



Corporate philanthropy and bribery as distinctive responses to economic policy uncertainty: Do state-owned and private firms differ?

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Abstract

Frequent changes in economic policy pose challenges to normal business production and operations. However, little is known about the non-market strategies adopted by firms in emerging economies, such as China, in response to economic policy uncertainty. This study proposes that firms in China respond to high levels of economic policy uncertainty by increasing philanthropic donations and bribery. In addition, this study argues that private firms and state-owned firms implement different strategies to cope with economic policy uncertainty. Specifically, the study suggests that state-owned enterprises (SOEs) are more likely, than non-SOEs, to respond to economic policy uncertainty by increasing corporate philanthropy, and less likely to respond by increasing expenditure on bribes. This study obtained empirical evidence to support these views, based on an analysis of a dataset of 2,904 listed Chinese firms from 2008 to 2019.

Keywords Economic policy uncertainty · Corporate philanthropy · Corporate bribery · China · State-owned enterprises

In recent years, the continuous emergence of ‘black swan’ events, such as Brexit and COVID-19, has led to constant changes in international financial markets.

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Governments have introduced various macroeconomic policies to counter the adverse or potentially adverse effects of these events on economic activity (Baker et al., 2016). Because of the unpredictability, opacity, and ambiguity that accompany the process of economic policy making, economic policy uncertainty (EPU)—uncertainty caused by the inability of economic agents to predict exactly whether, when, in what direction, and with what intensity the government will change current economic policy (Zhong et al., 2021)—increases across countries as policies are constantly being adjusted (Gulen & Ion, 2016; Wu et al., 2020). This situation is more pronounced in emerging economies, such as China, because their governments are quite willing to intervene and regulate resource allocation and economic operations (Jia et al., 2019a; Luo & Wang, 2019).

The frequent introduction of various economic policies has played a positive role in ironing out economic cycle fluctuations, overcoming the shortcomings of the market allocation of resources, and promoting the stable and rapid development of the national economy (Zhao et al., 2021; Zhong et al., 2021). However, the results of high EPU also pose great challenges and obstacles to business decisions (Gulen & Ion, 2016; Zhong et al., 2021), for example, companies suffer greater uncertainty and higher operating costs. This situation is more pronounced in emerging economies with imperfect market mechanisms, such as China. Therefore, deciding what strategic actions to adopt to meet the challenges of EPU is an urgent matter for companies, especially those in emerging economies, such as China. Indeed, previous studies have examined the impact of EPU on a variety of strategic market actions, such as corporate investment (Gulen & Ion, 2016), overseas investment (Wu et al., 2020), and strategic change (Zhong et al., 2021). Nonetheless, little is known about whether and when firms in emerging economies take non-market strategic action in response to EPU. This gap in the literature needs to be filled urgently; on the one hand, a series of studies have insightfully shown that firms in emerging economies actively implement non-market strategic actions to address threats posed by the institutional environment (Peng & Luo, 2000; Rodgers et al., 2021). For example, Rodgers et al. (2021) argued that non-market strategic actions help resource-deprived firms navigate dysfunctional institutional spaces in emerging markets. On the other hand, scholars continue to call for future research to introduce non-market strategies into the analytical framework to provide a comprehensive understanding of firms' efforts in response to institutional voids (e.g., EPU) in emerging economies, such as China (Iriyama et al., 2016; Zhao et al., 2021).

To fill this gap, this study focuses on corporate philanthropy and bribery expenditure, two types of non-market strategic actions that are highly prevalent in emerging economies, such as China (Ge & Micelotta, 2019; Xu et al., 2019), as entry points into the examination of the non-market strategies adopted by firms in response to EPU. Institutional theory assumes that firms are embedded in the institutional environment and adopt certain strategies to adapt to it while being constrained by it (Meyer & Rowan, 1977). Meanwhile, according to the resource dependency theory, companies do not have the means to produce all the resources they need; they must rely on external resources for their development (Pfeffer & Salancik, 1978). In this situation, companies can reduce their dependence on external resources by adopting prudent business strategies. In addition,

