Finally, we analyze the benefit of using CSR as a hedging strategy during periods of higher policy uncertainty. We measure a firm's exposure to policy uncertainty using the beta of the EPU index that is computed from an augmented Fama-French three-factor model. We find that this exposure is lower for firms that use CSR as a hedging strategy during periods of high policy uncertainty. This result justifies why some firms spend resources to increase their CSR performance when the overall policy environment is uncertain and provides direct evidence of the hedging strategy view.[1]

Our findings contribute to the rapidly growing literature on the effect of policy uncertainty on a firm's CSR performance. The findings so far are inconclusive. In a mixed sample of developing and developed nations, Jia and Li (2020) find that the uncertainties related to changes in economic policies and instabilities in the political environment have significantly negative effects on a firm's CSR performance. In the context of China, Niu and Zhou (2022) and Zhao et al. (2021) find policy uncertainty reduces firms' CSR. However, other studies find that policy or political uncertainty can positively affect a firm's CSR performance due to the signaling effect in the

[1] We also examine the effect of the CSR score on a firm's operational risk-taking (e.g., R&D expenditure and investment) during periods with heightened policy uncertainty. We find no concrete evidence that CSR would reduce a firm's risk-taking behavior.

uncertain period (Yuan et al., 2022) or the reduction or loss of political connections (Cheng et al., 2022). We differ from the studies above in the mechanisms (the hedging strategy view) and in focusing explicitly on a large sample of US firms. The closest study to ours is Chatjuthamard et al. (2021) who find a similar insurance-like effect of CSR, but their focus is on the firm-level political risk based on firms' earnings conference calls. Our study examines the effects of macro-level economic policy uncertainty as well as state-level political uncertainty that are difficult to diversify away in the financial markets and thus, nonfinancial strategies, such as CSR or lobbying, should be explored. In addition, we uncover that these two strategies - CSR and lobbying - can be substitutes when firms attempt to manage policy uncertainty. To the best of our knowledge, this discovery is the first piece of evidence on the connection between these two important nonfinancial corporate strategies during uncertain periods.

Broadly, this study also contributes to the literature on policy uncertainty. While this literature finds that policy uncertainty has significantly negative effects on corporate behavior (Julio and Yook, 2012; Gulen and Ion, 2016; Jens, 2017; Bhattacharya et al., 2017; Bonaime et al., 2018) or corporate financing conditions (e.g., Waisman et al., 2015; Colak et al., 2017; Chan et al., 2021), it has only begun to examine the effect of policy uncertainty on a firm's nonfinancial behaviors. Afzali et al. (2021) find that policy uncertainty induces firms to engage in more norm-deviant behavior, such as tax cheating and bribery. Our study contributes to this literature by emphasizing a different and positive effect of policy uncertainty on a particular nonfinancial strategy: CSR as a hedging strategy.

This study also contributes to the literature on CSR (e.g., Liang and Renneboog, 2017; Buchanan et al., 2018; Dyck et al., 2019; Chen et al., 2020). A strategic CSR approach (Jones, 1995; Baron, 2001) argues that participation in CSR is likely to be rewarded by the investors and thus, engaging in it is an optimal strategy for the firm to maximize shareholder value. Our findings contribute to this strategic view of CSR by arguing that it can bring hedging benefits to firms during periods of high policy uncertainty.

From a practical perspective, the hedging role of CSR provides a rationale to push firms to pursue a CSR strategy, which is now a mainstream business strategy worldwide. The weaknesses and fragilities of the global economy and the associated political bickering have caused enormous policy uncertainties (Baker et al., 2016). These uncertainties were further amplified by the recent health crisis (COVID-19) and various geopolitical tensions worldwide. All these developments highlight the value of corporate hedging methods such as the CSR strategy we highlight in this paper. Managing policy uncertainty through CSR can not only avoid the consequences involved in those uncertainties, but also promote a sustainable and responsible development strategy for firms.

Our study comprises six sections. Section 2 has a review of the literature and the development of hypotheses. In Section 3, we discuss the data and the variable construction. Section 4 presents the baseline results and robustness analyses on the relationship between CSR and policy uncertainty. Section 5 has an analysis of the potential substitution relationship between CSR as a hedging tool and lobbying in managing policy uncertainty and the benefits of that tool in reducing firms' exposure to policy uncertainty. Section 6 concludes.

2. Related literature and hypothesis development

2.1. Literature review

This study is related to the literature on the determinants of CSR. While many studies have shown that individual firm-level factors affect a firm's CSR performance,[2] the recent literature has found that macroeconomic or institutional factors also have equally important effects on firms' CSR. Liang and Renneboog (2017) show that a firm's CSR performance is strongly correlated with its country's legal origin. Earlier studies have found that a firm's CSR performance is deeply influenced by the political, labor, and education systems (Ioannou and Serafeim, 2012) or broadly the institutional norms surrounding firms (Campbell, 2007; Jackson and Apostolakou, 2010).

Motivated by the relationship between external institutional factors and CSR performance, recent studies have explored if the dynamic characteristic of institutional factors, in particular policy uncertainty, can affect a firm's CSR performance. The literature so far has gotten inconclusive results. Jia and Li (2020) find that uncertainty related to a change in economic policy and political instability has a significantly negative effect on a firm's CSR performance. They attribute this negative effect to the increased value of the waiting option during uncertain times. In the context of China, Niu and Zhou (2022) and Zhao et al. (2021) find that policy uncertainty reduces firms' CSR. However, other studies have found a positive effect of policy uncertainty on firms' CSR performances based on data from Chinese firms (Yuan et al., 2022; Cheng et al., 2022) or from US firms' earnings conference calls (Chatjuthamard et al., 2021). They attribute the positive effect of policy uncertainty to the signaling effect of CSR (Yuan et al., 2022) or the insurance-like role of CSR (Chatjuthamard et al., 2021). The mediating role of policy uncertainty is also examined in studies on the relationship between firms' CSR performances and their managerial characteristics (Ongsakul et al., 2021; Muriithi et al., 2022) or the relationship between CSR performance and firm value (Rjiba et al., 2020). Our study is consistent with the claim of a positive relationship between CSR and policy uncertainty. But it differs from those studies (Yuan et al., 2022; Cheng et al., 2022) in its sample selection and mechanism. This study also differs from Chatjuthamard et al. (2021) in the type of policy uncertainty considered. We focus on macro-

[2] See, among others, studies like Surroca et al. (2010), Edmans (2011), Servaes and Tamayo (2013), Eccles et al. (2014), Dimson et al. (2015), Flammer (2015), Buchanan et al. (2018), Nguyen et al. (2020), Bardos et al. (2020), and Garel and Petit-Romec (2021).

level and state-level economic or political uncertainties which are more difficult to diversify in the market. We further consider the connection between two strategies - CSR and lobbying - during periods of high policy uncertainty which neither of these studies has examined. The literature on the mediating role of policy uncertainty does not speak directly to the relationship between policy uncertainty and CSR.

Our work also relates to the literature on the effects of policy uncertainty on firms' behavior. This strand of literature has examined the effect of policy uncertainty on their investment and financing and mostly finds negative outcomes.[3] In a recent study, Afzali et al. (2021) examine the effect of policy uncertainty on a firm's moral behavior, and they report that it induces the firm to engage in more norm-deviant behavior, such as tax cheating and bribery. We report a different behavior by firms: when facing a high policy uncertainty and a tradeoff between lobbying and CSR as a hedging strategy, many firms choose CSR.

2.2. Hypothesis development

We develop our hypotheses based on the hedging strategy view that states that a firm can strategically manage risk arising from policy uncertainty through a commitment to CSR. The hypothesis builds on the interconnection between policy uncertainty and firm risk. A growing number of studies pose that policy uncertainty is the deciding factor in asset values and requires a risk premium. Pástor and Veronesi (2012, 2013) theorize that in weak economic conditions when a change of policy is more likely, the equity risk premium is primarily driven by the political or policy risk premium. They also show empirically that the uncertainty index is positively associated with return volatility. Similarly, Baker et al. (2016) demonstrate that policy uncertainty is positively associated with stock price volatility. The effect of policy uncertainty can even spill over to the stock markets in other countries. In a similar vein, Berkman et al. (2011) report that a political crisis can lead to an increase in not only domestic stock return volatility but also worldwide stock return volatility. Brogaard et al. (2019) find evidence that the uncertainty of US elections increased stock return volatility in 50 non-US countries.

As the perceived risk associated with policy uncertainty increases, firms may strategically hedge against policy risks using various tools, such as investing in social capital. As stated by Godfrey et al. (2009), CSR can be viewed "as voluntary corporate action designed to improve social conditions or as corporate actions not required by law that attempt to further some social good and extend beyond the explicit transaction interest for the firm." In this sense, CSR can be one of the building blocks of a firm's social capital (Servaes and Tamayo, 2017). Recent studies show that CSR can accumulate social capital by building trust with a firm's stakeholders. Stakeholders criticize and sanction firms with good CSR performance less (Godfrey et al., 2009; Lins et al., 2017), which enables them to enjoy relatively higher returns during adverse events in comparison to firms with poorer CSR performance. There is also direct evidence that CSR performance is negatively related to a firm's risk (Shiu and Yang, 2017; Albuquerque et al., 2018), which consequently increases its value (Harjoto and Laksmana, 2018; Albuquerque et al., 2018). Value-maximizing firms can increase their CSR performance so as to build more trust with their stakeholders and cushion against the possible changes in future regulations and policies when uncertainty is higher. Such strategic actions can include hiring new staff to help with the development of new CSR strategies within the firm. It can also include CSR-focused marketing strategies and advertisements. It can even encompass product reorientation so that the firm designs a more environmentally friendly packaging of its product. Therefore, we propose the following hypothesis:

Hypothesis 1. Firms strategically increase their CSR performance during periods of high policy uncertainty.

Firms have multiple ways to hedge the risk caused by policy uncertainty. A potential alternative is the lobbying strategy. Corporate lobbying enables firms to reach out to policymakers and access relevant policy information that they can use to better manage political risk (Hassan et al., 2019) or to enhance firm performance (Fisman, 2001; Faccio, 2006; Cooper et al., 2010; Acemoglu et al., 2016).[4] The literature has also found direct evidence that political connection can mitigate the negative effect of policy risk, which is often measured by economic or local policy uncertainty, on a firm's investment or financing condition (Bradley et al., 2016; Pham, 2019).[5] Therefore, firms might hope to lobby more intensively during periods of high policy uncertainty to hedge that uncertainty. However, Shang et al. (2021) find that the entry barrier to lobbying is higher during periods of high policy uncertainty that discourages firms from initiating lobbying. Kerr et al. (2014) find similar evidence that supports the entry barrier hypothesis of lobbying. Firms that intend to hedge policy uncertainty have to weigh the costs and benefits between CSR and lobbying. Those firms that find lobbying to be

[3] For instance, a rise in policy uncertainty often delays a firm's physical investment (e.g., Julio and Yook, 2012; Gulen and Ion, 2016; Jens, 2017), affects its innovation (e.g., Bhattacharya et al., 2017), or inhibits mergers and acquisitions (Bonaime et al., 2018). By raising the placement costs of securities for the financial intermediaries (Gungoraydinoglu et al., 2017), policy uncertainty also negatively affects a firm's external financing from the equity market (e.g., Colak et al., 2017; Chan et al., 2021) or from the debt market (e.g., Waisman et al., 2015) that pushes the firm to rely more on its internal cash holdings (Duong et al., 2020).

[4] The literature documented that political connections enable firms to get better access to policy information prior to the actual policy change (e.g., Wellman, 2017; Pham, 2019), receive preferential treatment in government contracts or programs (e.g., Duchin and Sosyura, 2012; Blau et al., 2013; Adelino and Dinc, 2014), or influence the direction of policy change (e.g., Stigler, 1971; Peltzman, 1976). Those benefits may help firms to manage economic policy uncertainty.

[5] Pham (2019) finds that political connections mitigate the negative effect of policy risk on a firm's investment. Bradley et al. (2016) find that firms lobby or make campaign contributions to reduce the adverse effect of local policy risk on their cost of debt.

costly to initiate might resort to CSR strategy, which makes these two strategies substitutable during periods of high policy uncertainty. We propose the following hypothesis:

Hypothesis 2. CSR and lobbying strategies are substitutable during periods of high policy uncertainty.

3. Data and samples

3.1. Sample and CSR variable

Our CSR sample is constructed using the MSCI ESG KLD STATS database (KLD data hereafter) with available environmental, social, and governance (ESG hereafter) scores for US-listed firms for the period from 2003 to 2018. The KLD data are widely used in CSR studies (e.g., Kim et al., 2012; Flammer, 2015; Krüger, 2015). The data cover the MSCI USA Investable Market Index that represents approximately 99% of the market capitalization in the US. We include all of the firms except those in the financial industry and those lacking financial statement data. There are 6004 firms and 32,857 firm-year observations in total in the sample.

The KLD data show the numbers for positive indicators (CSR strengths) and negative indicators (CSR concerns) for a firm's environmental, social, and governance performance. We focus on environmental and social performance and thus exclude the category of corporate governance (e.g., Krüger, 2015). Following Servaes and Tamayo (2013) and Lins et al. (2017), we scale the number of strengths (concerns) in a category for each firm in each year by the maximum number of strengths (concerns) in that category in the same year to account for the adjustment in the items in the KLD ratings. A net CSR score for each category is then calculated by subtracting the scaled number of concerns from the scaled number of strengths. The net CSR score for each category ranges from -1 to 1 (Kim et al., 2012; Di Giuli and Kostovetsky, 2014). An overall CSR score, ranging from -6 to 6, is calculated by adding the net CSR score across the six dimensions (five subcategories for social performance [community, diversity, employee relations, human rights, and product] and one subcategory for environmental performance). We also calculate the overall scores of CSR strengths or concerns by adding the scaled number of strengths or the scaled number of concerns across the six subcategories separately. Our main results remain robust if we measure the overall CSR score, the CSR score for each subcategory, and the score for CSR strengths/concerns that add up the raw number of strengths and concerns without scaling.

As shown in the Online Appendix, our results are also robust to using an alternative CSR score from the Thomson Reuters ASSET4 database (now Refinitive). The database has covered the firms of the S&P 500 and the NASDAQ 100 since 2002 in the US market and has been expanded to include firms in the Russel 2000 index after 2017. We use an overall CSR score from the three pillar scores of environmental (E), social (S), and corporate governance (G) provided for public firms in this database. We show that our results are robust for the overall CSR score as well as the environmental CSR and social CSR scores (measured in natural logarithm terms).

3.2. Policy uncertainty

We use two variables to measure policy uncertainty (the EPU index and gubernatorial election) for two reasons. First, the EPU index and gubernatorial elections can capture different sources of policy uncertainty. The EPU index measures the degree of uncertainty in the policies that the government will adopt as well as their effects on the economy (Pham, 2019). Therefore, it can capture both uncertainties created by political and non-political disagreements. The gubernatorial election itself captures the degree of uncertainty over political leadership that is largely exogenous to a firm's decision. To the extent that political leadership affects state policies, gubernatorial elections can have a significant effect on a firm's decisions (e.g., Colak et al., 2017; Jens, 2017; Chan and Marsh, 2021). Second, we can better exploit variations in policy uncertainty by using two policy uncertainty variables. The EPU index can provide more time variations at the national level. However, it is subject to challenges in separating its effect from the business cycle (e.g., Jurado et al., 2015). Gubernatorial elections are staggered across the states in different years, thus providing more cross-sectional variations in policy uncertainty. The two variables thus complement each other.[6]

The EPU index is created by Baker et al. (2016) and many studies use it to identify the effects of policy uncertainty (e.g., Brogaard and Detzel, 2015; Gulen and Ion, 2016). It has three components. The first component is developed from the frequency of articles related to policy uncertainty in 10 leading US newspapers. The second component of the index measures uncertainty related to future changes in the tax code. The third component of the index measures the forecast disagreement about future monetary and fiscal

[6] Hypothetically, firms in the US can be affected by foreign policy uncertainty as well. Some studies have found that the effect of foreign policy uncertainty on a firm's decision is mainly channeled through the uncertainty in trade and finance policies (Handley and Limão, 2015). However, a large country like the US has influential power over multinational trade agreements (such as WTO) and the major world interest rates (such as LIBOR). It also holds the single largest world reserve currency - the US dollar. Recent studies find that the effect of policy uncertainty in the US has been transmitted to other countries, for instance, the UK (Mumtaz and Theodoridis, 2015) and the Euro area (Colombo, 2013), not the other way around. Nevertheless, we analyze the effect of each component of the EPU index that includes two internationally relevant categories (trade uncertainty and sovereign debt uncertainty). Uncertainties related to the two international policies in the US have significantly increased firms' CSR scores.

policies. Since the news-based component is the most heavily weighted in the overall index and continually tracks policy uncertainty, we use it as the first proxy for policy uncertainty.[7] The EPU index started in 1985 and updates every month. Since we study the effect of policy uncertainty on the CSR score at an annual frequency, we follow Bonaime et al. (2018) and convert the monthly EPU index into an annual variable by taking the average monthly values for each calendar year. The natural logarithm of the yearly news-based economic policy uncertainty index (LNEPU) is our analysis's first variable for policy uncertainty. We also construct a variable (EPUBETA) to measure the sensitivity of a firm's stock return to policy uncertainty.

Following Colak et al. (2017) and Jens (2017), we create a dummy variable (GUBER) which equals one if a gubernatorial election occurs in a state where the firm is headquartered and zero otherwise. The gubernatorial election data are collected from the Stateline database and CQ Electronic Library.