companies can try to strengthen their relationships with stakeholders to gain better access to the resources they need for their development, or to reduce the uncertainty of access to these resources (Alvarez et al., 2018; Pfeffer & Salancik, 1978). Based on the institutional and resource dependency theories, we propose that firms in China actively increase their corporate philanthropy and bribe spending in response to EPU. In emerging economies, such as China, governments assume the function of providing social public services, but they generally face a lack of resources (Zhang et al., 2021). Corporate philanthropy caters to governments' need to provide social services (Wang & Qian, 2011). In the process, companies strengthen their relationship with, gain the goodwill and trust of, and are more likely to receive help and support from, the government (Wang & Qian, 2011). This means that, by expanding corporate philanthropy, firms can improve their relationship with the government. This, in turn, affords them better access to policy information and the scarce resources needed to address the challenges and obstacles that EPU poses to their business decisions, from the government. In addition, by increasing bribery expenditure, leading to government-business collusion and power-money transactions, firms can obtain policy information, low-cost capital, and other scarce factors of production needed to effectively respond to adverse shocks from EPU (Birhanu et al., 2016; Hewa Wellalage et al., 2019). However, bribery undermines the market principle of fair competition, which, if widespread, harms all firms (Hewa Wellalage et al., 2019; Xu et al., 2019; Yu & Lee, 2021).

In addition, the public expects the government and the SOEs, in contrast to non-SOEs, to fulfill a higher social responsibility, because of their "state-for-people" nature (Lu et al., 2020). SOEs are more likely to receive government support, following charitable donations; additionally, government assistance and support for such SOEs is less likely to cause controversy and social pressure. Meanwhile, compared with non-SOEs, SOEs have an intrinsic connection with the government. Therefore, they have the advantage of obtaining timely policy information and other scarce resources controlled by the government (Shaheer et al., 2017) without ingratiating government officials through illegal means. Given this, we propose that, compared with non-SOEs, SOEs are more likely to respond to EPU by increasing expenditure on corporate philanthropy, rather than on bribes. We obtained empirical evidence in support of our view through an analysis of empirical data on Chinese listed firms over the period 2008–2019.

This study contributes to the existing literature on EPU, non-market strategies, and SOEs. Firstly, it contributes to the existing EPU literature (Kalcheva et al., 2021; Zhao et al., 2021) by identifying and theorizing non-market strategic actions implemented by firms in China in response to EPU. Secondly, this study adds to and extends the existing literature on non-market strategies by including two types of non-market strategic action (e.g., corporate philanthropy and bribery) in its analytical framework, and subsequently exploring the impact of EPU on both of these (Luo & Wang, 2019; Zhang et al., 2021). Finally, this study explores the heterogeneity of non-market strategic actions taken by SOEs and non-SOEs in response to EPU, considering the different levels of closeness between the two sectors and the government. In doing so, this study responds to the call to further explore the differences

between SOEs and non-SOEs in their engagement in non-market strategic actions (Lu et al., 2020; Shaheer et al., 2017), adding to the existing literature on SOEs.

Theory and hypotheses

Corporate philanthropy and bribery

Corporate philanthropy refers to the contribution by a company, in terms of money, or in kind, by way of goods or services, to those in need (Sauerwald & Su, 2018; Zhang et al., 2021). Companies have several key motives for making charitable donations. The first is reputational motive. Corporate philanthropy conveys a positive signal that a company is actively taking social responsibility, which can build a good image, and accumulate good reputation capital for the company (Chen et al., 2021). Reputation capital is an important strategic resource for enhancing an enterprise's market competitiveness. The second is the motive of social assimilation. Firms do not exist in a vacuum, and their behavior is influenced by the social institutional pressures of their environment. Corporate philanthropy by firms may be based on managers' modeling of their peers or obedience to external institutional pressures (Ge & Micelotta, 2019). The third is the management's opportunistic motives. Corporate philanthropy may be an opportunistic act by managers in pursuit of personal social status or reputation enhancement (Li et al., 2017). The fourth motivation is to mitigate the negative effects of misconduct. Firms may implement certain improper business practices during their operating process, which could damage their reputation. In the event of such happenings, firms are likely to use corporate philanthropy as a strategic tool to divert public attention from misconduct (Zhong et al., 2022), thus reducing its negative impact (Sun et al., 2019). The fifth motive is political affiliation. Firms can gain government recognition and trust through corporate philanthropy (Luo & Wang, 2019), making it easier to obtain scarce resources from the government. This is especially important for firms in China, (Wang & Qian, 2011; Zhang et al., 2021) which is the focus of this study.