3.3. Other variables

3.3.1. Macroeconomic variables

The policy uncertainty as measured by the EPU index may capture uncertainty related to other macroeconomic factors (Bonaime et al., 2018). To address this concern, we create a macro uncertainty variable (MACRO) from four proxies of macroeconomic uncertainty: the monthly macro uncertainty indices from Jurado et al. (2015), the monthly implied volatility index created by the Chicago Board Options Exchange, the cross-sectional standard deviations of monthly returns from the Center for Research in Security Prices (CRSP hereafter), and the cross-sectional standard deviation in annual sales growth of firms in Compustat (Bloom, 2009). The macro uncertainty variable (MACRO) is the first principal component of the four proxies (Bonaime et al., 2018). Also, to deal with the endogeneity problems, we follow Bonaime et al. (2018) and use the partisan conflict index as an instrumental variable for news-based economic policy uncertainty in the endogeneity test. The partisan conflict index, created by Azzimonti (2018), is updated by the Federal Reserve Bank of Philadelphia.

3.3.2. Firm-level control variables

We construct a series of firm-level variables from Compustat, CRSP, Execucomp, and the MSCI GMI Rating directorship database to control for some common factors that might affect a firm's CSR performance. These variables are the size, market-to-book ratio, return on assets (ROA), cash ratio, dividend yield, leverage ratio, and several measures to represent the quality of corporate governance of firms (e.g., Di Giuli and Kostovetsky, 2014; Ferrell et al., 2016). Size is the natural logarithm of the book value of total assets. The market-to-book ratio is the market value of equity divided by the book value of equity. ROA is the return on total assets. The cash ratio is calculated by cash and cash equivalents over total assets in a firm for a year. The dividend yield is the dividend payments divided by total assets. The leverage ratio is the total liabilities divided by total assets. We use CEO and board characteristics to represent the quality of corporate governance, such as the CEO's age, tenure, and compensation, as well as the percentage of independent directors on the board (e.g., Harjoto et al., 2015; Ferrell et al., 2016). The data are collected from the Execucomp and MSCI GMI Ratings directorship databases.

3.3.3. Political strategy variables

We also create variables to capture lobbying in response to policy uncertainty. The data on corporate lobbying expenses is from the Center for Responsive Politics.[8] Following Kerr et al. (2014), we create a dummy variable LOBBY to capture a firm's lobbying status (the extensive margin of lobbying) and a variable LNLOB to measure a firm's expense for lobbying (the intensive margin of lobbying). LOBBY equals one if a firm engages in lobbying in the current year and zero if it does not. LNLOB is the natural logarithm of one plus the expense of lobbying (adjusted to the 2015 dollar by GDP deflator). The closeness of an election is measured by winning margins and is the difference in the percentage of votes received by the winning candidates and their opponents. We create a new dummy variable CLOSE that equals one if the winning margin is less than 5% and zero otherwise to represent close elections and an opposite variable NONCLOSE that equals one if the winning margin is more than 5% and zeros otherwise to represent non-close elections.

Detailed definitions of the variables are presented in Appendix 1. All the firm-level control variables are winsorized at the 1% and 99% levels.

[7] The weights used to compute the overall policy uncertainty index is one-half for the news-based component, one-sixth for the tax component, and one-third for the forecaster disagreement component, which means the news-based component represents the single biggest fraction of the overall policy uncertainty index. We also verify the use of the news-based component with robustness tests for the effects of the overall policy uncertainty index and the other two components on a firm' CSR score. We find that the overall policy uncertainty index also has a positive effect on the firm's CSR score, but the majority of its explanatory power comes from its news-based component. The results are consistent with the literature on policy uncertainty which finds that news-based component has the biggest influence on corporate behavior, such as investment (e.g., Gulen and Ion, 2016) or cash holding (e.g., Duong et al., 2020). Thus, we follow the literature (e.g., Gulen and Ion, 2016) by using the news-based component as our first proxy of policy uncertainty.

[8] We extracted the corporate lobbying data from LobbyView (Kim, 2018). The raw data were merged with Compustat. We aggregated the semiannual or quarterly observations into annual data.

Table 1
Descriptive Statistics.

Variable	Obs.	Mean	Median	Std. Dev.	Min	Max
Panel A: CSR						
CSR	32,857	−0.04	0.00	0.56	−3.06	3.73
CSR_STR	32,857	0.29	0.11	0.48	0.00	4.00
CSR_CON	32,857	0.32	0.25	0.39	0.00	4.10
COM	32,857	0.01	0.00	0.19	−1.00	1.00
DIV	32,857	−0.06	0.00	0.32	−1.00	1.00
EMP	32,857	−0.01	0.00	0.16	−1.00	0.89
ENV	32,857	0.03	0.00	0.13	−0.71	0.86
HUM	32,857	0.01	0.00	0.11	−0.75	1.00
PRO	32,857	−0.02	0.00	0.14	−1.00	0.67
Panel B: Policy uncertainty						
EPU	32,857	121.11	137.96	31.19	67.14	157.98
LNEPU	32,857	4.76	4.93	0.29	4.21	5.06
LNOVERALL	32,857	4.72	4.71	0.28	4.27	5.15
LNFED	32,857	4.35	4.20	0.35	3.79	4.95
LNTAX	32,857	5.64	5.65	1.22	2.94	7.38
LNCPI	32,857	4.51	4.45	0.23	4.21	4.94
GUBER	31,852	0.26	0.00	0.44	0.00	1.00
CLOSE	8,273	0.10	0.00	0.29	0.00	1.00
NONCLOSE	31,852	0.23	0.00	0.42	0.00	1.00
EPUBETA	32,706	0.00	0.00	0.26	−2.41	1.63
Panel C: Other variables						
LOBBY	32,857	0.35	0.00	0.48	0.00	1.00
LNLOB	32,857	4.14	0.00	6.11	0.00	18.42
MTB	32,857	3.00	2.07	5.87	−39.44	46.68
LEV	32,857	0.24	0.21	0.23	0.00	4.84
ROA	32,857	0.02	0.04	0.16	−6.64	0.36
CASH	32,857	0.18	0.10	0.21	0.00	0.98
DIVD	32,857	0.01	0.00	0.03	0.00	0.31
SIZE	32,857	7.50	7.40	1.74	0.00	14.80
BONUS	22,230	0.08	0.00	0.15	0.00	1.00
CEOTENURE	21,436	1.78	1.79	0.86	0.00	4.13
CEOAGE	21,934	4.02	4.03	0.13	3.33	4.56
INDEPDIR	24,644	0.60	0.60	0.16	0.00	1.00
MACRO	32,857	−0.23	−0.85	1.58	−1.68	3.61
LNPCI	32,857	4.78	4.94	0.29	4.40	5.34

This table provides the descriptive statistics of the variables used in the specifications. Detailed variable definitions and data sources are provided in Appendix 1. For each variable, the number of observations (Obs.), mean, median, standard deviation (Std. Dev.), minimum and maximum are reported.

3.4. Descriptive statistics

Table 1 displays the summary statistics and definitions for all variables in our sample. The average overall CSR score is −0.04, with a standard deviation of 0.56, while the mean CSR strengths score (CSR_STR) and concerns score (CSR_CON) are 0.29 and 0.32, respectively. The average value of the EPU index (EPU) is 121.11. The average natural logarithm of the EPU index in the sample (LNEPU) is thus 4.76. The most considerable uncertainty comes from the tax code (LNTAX) that is 5.64, and the lowest comes from the disagreement on federal, state, and local purchases (LNFED) that is 4.35. The firm's sensitivity to economic policy uncertainty (EPUBETA) is dispersed. The mean sensitivity value is 0.003 with a standard deviation of 0.26. As for gubernatorial elections, around 26% of the firm-year observations are in the states with gubernatorial elections.[9] During election years, 10% of the firms are located in states with close elections. The statistics for the financial statement variables, corporate governance variables, and macro uncertainty variables are also reported.

4. Policy uncertainty and CSR performance

We present the baseline results and the robustness checks regarding the relationship between policy uncertainty and a firm's CSR performance in Hypothesis 1.

[9] "the states" here refers to the states where firms' headquarters are located. "state" below also refers to the headquarter state.

4.1. The relationship between policy uncertainty and CSR performance

We model a firm's CSR performance in a given year as a function of the average economic policy uncertainty index (LNEPU) or the gubernatorial election (GUBER) dummy after controlling for firm characteristics and macro-level variables. Our regression is based on the following model:

$$CSR_{it} = \alpha + \beta_1 PU_t + \gamma_1 CSR_{i,t-1} + \gamma_2 Control_{i,t-1} + \gamma_3 Macro_t + FirmFE + \epsilon_{it} \quad (1)$$

in which i denotes the firm and t indexes the calendar year. *PU* indicates a policy uncertainty variable (LNEPU or GUBER). We add both firm fixed effects and the lagged dependent variable to improve the identification. Firm fixed effects capture the time-invariant factors that may affect the CSR score.[10] The one-year lagged CSR score is added to control for its serial correlation (Harjoto et al., 2015). Also controlled for are other firm-level determinants in the previous year, which are common to the CSR literature (e.g., Di Giuli and Kostovetsky, 2014; Liang and Renneboog, 2017; Chen et al., 2020). These determinants are captured by $Control_{i,\,t-1}$ and comprise the firms' size, market-to-book ratio, leverage ratio, ROA, cash ratio, dividend yield; the CEOs' bonus, tenure, and age; and the ratio of independent directors in the previous year. $Macro_t$ is the macro uncertainty variable (MACRO) that is the first principal component of the four proxies for macroeconomic uncertainty as we defined earlier. We are interested in the coefficient β_1. All the t-statistics are estimated by the robust standard error and are clustered at the firm level.

The regression results are reported in Table 2. Columns (1)–(4) of Panel A show that the effect of policy uncertainty on a firm's overall CSR score is significantly positive in all specifications after controlling for the firm-level variables, the lag of the CSR score, and the macroeconomic uncertainty variable. In the specifications for LNEPU, the estimated coefficient is 0.175 (t-statistic = 15.70) if the corporate governance variables are not controlled for in Column (1) and 0.260 (t-statistic = 15.51) if the corporate governance variables are controlled for in Column (2). These results indicate that if the raw EPU index increases by one standard deviation (i.e., 31.19), the overall net CSR score increases by approximately 0.60 or 0.89 depending on the control variables added; these increases correspond to a 1.08 or a 1.58 standard deviation in the CSR score. Given that policy uncertainty fluctuates substantially during turbulent times, such as during financial crises, the economic significance could be much larger.

Columns (3)–(4) of Panel A present the effect of policy uncertainty on a firm's overall CSR score based on gubernatorial elections. We find that the coefficients for GUBER are significantly positive, and all are highly significant at the 1% level. They indicate that when a state has a gubernatorial election, the average overall CSR score of firms in this state is 0.048 higher compared to firms located in states without gubernatorial elections. These findings support the hedging strategy view in Hypothesis 1 that firms strategically improve their CSR scores when facing high policy uncertainty from different sources. Therefore, economic policy uncertainty and gubernatorial elections induce firms to undertake a CSR strategy and behave responsibly.

We next check the consistency of the results regarding the effects of other variables in the literature. Consistent with Harjoto et al. (2015), the coefficients for the lagged CSR score are highly significant. Consistent with studies on CSR (Di Giuli and Kostovetsky, 2014; Liang and Renneboog, 2017), firm size is an important determinant of the CSR score. The CSR score is positively associated with the leverage ratio and dividend yield, which is consistent with Ferrell et al. (2016). CSR is also positively correlated with the market-to-book ratio and ROA but not the cash ratio, which is consistent with the view that firms that do better financially can afford CSR (Di Giuli and Kostovetsky, 2014). We also find that firms with CEOs getting larger bonuses or with lower percentages of independent directors on the board have lower CSR scores, which is consistent with the findings of Chen et al. (2020) and Sajko et al. (2021).[11] CEOs' age and tenure do not affect the CSR score, which is consistent with (Di Giuli and Kostovetsky, 2014). The coefficients for the variable of macro uncertainty are generally negative, indicating that economic uncertainty may adversely affect a firm's CSR.

4.2. How can a firm improve its CSR performance?

4.2.1. CSR strengths and concerns

A firm can increase its scores on CSR strengths or reduce its scores on CSR concerns to improve its overall CSR score. CSR strengths and concerns in the KLD database capture social responsibility and social irresponsibility, respectively. Kölbel et al. (2017) argue that CSR concerns (i.e., corporate social irresponsibility) can do more to destroy social capital than CSR strengths do to enhance it. Oikonomou et al. (2012) find that corporate social responsibility is negatively and weakly related to a firm's systematic risk, but corporate social irresponsibility is positively and strongly related to financial risk. Krüger (2015) finds similar evidence that investors respond very negatively to negative events and somewhat negatively to positive events. Logically, to the extent that policy uncertainty affects the risk or value of a firm, it can strategically choose to reduce its CSR concerns in order to mitigate the possible negative effect of policy uncertainty on its financial performance.

We replicate the baseline regression in Table 2 by using the scores of CSR strengths and CSR concerns, respectively. Panel A of Table 3 shows that a firm's score on CSR strengths significantly increases when facing higher economic policy uncertainty. But the effect is not significant for gubernatorial elections. In contrast, the score on CSR concerns significantly decreases when facing economic policy uncertainty or political uncertainty. These results indicate that a firm can hedge political uncertainty by reducing the scores of

[10] Year fixed effect cannot be included in the regressions of the economic policy index (LNEPU) as the index is the same for all firms in a year (Gulen and Ion, 2016). The results remain robust if a linear time trend variable is added to the model (Bonaime et al., 2018).

[11] Chen et al. (2020) find that monitoring attention (e.g., independent directors) could increase firms' CSR performance. Sajko et al. (2021) show that CEOs who focus on the firm's short-term performance for their bonus will cut investment in CSR.

Table 2
Policy Uncertainty and CSR Performance: Baseline Results.

	(1)	(2)	(3)	(4)
	Dep. Var. = CSR			
LNEPU	0.175***	0.260***		
	(15.70)	(15.51)		
GUBER			0.048***	0.044***
			(10.68)	(6.50)
CSR (t-1)	0.540***	0.531***	0.541***	0.537***
	(59.54)	(49.47)	(57.59)	(48.11)
MTB	0.001***	0.001*	0.001***	0.001
	(3.50)	(1.77)	(3.07)	(1.35)
LEV	0.073***	0.081**	0.089***	0.109***
	(3.42)	(2.01)	(4.01)	(2.67)
ROA	0.047**	0.080**	0.021	0.071*
	(2.54)	(2.23)	(1.19)	(1.96)
CASH	0.016	−0.058	0.031	−0.027
	(0.66)	(−1.53)	(1.27)	(−0.70)
DIVD	0.206**	0.295*	0.306***	0.423***
	(2.29)	(1.82)	(3.39)	(2.66)
SIZE	0.109***	0.121***	0.147***	0.163***
	(17.98)	(12.20)	(25.23)	(16.26)
BONUS		−0.151***		−0.316***
		(−5.86)		(−11.88)
CEOTENURE		−0.008		−0.008
		(−1.39)		(−1.35)
CEOAGE		0.006		0.035
		(0.13)		(0.72)
INDEPDIR		0.188***		0.112***
		(6.24)		(3.55)
MACRO	−0.036***	−0.045***	−0.026***	−0.033***
	(−27.20)	(−24.50)	(−26.05)	(−21.99)
Constant	−1.682***	−2.319***	−1.153***	−1.484***
	(−29.63)	(−11.53)	(−26.31)	(−7.42)
Firm fixed effect	Yes	Yes	Yes	Yes
Observations	32,857	17,875	31,852	17,553
R-squared	0.6687	0.6477	0.6508	0.6392

This table presents the estimates of OLS regressions in Eq. (1) that examine the effect of policy uncertainty on a firm's CSR score. The sample period is from 2003 to 2018. The dependent variables are the net CSR score calculated by taking the difference between the total CSR strengths and CSR concerns adding up across six dimensions for each firm-year. Data on CSR scores are taken from the MSCI ESG KLD STATS database. The key independent variables are the natural logarithm of the annual average of monthly economic policy uncertainty index (LNEPU) from Baker et al. (2016) and a dummy variable for gubernatorial election (GUBER) at the state-year level. Firm fixed effect is included in all the models. Detailed variable definitions are provided in Appendix 1. Standard errors are clustered at the firm level. ***, **, and * are 1%, 5%, and 10% significance levels, respectively.

CSR concerns and are consistent with the literature that corporate social irresponsibility can have a large effect on firms' performances.

4.2.2. CSR subcategory

We use more comprehensive and detailed measures of CSR scores to assess how firms respond to policy uncertainty. We divide the overall net CSR score into its subcategories to capture the effect of policy uncertainty on them. This investigation enables us to better understand the underlying reasoning behind a firm's decision to use a CSR strategy during uncertain periods since CSR subcategories can have distinct effects on firms' performances (e.g., El Ghoul et al., 2011; Dumitrescu and Zakriya, 2021). A firm could strategically improve CSR scores in some particular subcategories if it can identify the nature and magnitude of policy uncertainty, or may not differentiated those subcategories if it cannot see through policy uncertainty.