Bribery expenditure is often defined as rent-seeking behavior that helps improve corporate performance or reduce corporate costs (Eddleston et al., 2020; Xu et al., 2019). Bribery is a common global phenomenon (Yu & Lee, 2021). However, emerging economies (e.g., China) are unique, with the prevalence of both bribery and corporate philanthropy (Xu et al., 2019; Zhang et al., 2021). For example, Ding Shumiao (later renamed Ding Yuxin), a Chinese "philanthropic tycoon," was exposed for bribing officials with USD 40 million.¹ In a transition economy, there is a general lack of mechanisms for fair competition and property rights protection, as institutional development to support the market economy is not yet perfect. Under such conditions, various bribery and rent-seeking behaviors are prevalent (Xu et al., 2019). For firms, bribery serves the dual functions of protection and grease money. Protection money signifies that companies protect themselves from further

¹ <http://news.sohu.com/20130924/n387163325.shtml>

extortion and predation by government officials through bribery. Grease money signifies bribes that fulfill a resource allocation function, especially for scarce government resources, and improves access to administrative agencies. In addition, corporate bribery is influenced by a variety of factors (Diaby & Sylwester, 2015; Jeong & Weiner, 2012), such as firm performance (Xu et al., 2019), industry competitive intensity (Diaby & Sylwester, 2015; Iriyama et al., 2016), and level of national bribery (Lee et al., 2010).

Scholars have accumulated substantial theoretical and empirical insights into corporate philanthropy and bribery behavior. And these studies have recognized the critical influence of institutional environmental factors on these behaviors (Ge & Micelotta, 2019; Lee et al., 2010). However, few studies have analyzed and empirically examined the impact of economic policy factors, especially EPU, on corporate philanthropy and bribery behavior. Moreover, the existing literature on corporate philanthropy and bribery is relatively independent, even though they coexist in emerging economies, such as China.

Challenges posed by EPU for firms

EPU is thought to arise from the following sources: Uncertainty either due to changes in government policies, or in their implementation, and the possibility of the government taking a completely different position (Gulen & Ion, 2016; Wu et al., 2020; Zhong et al., 2021). Baker et al. (2016) recently developed an EPU index based on news coverage. Scholars have used this index to measure EPU and frequently discuss topics related to EPU. Since firms are an important part of the market economy and an important target and implementation intermediary of macroeconomic policies, how EPU affects micro-firms has become a focal topic of academic interest. According to the available studies, EPU adversely affects firms' production and business activities in at least two ways. First, a higher EPU increases the financing constraints faced by firms by inhibiting the supply of loans from financial institutions (Lou et al., 2022; Vural Yavaş, 2021), thereby raising financing costs (Kim, 2019). Higher EPU makes it significantly more difficult for banks to accurately assess the expected returns of firms' investment projects and monitor their repayment risks. Therefore, in the interest of self-protection, creditors demand higher financing premiums or make loan approvals more difficult. Additionally, higher EPU increases uncertainty about financial institutions in terms of their own operations, making it difficult to form accurate expectations of future liquidity needs. Therefore, for safety, financial institutions reduce their credit supply to increase their capital accumulation (Vural Yavaş, 2021).

Second, elevated EPU negatively impacts firms' profits by interfering with the efficiency and effectiveness of the implementation of previously developed business plans (Leung & Sun, 2021). Additionally, higher EPU makes the economic environment complex, volatile, and unpredictable (Baker et al., 2016), creating a high level of external risk for firms (Leung & Sun, 2021; Zhong et al., 2021). For example, in an EPU environment, frequent changes in industrial policies or product standards can make it difficult for firms to form clear expectations of the outcomes of

innovative activities and develop new products and technologies that meet policy requirements, which may ultimately cause a severe waste of resources (Lou et al., 2022). Therefore, in an EPU environment, to avoid the adverse effects of internal and external risks on development, firms tend to avoid the formulation and implementation of long-term strategic decisions with long investment cycles and high return risks (Guedhami et al., 2021). Thus, firms no longer maintain or enhance their competitive advantage in the market.

EPU is widely acknowledged as an important exogenous shock that poses significant challenges and obstacles to firms' business decisions (Wu et al., 2020). A series of empirical studies have also confirmed the impact of EPU on a wide range of strategic market actions taken by firms (e.g., firm innovation and foreign investment) (Wu et al., 2020; Zhong et al., 2021). However, little is known about the non-market strategic actions that firms, especially those in emerging economies like China, implement in response to EPU. This research gap provides a good entry point for this study. The next sections discuss these issues and present the testable hypotheses.