Panel B of Table 3 replicates the baseline specification but replaces the dependent variable with each of the six CSR subcategories: community (COM), diversity (DIV), employee relations (EMP), environment (ENV), human rights (HUM), and product (PRO). We find that the two measures of policy uncertainty are significantly and positively related to almost all CSR subcategories with different economic sizes. Employee relations, community, and product are the top three categories through which a firm increases its CSR when facing economic policy uncertainty. In contrast, diversity, employee relations, and community are the top three when a firm faces a gubernatorial election.[12] The magnitudes of the effect of policy uncertainty on other CSR subcategories are relatively small, although

[12] The coefficient for DIV is insignificant and negative for the specification of LNEPU and significantly positive for the specification of GUBER. The negative effect of LNEPU on diversity is consistent with the findings that board diversity (e.g., gender diversity) does not affect firms' risk (Sila et al., 2016) or their risk-taking (Bruna et al., 2019). Thus, firms that seek to strategically hedge the risk may not increase their scores on diversity. It may also indicate a nonlinear relationship between LNEPU and diversity.

Table 3
How a Firm Increases its CSR Performance? - CSR Strengths/Concerns, Categorical CSR Scores.

Panel A: CSR strengths and concerns

	(1) CSR?STR	(2) CSR?CON	(3) CSR?STR	(4) CSR?CON
LNEPU	0.149***	−0.027***		
	(18.88)	(−3.77)		
GUBER			−0.003	−0.050***
			(−0.85)	(−15.96)
Controls	Yes	Yes	Yes	Yes
Firm fixed effect	Yes	Yes	Yes	Yes
Observations	32,857	32,857	31,852	31,852
R-squared	0.7133	0.6122	0.6936	0.6141

Panel B: CSR subcategory

	(1)	(2)	(3)	(4)	(5)	(6)
	COM	DIV	EMP	ENV	HUM	PRO
EPU index:						
LNEPU	0.062***	−0.067***	0.080***	0.032***	0.009***	0.043***
	(13.97)	(−10.68)	(26.32)	(14.29)	(5.45)	(15.66)
Gubernatorial election:						
GUBER	0.005***	0.034***	0.010***	−0.005***	0.000	0.003**
	(2.62)	(12.04)	(6.99)	(−4.50)	(−0.25)	(2.56)
All Panel B:						
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Firm fixed effect	Yes	Yes	Yes	Yes	Yes	Yes

This table presents the results of tests for the effect of policy uncertainty on CSR strengths/concerns and each CSR subcategory. We re-estimate Eq. (1) but replace the overall CSR score with CSR strength/concern or each subcategory. Panel A presents the results for CSR strength and concern. Panel B displays the result for each CSR subcategory, namely community (COM), diversity (DIV), employee relations (EMP), environment (ENV), human rights (HUM), and product (PRO). Firm fixed effect is included in all the models. Control variables include all the other variables in Column (1) of Table 2. Detailed variable definitions are provided in Appendix 1. Standard errors are clustered at the firm level. ***, **, and * are 1%, 5%, and 10% significance levels, respectively.

they are still highly significant in most categories. The finding indicates that firms choose to improve the scores of social CSR subcategories aimed at specific stakeholder groups (especially the community, employees, or customers) to better hedge policy uncertainty. This finding is consistent with the finding of Dumitrescu and Zakriya (2021) that social CSR subcategories can mitigate a firm's risk better than environmental and governance subcategories.

4.3. Which type of economic policy uncertainty affects CSR performance

Different types of policy uncertainty have characteristics that may have different influences on a firm's CSR strategy. Baker et al. (2016) find that fiscal, regulatory, and government policies are important sources of policy uncertainty. We further test the effect of each element of policy uncertainty. We conduct this analysis for the EPU index only as the gubernatorial election is a binary variable. We also test the effects of the overall EPU index and its other components, namely the disagreement on federal, state, and local purchases; CPI forecast disagreement; and tax expiration index. The overall EPU index is a weighted average of the newspaper-based uncertainty index and these other components. We take the natural logarithm of these variables. The newspaper-based uncertainty index is the most crucial component of the overall EPU index (Gulen and Ion, 2016).

We present the results on the overall EPU index and each non-newspaper-based component in Panel A of Table 4. We continue to find a significantly positive effect on CSR scores for the overall EPU index (see Column (1)) and the disagreement on federal, state, and local purchases (see Column (2)). In Panel B of Table 4, we present the results for each component of our baseline newspaper-based EPU index. We find that most of the explanatory power of economic policy uncertainty (LNEPU) comes from uncertainties related to fiscal policy, government policy, regulation, and international policy. Among them, uncertainty related to trade policy has the largest effect on firms' CSR scores. A one-standard-deviation increase in trade policy uncertainty results in a 0.43 increase in CSR scores, corresponding to a 0.76 standard deviation in CSR scores.[13] However, uncertainty related to monetary policy leads to a decrease in CSR scores that may reflect the fact that uncertainty related to monetary policy mainly affects financial indicators such as credit spreads (see Husted et al., 2020). A firm can hedge it more effectively through adjustments in its financial investment strategy. Due to the same reasoning, a similar result also appears in Column (3) of Panel A, as CPI forecast is important for both financial investment strategy and

[13] The standard deviation of the raw index of trade policy is 103.33. We calculate the economic significance as ln(103.33) * 0.093.

Table 4
Which Types of Economic Policy Uncertainty Affects CSR Performance?

Panel A: The overall EPU index and three non-news-based EPU indices

	(1)	(2)	(3)	(4)
	Dep. Var. = CSR			
Overall index (LNOVERALL)	0.134***			
	(11.43)			
Federal/state/local purchases disagreement (LNFED)		0.043***		
		(6.56)		
CPI forecast disagreement (LNCPI)			−0.004	
			(−1.57)	
Tax expirations index (LNTAX)				−0.106***
				(−7.27)
Controls	Yes	Yes	Yes	Yes
Firm fixed effect	Yes	Yes	Yes	Yes
Observations	32,857	32,857	32,857	32,857
R-squared	0.6063	0.6034	0.6029	0.6035

Panel B: Subcategories for the baseline news-based EPU index

	(1)	(2)	(3)	(4)
	Dep. Var. = CSR			
	Fiscal policy	Monetary policy	Government policy (Healthcare)	Government policy (National security)
Categorical EPU Indices	0.042***	−0.096***	0.022***	0.058***
	(7.89)	(−10.05)	(4.50)	(10.78)
Controls	Yes	Yes	Yes	Yes
Firm fixed effect	Yes	Yes	Yes	Yes
Observations	32,857	32,857	32,857	32,857
R-squared	0.6041	0.6047	0.6032	0.6041

	(5)	(6)	(7)	(8)
	Dep. Var. = CSR			
	Government policy (Entitlement programs)	Regulation	International policy (Trade policy)	International policy (Sovereign debt)
Categorical EPU Indices	0.021***	0.043***	0.093***	0.020***
	(4.41)	(5.75)	(25.12)	(7.28)
Controls	Yes	Yes	Yes	Yes
Firm fixed effect	Yes	Yes	Yes	Yes
Observations	32,857	32,857	32,857	32,857
R-squared	0.6032	0.6035	0.6129	0.6041

This table presents the result for each category of economic policy uncertainty (EPU). Panel A reports the result for the alternative overall EPU index and three non-news-based EPU indices taken from Baker et al. (2016). Panel B reports the results for each subcategory of the EPU index, including fiscal policy, monetary policy, government policies (healthcare, national security, and entitlement programs), regulation, and international policies (trade policy, sovereign debt). Firm fixed effect is included in all the models. Control variables include all the other variables in Column (1) of Table 2. Detailed variable definitions are provided in Appendix 1. Standard errors are clustered at the firm level. ***, **, and * are 1%, 5%, and 10% significance levels, respectively.

monetary policy.[14]

4.4. Non-linear, asymmetric, and persistent effects of economic policy uncertainty

Improving CSR performance requires a large input of resources (Di Giuli and Kostovetsky, 2014), especially when firms decide to invest in their core business structures and procedures on sustainability practice. Therefore, a firm's CSR strategy may respond more strongly to larger jumps in policy uncertainty than to lower ones. In Table 5, we replicate the baseline result based on the different quantiles of policy uncertainty to explore this possibility. We find that the CSR scores increase significantly in subsamples above the

[14] There could be different explanations for the negative effect of monetary policy uncertainty. For example, monetary policy uncertainty can increase the credit spread as Husted et al. (2020) find. The increased financing cost makes it difficult for firms to finance their CSR expenditures, which results in a decline in CSR performance.

Table 5
Non-linear and Asymmetric Effects of Economic Policy Uncertainty on CSR.

	(1)	(2)	(3)
	Dep. Var. = CSR		
EPU 25th - 50th percentile	0.089***		
	(10.04)		
EPU 50th - 75th percentile	0.068***		
	(7.77)		
EPU above 75th percentile	0.124***		
	(14.08)		
EPU Up		0.068***	−0.508***
		(14.99)	(−8.48)
LNEPU * EPU Up			0.114***
			(8.97)
LNEPU			0.093***
			(7.11)
Controls	Yes	Yes	Yes
Firm fixed effect	Yes	Yes	Yes
Observations	32,857	32,857	32,857
R-squared	0.6090	0.6063	0.6104

This table presents the results of the non-linear and asymmetric effect of economic policy uncertainty on CSR. "EPU 25th - 50th percentile" refers to the value of LNEPU, which is above the 25th percentile and below the 50th percentile. "EPU 50th - 75th percentile" includes observations of LNEPU that are above the median and lower than the 75th percentile. "EPU above 75th percentile" refers to the value of LNEPU that are above the 75th percentile. "EPU Up" is a dummy variable that equals 1 if the change in the EPU index is positive. The change in the EPU index is measured by the difference between the EPU index in the current year and the EPU index in the previous year. Firm fixed effect is included in all the models. Control variables include all the other variables in Column (1) of Table 2. Detailed variable definitions are provided in Appendix 1. Standard errors are clustered at the firm level. ***, **, and * are 1%, 5%, and 10% significance levels, respectively.