EPU and corporate philanthropy

Corporate philanthropy, the highest expression of social responsibility (Carroll, 1991), enhances the overall welfare of society (Campbell & Slack, 2008). Consequently, scholars typically view corporate philanthropy as a corporate-implemented, legal, non-market strategic action, even though firms increasingly use it as a tool to achieve economic or political ends (Luo & Wang, 2019). We argue that firms in China actively increase their corporate philanthropy to counteract the adverse effects of EPU on production and operations. In emerging economies, such as China, the executive power of the government overrides the law in many cases, while the government holds the power to allocate resources (Wang & Qian, 2011; Yu et al., 2022). This means that government trust, recognition, and support play an important role in the ability of firms in China to respond effectively to environmental change and subsequently achieve sustainable development (Jia et al., 2019b). Firms in China establish reciprocal relationships with governments by performing a range of public functions to acquire government's trust and support (Wang et al., 2022). The reason for this is that while governments enjoy the power to allocate social resources, they must also spend a great deal of financial resources to perform social functions, such as providing relief for socially vulnerable groups, responding to major regional disasters, and providing other social services. However, fiscal expenditures in these areas often put enormous pressure on financially constrained governments of emerging economies (Tang et al., 2017). For example, one study found that during the period 1993–2008, local governments in China spent an average of 1.375 times more than their total revenues (Chen et al., 2011). In addition, large local government deficits are highly unpopular in China because they foster public doubt about local officials' ability to govern, thereby damaging their political careers (Tang et al., 2017).

As a result, governments in emerging economies like China look for other resources to supplement their own investments in public goods or services (Jia et al., 2019b; Zhang et al., 2021). Unlike in developed countries, in China, there are few

donation channels available for corporations to choose from, apart from government-organized charitable organizations or government departments; thus, corporate philanthropy flowing to the Chinese government is highly visible (Zhang et al., 2021). In this situation, increasing charitable donations to help the government cope with a crisis can increase the goodwill of government officials toward enterprises and strengthen the relationship between them. This facilitates priority access to assistance and support for an enterprise from the government (Chan & Feng, 2019; Jia et al., 2019b). For example, the Shanghai government organized the Shanghai Charity Award to recognize the good deeds of the community and encourage more social forces to support and participate in the charity sector.² Empirical studies have confirmed that corporate philanthropy helps firms in China obtain more income tax deductions (Chan & Feng, 2019), government subsidies (Lin et al., 2015), and debt financing, especially long-term borrowing (Li & Wang, 2016). As mentioned earlier, EPU can exacerbate firms' financing constraints (Lou et al., 2022; Vural Yavaş, 2021), increase financing costs (Kim, 2019), and reduce expectations of future environmental stability. Building a good relationship with the government through increased corporate philanthropy allows companies not only to eliminate the complexity, volatility, and unpredictability of the environment through advanced knowledge of relevant government policy directions, but also avail preferential access to scarce resources (e.g., subsidies and credit) held by the government. Therefore, in China, such strategies constitute a rational choice for overcoming the risk of high EPU.

Hypothesis 1 EPU has a positive relationship with Chinese companies' corporate philanthropy.

EPU and corporate bribery

As Iriyama et al. (2016) argued, non-market strategic actions may also include illegal forms such as bribery (Ren et al., 2022a). For example, Xu et al. (2019) found that, in China, firms increase their chances of obtaining positive business outcomes by increasing their spending on bribes, to put competitors at a disadvantage. This shows that firms also engage in illegal, non-market strategic actions to maintain their competitiveness or respond to environmental changes (Xu et al., 2019). This situation is particularly evident in emerging economies like China (Hewa Wellalage et al., 2019; Ren et al., 2022a). Thus, we introduce bribery into our analytical framework, as an illegal strategy for responding to EPU. We argue that firms in China actively increase their expenditures on bribes to cushion the negative impact of EPU on their normal production and operations. Corporate bribery influences policy formulation and implementation through financial incentives to government officials (Iriyama et al., 2016). For example, Chadee et al. (2021) argued that corporate bribery is an important tool that allows firms, through agents (e.g., government

² <https://www.jfdaily.com/sgh/detail?id=684407>

officials), to modify or clarify regulatory frameworks and policies in ways that further their own interests (Ufere et al., 2012). In addition, bribery helps reduce government extortion (Ren et al., 2022a) and helps firms gain more access to scarce government resources (Hewa Wellalage et al., 2019).