75th percentile of economic policy uncertainty and modestly in the subsamples below the 25th percentile. CSR strategy appears to be a more important tool to manage policy risk in the most volatile times. Following Colak et al. (2018), we also check the asymmetric effect of policy uncertainty on CSR scores in Columns (2) and (3). To this end, we interact with a dummy variable denoting whether the EPU index is going up or not (EPU Up) with LNEPU. A positive coefficient for the interaction term means that CSR scores will increase more if the EPU index is under upward pressure at a given level. Indeed, we find that CSR scores increase more when policy uncertainty will increase in the future.

The literature has found that the adoption of sustainability policies encourages firms to undertake distinct organizational processes in subsequent periods that can better promote stakeholder engagement in long-term orientated practices (Eccles et al., 2014). If this is also true for CSR policies, policy uncertainty should generate an enduring effect on a firm's CSR performance. To explore this possibility, we follow Gulen and Ion (2016) and estimate the time-varying effect of policy uncertainty. As earlier, we focus on the continuous measure of policy uncertainty: the EPU index.

$$CSR_{i,t+l} = \alpha + \beta_1 LNEPU_{i,t} + \gamma_1 Control_{i,t-1} + \gamma_2 Macro_{i,t} + FirmFE + \epsilon_{i,t+l} \quad (2)$$

Here, i and t denote firm and current time, $l \in \{1, 2, 3, 4, 5\}$. Therefore, we estimate a separate regression of CSR on LNEPU and all the other control variables as in Eq. (1), but each time we extend the lag between CSR and LNEPU by one year. We run the estimation up to a 5-year lag.[15] We plot the estimated coefficient for LNEPU as well as its 95% confidence interval in Fig. 1.

The results show that policy uncertainty has a persistent and positive effect on CSR. Not only does policy uncertainty have a positive effect on CSR in the current year, but it lasts up to five years into the future. The relationship peaks in the future two years and weakens for the longer lags but still stays significantly positive. This is consistent with the idea that once policy uncertainty changes a firm's CSR policies, it might encourage firms to undertake organizational reforms to make persistent efforts to increase their CSR performance.

4.5. Robustness tests

4.5.1. Economic policy uncertainty

One concern with our result on economic policy uncertainty is that some omitted national-level time-varying factors may affect both it and a firm's CSR score simultaneously. For instance, some studies have found that economic policy uncertainty is countercyclical (e.g., Gulen and Ion, 2016). On the other hand, Harrison and Berman (2016) have found that firms increase their investment in diversity, employee relations, and the environment during periods of slow economic growth. While we have controlled for macroeconomic uncertainty in all the specifications, we mainly focus on macroeconomic volatility that might not fully capture the effects of the business cycle.

[15] We run the estimation up to a 5-year lag so that we do not lose too much degree of freedom in the estimation. The lagged term of CSR is removed from this equation to focus on the dynamic effects of LNEPU, which is the same approach as in Gulen and Ion (2016).

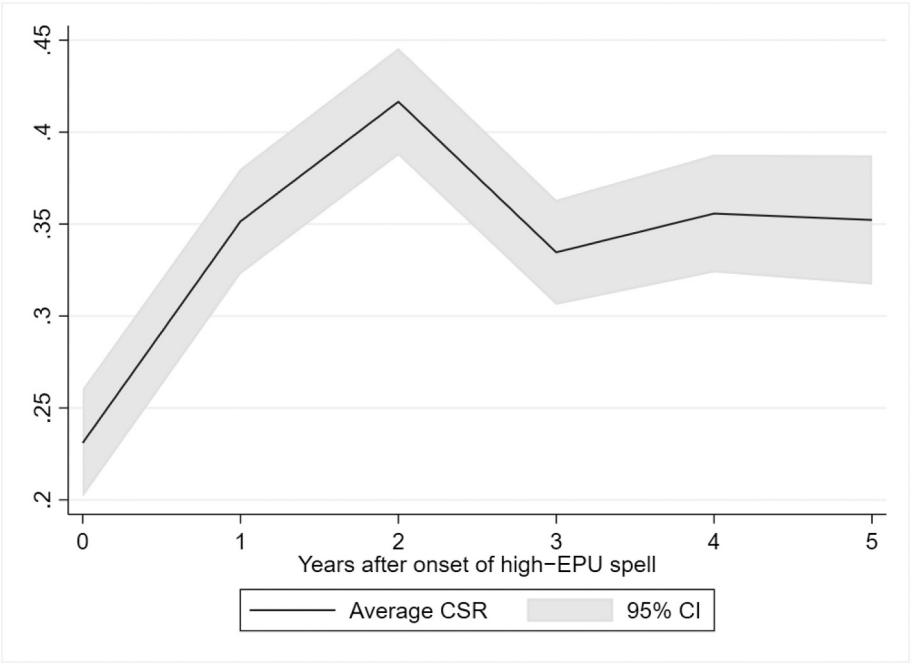

Fig. 1. The Persistent Effect of Economic Policy Uncertainty on CSR.
This figure depicts the effect of policy uncertainty on future levels of CSR. The horizontal axis represents the lag between the dependent (CSR) and independent variables (LNEPU) in each regression estimated from Eq. (2). The lagged term of CSR is removed from Eq. (2) following the same approach as Gulen and Ion (2016). The estimated coefficients of LNEPU (solid line) are reported together with the 95% confidence intervals (shadow region).

We conduct an instrumental variable (IV) test to address this concern on omitted variables. In the same spirit as Gulen and Ion (2016) and Bonaime et al. (2018), we use some measures of political polarization as an instrument for policy uncertainty. Specifically, following Bonaime et al. (2018), we use the partisan conflict index developed by Azzimonti (2018) (the PC index). The index is constructed with an approach similar to Baker et al. (2016). The PC index is measured with the ratio of newspaper coverage of articles reporting political disagreement about government policy within and between parties over the total number of new articles in the same period. In the Online Appendix, we follow Gulen and Ion (2016) and also use partisan polarization in the US Senate that is measured by the DW-NOMINATE scores as our second instrumental variable. The scores track legislators' ideological positions based on poll data.

Partisan polarization directly affects policy uncertainty. Intense partisan conflict is often associated with significant political gridlock and makes "the time, size, and composition of government policy less predictable" (Azzimonti, 2018). Baker et al. (2020) find that a polarized election can increase economic policy uncertainty; therefore, the PC index satisfies the relevance condition as an instrument. A valid instrument should also satisfy the exclusion condition. While the exclusion condition is not directly testable, it is unlikely that firms would be able to change the level of political polarization to serve their interests (i.e., to have optimal CSR strategy). Rather, political polarization likely accentuates or prolongs policy uncertainty which in turn influences firms' CSR strategy. Indeed, Guirola (2021) finds that economic expectation is strongly correlated to disagreements between politicians that arise from the climate of hostility between partisan camps. Thus, conflicts over political ideologies could affect policy communication and economic expectation that give rise to large policy uncertainty.

We run the two-stage least squares regressions (2SLS). In the first stage, we regress LNEPU on the instrumental variable - the natural logarithm of the yearly partisan conflict index, LNPCI, and all other control variables in Eq. (1). The predicted value of LNEPU is estimated from the first-stage regression and is then used in the second-stage regression. We use three statistical models - standard 2SLS, Lewbel's 2SLS (Lewbel, 2012), and the generalized method of moments (Hansen, 1982) to ensure that the specific statistical models do not drive our results.

Panel A of Table 6 presents the results. Column (1) of Table 6 shows that LNPCI is significantly associated with LNEPU. Specifically, the *F*-statistics in the Cragg-Donald weak identification test show that the instrument is strongly relevant. Columns (2)–(4) display the results associated with the three statistical models. In each model, the coefficients for the instrumented economic policy uncertainty variable are significantly positive at the 1% level that provides further supporting evidence on the baseline policy uncertainty - CSR relationship. We find similar results for the second instrumental variable and present the findings in the Online Appendix.

4.5.2. Gubernatorial election

A gubernatorial election is pre-scheduled, and therefore the potential endogeneity concern is largely mitigated. Following Julio and Yook (2012), Jens (2017), and Colak et al. (2017), we conduct a robustness test based on the closeness of gubernatorial elections. The

Table 6
Robustness Tests: Instrumental Variable Regression and Close Elections.

Panel A: Instrumental variable regressions for the EPU index				
	First Stage	Second Stage		
	(1)	(2)	(3)	(4)
	Dep. Var. = LNEPU	Dep. Var. = CSR		
		Standard 2SLS	Lewbel's 2SLS	IV-GMM
LNPCI	1.067***			
	(316.34)			
LNEPU (Instrumented by LNPCI)		0.195***	0.199***	0.168***
		(16.04)	(16.54)	(14.88)
Controls	Yes	Yes	Yes	Yes
Firm fixed effect	Yes	Yes	Yes	Yes
Observations	32,857	32,857	32,857	32,857
Weak identification test				
Cragg Donald Wald F statistic (LNPCI)		(0.000)***	(0.000)***	(0.000)***

Panel B: Close election			
	(1)	(2)	(3)
	Dep. Var. = CSR		
	Election sample	Sample excluding non-close elections	Full sample
CLOSE	0.078***	0.054***	0.062***
	(3.28)	(3.13)	(3.68)
NONCLOSE			0.046***
			(10.02)
Controls	Yes	Yes	Yes
Firm fixed effect	Yes	Yes	Yes
Observations	8,273	24,374	31,852
R-squared	0.7071	0.6734	0.6508

This table presents the results of robustness tests for the PU - CSR relation. Panel A reports the endogeneity test for the EPU index from the instrumental variable approach. The instrumental variable is the natural logarithm of the partisan conflict index (LNPCI) developed by Azzimonti (2018). Column (1) of Panel A presents the results of first-stage regression. The second stage regressions using different statistical methods are presented in Columns (2)–(4) of Panel A. Panel B gives the results on close election results. Column (1) of Panel B displays the result for the election sample. Column (2) of Panel B uses the sample excluding non-close elections. Column (3) of Panel B considers the full sample and controls for the effects of both close elections and non-close elections. CLOSE is a dummy variable if the winning margin of a gubernatorial election is less than 5% and 0 otherwise. NONCLOSE is a dummy variable if the winning margin is more than 5% and 0 otherwise. Firm fixed effect is included in all the models. Control variables include all the other variables in Column (1) of Table 2. Detailed variable definitions are provided in Appendix 1. Standard errors are clustered at the firm level. ***, **, and * are 1%, 5%, and 10% significance levels, respectively.

election outcome is expected to be more uncertain when the candidate wins with a small margin (that is, it is a close election). Consequently, policy uncertainty is expected to be higher and to have a more significant effect on a firm's CSR strategy.

Column (1) of Panel B of Table 6 shows the results. Within the election cycle, we find that a close election has a significantly larger effect on a firm's CSR score than a non-close election. CSR scores are increased by 0.078 more in close elections than in non-close elections. This result indicates that the higher the election uncertainty (i.e., the higher the resulting policy uncertainty), the sharper the increase in CSR scores during the election year. Column (2) of Panel B shows the results for the sample excluding non-close election years. This regression compares the CSR scores of firms in states with close elections relative to that of firms in non-election states. Consistent with our expectation, the result shows that the estimated coefficient for "CLOSE" (0.054) is larger than the coefficient for GUBER in the baseline result (0.048). Column (3) of Panel B shows the estimation of the difference between the CSR scores of firms in close-election states or non-close-election states, and the CSR scores of firms in non-election states using a full sample. The estimated difference between the CSR scores of firms in close-election states and the CSR scores of firms in non-election states is 0.062. The estimated difference between the CSR scores of firms in non-close-election states and the CSR scores of firms in non-election states is 0.042. Close elections have a larger effect on CSR scores, which is consistent with our expectations.

4.5.3. Other robustness checks

We conduct two additional robustness analyses on the measure of CSR scores. First, our results are obtained using a scaled net CSR score, which raises the question of the appropriateness of the scaling method. To alleviate this concern, we use the raw net CSR score without scaling that is calculated by subtracting the total CSR concerns from the total CSR strengths. We then re-estimate Table 2 using the raw net CSR score. The findings remain unchanged. Second, there is a rising concern that the CSR score is inconsistent across different rating agencies (Brandon et al., 2021; Christensen et al., 2021) that makes it difficult to effectively guide a firm's decisions. To test the robustness of baseline results to alternative CSR rating sources, we collect ESG data from US-listed firms between 2002 and

2017 in an alternative Thomson Reuters ASSET4 database, which is also one of the largest ESG rating providers to investors. In the Online Appendix, we show that the effect of policy uncertainty on CSR scores is still highly significantly positive. The result also holds for both LNEPU and GUBER.[16]

5. Benefits of the CSR strategy

5.1. CSR strategy as a substitute for lobbying

Hypothesis 2 posits that a political connection might be a substitute for CSR strategy during periods of high policy uncertainty. Next, we test how the relationship between lobbying and CSR scores could be affected by policy uncertainty.[17]

Table 7 presents the relationship between lobbying and CSR. Lobbying is measured by the lobbying status dummy (LOBBY) or by the total annual lobbying expenses of a firm (LNLOB). We partition the sample into two subsamples, the "High EPU" sub-sample with an EPU index above the median and the "Low EPU" subsample with an EPU index below the median. Similarly, we divide the gubernatorial election sample into "Election" and "Non-election" subsamples, with the former including only the observation of the gubernatorial election and the latter including all observations in non-election states. We find that there is a clear difference in the relationship between lobbying and CSR for periods with different levels of policy uncertainty. While lobbying and CSR are significantly and negatively correlated in the subsample with a high degree of policy uncertainty (Columns (1) and (3)), the relationship is insignificant in periods with a low degree of policy uncertainty (Columns (2) and (4)). These results are more pronounced when lobbying is measured by an extensive margin (i.e., lobbying status dummy, LOBBY) that indicates that CSR may replace lobbying initiation strategy when policies become very uncertain.

Taken together, the evidence is consistent with the substitution hypothesis between CSR and lobbying during uncertain periods.

5.2. CSR strategy as a hedge against policy uncertainty

In this subsection, we examine the benefits that the CSR strategy can deliver to firms during uncertain times. As argued earlier, we expect a reduced exposure to policy uncertainty for firms that strategically improve their CSR performance.

We first estimate a firm's policy uncertainty exposure following Bali et al. (2017), Nagar et al. (2019), and Hassan et al. (2019). We construct a policy uncertainty beta to capture a firm's exposure to policy uncertainty. To this end, we regress a firm's daily excess stock return on the daily EPU index (measured in natural logarithm terms) and the Fama-French three factors for each firm-year (Bali et al., 2017; Nagar et al., 2019):

$$R_{id} - r_{fd} = \alpha_i + \beta_i LNEPU_d + b_i\left(R_{Md} - r_{fd}\right) + s_i SMB_d + h_i HML_d + \epsilon_{id} \tag{3}$$

where R_{id} is the stock return of firm i on day d. r_{fd} is the daily risk-free rate (US T-bill rate). R_{Md} is the daily return on the market (the value-weighted market portfolio). $LNEPU_d$ is the natural logarithm of the daily EPU index. The SMB_d and HML_d are the daily returns on the size and value factors in Fama and French (1993). β_i is the factor loading of the EPU index (LNEPU) for firm i. We estimate the beta from daily stock returns and require at least 100 daily observations for each firm-year.

We then explore whether the CSR strategy reduces a firm's exposure to policy uncertainty. We estimate the following model:

$$EPUBETA_{it} = \delta + \delta_1 PU_t + \delta_2 PU_t{*}CSR_{it} + \delta_3 CSR_{it} + \delta_4 Control_{i,t-1} + \delta_5 Macro_t + FirmFE + \epsilon_{it} \tag{4}$$

in which $EPUBETA_{it}$ is the exposure to policy uncertainty we compute above. Again, PU_t stands for policy uncertainty. The interaction terms between LNEPU or GUBER and CSR score are included in the regressions. In the regression, we add all the control variables such as macro conditions and firm characteristics. We are interested in the coefficient for the interaction term δ_2 that captures the effect of CSR strategy on a firm's exposure to policy uncertainty during different periods. To conserve space, we only report the coefficients and t-statistics on the policy uncertainty variables, CSR variables, and their interaction terms.

We report the results in Table 8. In Column (1), we regress a firm's exposure to policy uncertainty on its CSR score after controlling for firm fixed effects as in the baseline regression. We find that a firm's CSR score does not significantly correlate with policy uncertainty exposure, indicating that firms with a CSR strategy (i.e., increasing CSR score) in general do not have statistically significantly different EPUBETA than the other firms. In Columns (2) and (3), we test if CSR strategy can be used to reduce a firm's exposure to policy uncertainty during periods with heightened economic policy uncertainty or political uncertainty. We find that the coefficients for the interaction terms between CSR and policy uncertainty variables are negative and significant, indicating that a firm's stock return is less sensitive to policy uncertainty when it adopts a CSR strategy during uncertain periods. This result holds for both economic policy uncertainty and gubernatorial elections and echoes the earlier finding on the hedging benefit of the CSR strategy.

[16] Berg et al. (2021) find widespread changes to the historical ratings of the ASSET4 database. Therefore, we take the positive relationship between policy uncertainty and CSR using the ASSET4 database as the only supplementary evidence to support Hypothesis 1.

[17] There are several political strategies that firms can exploit, including hiring politically connected directors, donating or lobbying. Lobbying is often considered a relatively more active political strategy, whereas hiring politically connected directors is often regarded as a passive political strategy (Duchin and Sosyura, 2012).

Table 7
Different Strategies to Manage Policy Uncertainty: CSR and Lobbying.

	(1)	(2)	(3)	(4)
	Dep. Var. = CSR			
	High EPU	Low EPU	Election	Non-election
Lobbying status				
LOBBY	−0.047**	−0.002	−0.044***	−0.016
	(−2.37)	(0.12)	(−2.04)	(−1.08)
Controls	Yes	Yes	Yes	Yes
Firm fixed effect	Yes	Yes	Yes	Yes
Observations	18,848	18,811	9,077	26,988
R-squared	0.6440	0.6451	0.6033	0.5385
Lobbying expense				
LNLOB	−0.004**	0.001	−0.003*	−0.000
	(−2.41)	(0.69)	(−1.71)	(−0.28)
Observations	18,848	18,811	9,077	26,988
R-squared	0.6440	0.6451	0.6032	0.5384
Controls	Yes	Yes	Yes	Yes
Firm fixed effect	Yes	Yes	Yes	Yes

This table reports the result of the relationship between CSR and lobbying during uncertain periods. LOBBY is a dummy variable, which takes one if a firm recorded positive expense on lobbying in the current year. LNLOB is the natural logarithm of one plus lobbying expense adjusted to the 2015 dollar by GDP deflator. "High EPU" and "Low EPU" represent periods with above-median and below-median EPU indices, respectively. "Election" and "Non-election" represent periods with and without gubernatorial elections, respectively. Firm fixed effect is included in all the models. Control variables include all the other variables in Column (1) of Table 2. Detailed variable definitions are provided in Appendix 1. Standard errors are clustered at the firm level. ***, **, and * are 1%, 5%, and 10% significance levels, respectively.

Table 8
The Benefit of CSR Strategy: Reducing Exposure to Policy Uncertainty.

	(1)	(2)	(3)
	Dep. Var. = EPUBETA		
CSR	−0.005	0.143***	−0.003
	(−1.42)	(3.03)	(−0.81)
CSR*LNEPU		−0.031***	
		(−3.15)	
LNEPU		0.010*	
		(1.68)	
CSR*GUBER			−0.010*
			(−1.65)
GUBER			−0.007**
			(−2.07)
Controls	Yes	Yes	Yes
Firm fixed effect	Yes	Yes	Yes
Observations	37,306	37,306	35,970
R-squared	0.1873	0.1877	0.1849

This table reports the consequences (benefits) of increasing CSR score during uncertain times - reducing a firm's risk exposure to policy uncertainty, estimated from Eq. (3). A firm's exposure to policy uncertainty (EPUBETA) is the beta coefficient of LNEPU from an augmented Fama-French Three-factor model. Firm fixed effect is included in all the models. Control variables include all the other variables in Column (1) of Table 2. Detailed variable definitions are provided in Appendix 1. Standard errors are clustered at the firm level. ***, **, and * are 1%, 5%, and 10% significance levels, respectively.

6. Conclusion

In this study, we investigate whether and how policy uncertainty affects the CSR strategies of firms. One view is based on the real option theory that posits that managers avoid CSR investments during periods of high uncertainty by postponing any irreversible investments. By contrast, the hedging strategy perspective posits that a firm can improve its CSR score as a hedge against the negative effect of policy uncertainty. The empirical results from 6,004 US-listed firms and 32,857 firm-year observations support the latter view that policy uncertainty, as captured by the EPU index or gubernatorial elections, is positively and significantly associated with a firm's CSR score. The results still hold in various robustness tests. We also provide support for the hypothesis that a CSR strategy is undertaken by firms as an alternative to the lobbying strategy. Our findings are consistent with the studies claiming that CSR can mitigate the adverse effects of the financial crisis (Lins et al., 2017) or firm risk (Albuquerque et al., 2018).

We also explore the hedging benefits of CSR strategies that help mitigate the negative effects of policy uncertainty. When facing

policy uncertainty, CSR performance can provide firms with insurance-like benefits by reducing their exposure to policy uncertainty, which explains why firms are willing to spend precious resources to improve their CSR performances. This study sheds light on the relationship between policy uncertainty and the decisions made by managers related to a firm's CSR. It also provides new evidence on how firms manage external policy uncertainty.

Data availability

Data will be made available on request.

Appendix 1. Variable Definitions

This table provides the definitions of variables used in the analysis.

Variable	Definition	Data source
CSR	An overall CSR score from six CSR categories including community, diversity, employee relations, environment, human rights, and product	MSCI ESG KLD STATS
CSR_STR	A CSR strengths score from six CSR categories	MSCI ESG KLD STATS
CSR_CON	A CSR concerns score from six CSR categories	MSCI ESG KLD STATS
COM	A CSR score for the community category	MSCI ESG KLD STATS
DIV	A CSR score for the diversity category	MSCI ESG KLD STATS
EMP	A CSR score for the employee relations category	MSCI ESG KLD STATS
ENV	A CSR score for the environment category	MSCI ESG KLD STATS
HUM	A CSR score for the human right category	MSCI ESG KLD STATS
PRO	A CSR score for the product category	MSCI ESG KLD STATS
LNEPU	The natural logarithm of average monthly news-based economic policy uncertainty index in a year	Baker et al. (2016)
EPU	The average monthly news-based economic policy uncertainty index in a year	Baker et al. (2016)
LNOVERALL	Natural logarithm of average monthly overall economic policy uncertainty index in a year	Baker et al. (2016)
LNFED	Natural logarithm of average monthly policy uncertainty index of the federal/state/local purchases disagreement in a year	Baker et al. (2016)
LNTAX	Natural logarithm of average monthly policy uncertainty index of temporary federal tax in a year	Baker et al. (2016)
LNCPI	Natural logarithm of average monthly policy uncertainty index of the CPI forecast disagreement in a year	Baker et al. (2016)
EPU Up	A dummy variable that equals one if the average monthly news-based economic policy uncertainty index in a year increase and zero otherwise	Baker et al. (2016)
GUBER	A dummy variable that equals one if the state where a firm is headquartered holds a gubernatorial election in a year and zero otherwise	Stateline database and CQ Electronic Library
CLOSE	A dummy variable that equals one if the state where a firm is headquartered has a close winning margin (less than 5%) in an election year and zero otherwise	Stateline database and CQ Electronic Library
NONCLOSE	A dummy variable that equals one if the state where a firm is headquartered has a large winning margin (more than 5%) in an election year and zero otherwise	Stateline database and CQ Electronic Library
EPUBETA	Stock market return sensitivity to policy uncertainty. It is calculated from the beta coefficient of LNEPU from an augmented Fama-French Three-factor model	CRSP and Baker et al. (2016)
LOBBY	A dummy variable that equals one if a firm has lobby activities in a year and zero otherwise	The Center for Responsive Politics
LNLOB	Natural logarithm of one plus lobbying expense adjusted to the 2015 dollar by GDP deflator	The Center for Responsive Politics
MTB	Market to book ratio, calculated by the market value of equity over the book value of equity in a firm in a year	CRSP
LEV	Leverage ratio, calculated by total debt over the total asset in a firm in a year	CRSP
ROA	Return on assets in a firm in a year	CRSP
CASH	Cash ratio, calculated by cash and cash equivalent over total assets in a firm in a year	CRSP
DIVD	Dividend payment, calculated total dividend payment over total assets in a firm in a year	CRSP
SIZE	The natural logarithm of market capitalization in a firm in a year	CRSP
BONUS	The percentage of CEO bonus in total compensation in a firm in a year	Compustat ExecuComp
CEOTENURE	The natural logarithm of CEO tenures in a firm in a year	Compustat ExecuComp
CEOAGE	Natural logarithm of CEO age in a firm in a year	Compustat ExecuComp
INDEPDIR	The percentage of independent directors on a firm's board in a year	Compustat ExecuComp
MACRO	The first principal component estimated from four proxies of macro uncertainty, that are the monthly macro uncertainty indices, the monthly implied volatility index, the cross-sectional standard deviations of monthly returns, and the cross-sectional standard deviation of annual sales growth of firms in the US.	Jurado et al. (2015), the Chicago Board Options Exchange, the Center for Research in Security Prices and Compustat
LNPCI	Natural logarithm of the average value of monthly partisan conflict index in a year in the US from the Philadelphia Federal Reserve Bank	The Philadelphia Federal Reserve Bank

Appendix 2. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.jcorpfin.2023.102376.

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