In reality, the relationship between government officials and firms is a repeated game process in which firms bribe officials to obtain resources. Government officials accept bribes and then rationally choose to bestow corresponding rewards on firms (Chadee et al., 2021; Iriyama et al., 2016). This is because the firm faces losses if it does not receive appropriate returns from government officials. In the subsequent game, the firm chooses to reduce this loss to maximize its value. This means that firms reduce the number of bribes offered, making it difficult for bribe-taking officials to obtain more rent-seeking gains. Thus, when officials accept bribes from firms, they usually provide corresponding political gains to them. Indeed, prior research suggests that bribes to government officials help firms quickly obtain licenses, (Chadee et al., 2021) and more government orders and credit, (Krammer, 2019), or cause government officials to overlook firms' violations of certain regulations (Hewa Wellalage et al., 2019). For example, a Chinese news agency revealed that Avery Dennison, USA, obtained huge orders through bribing officials in the public security department.³ In addition, because government officials set and enforce policies, and are familiar with regulations and institutions, building dense networks with them may provide firms with institutional support for interpreting regulations, enforcing contracts, resolving negotiations, and obtaining internal information. In summary, bribes can be encouraged by making policy formulation and implementation more beneficial to the interests of the bribe-paying firm, or by helping the firm to acquire scarce government resources to cushion the adverse shocks of high EPU. Thus, in China, increased spending on bribes is a rational choice to overcome the risk of EPU.

Hypothesis 2 EPU has a positive relationship with Chinese companies' bribery expenditure.

The moderating role of ownership

In Hypothesis 1 and 2, we implicitly assume that firms have only weak linkages with the government. As a result, they have an incentive to act strategically and form close ties with the government. In turn, firms become more likely to have greater access to scarce resources controlled by the government to effectively cushion negative shocks from EPU. In addition, we implicitly assume that firms receive the same payoff from improving their relationship with the government. In fact, in emerging economies, such as China, the above implied assumptions do not always hold and may not apply in the case of SOEs. SOEs are prevalent across the world, especially in emerging economies, such as China (Bova & Yang, 2018; Lu et al., 2020). Unlike

³ <http://news.sohu.com/20090810/n265826226.shtml>

non-SOEs, SOEs are government-controlled enterprises and have a naturally close connection with the government (Li et al., 2019a), and their close connections with the government will also bring them more benefits. Meanwhile, a series of studies has shown that distinguishing between SOEs and non-SOEs is essential for a nuanced understanding of the interaction between firms and the institutional environment (Shaheer et al., 2017; Wang et al., 2022). In view of this, to gain more nuanced insights, we further compare the heterogeneity between SOEs and non-SOEs in terms of increased philanthropic and bribery spending in response to EPU.

First, we argue that SOEs are more likely to respond to EPU by increasing corporate philanthropy. On the one hand, unlike non-SOEs that conduct activities related to economic efficiency and corporate value, one of the fundamental reasons for the existence of SOEs is to help the government bear certain policy burdens and maintain social stability (Li et al., 2019a; Lu et al., 2020). This is because SOEs are financed mainly by people's taxes (Meyer et al., 2014). The aforementioned characteristics of SOEs lead to higher expectations of social responsibility fulfillment by the government and public (Lu et al., 2020), in both, developing and developed, economies (Bova & Yang, 2018). On the other hand, since the government controls important powers, such as the equity and personnel rights of SOEs, SOEs are more likely to allocate resources to corporate philanthropy activities to complement the government's social and political mission. When SOEs engage in corporate philanthropy, the government tends to provide more compensation and support to them, thus enhancing their ability to respond to the negative shocks of EPU. Since SOEs are government-controlled enterprises, such benefits are basically ceded to the government's own people, facilitating long-term stable cooperation between the two parties (Zhang et al., 2013). In addition, as news reports have shown, high levels of government subsidies to SOEs have generated much controversy,⁴ and the public does not believe that government subsidies and support to SOEs are justified or legitimate. In this case, if SOEs receiving government support were already actively fulfilling their social responsibilities (e.g., actively participating in corporate philanthropy), the resulting controversy and public pressure would be less. In turn, SOEs are more likely to be well-positioned to capture scarce government resources, allowing them to respond more effectively to negative EPU shocks.

Second, we argue that SOEs are less likely to respond to EPU by increasing their bribery expenditures, because of their innate connection with the government (Li et al., 2019a). On the one hand, this innate connection allows SOEs to obtain economic policy-related information (e.g., access to inside information) from government departments earlier and more accurately than non-SOEs (Shen et al., 2021). On the other hand, SOEs also have easier access to loans from banks and other financial institutions, and government subsidies (Shaheer et al., 2017). Therefore, SOEs are not required to resort to illegal means, such as bribes, to ingratiate themselves to the government in response to EPU. Previous studies have pointed out that firms engage in bribery to achieve business-related benefits (Ren et al., 2022a; Xu et al., 2019). However, since SOEs can use their political connectivity to achieve their goals, their

⁴ <https://m.huanqiu.com/article/9CaKrnJS5k8>

propensity to pay bribes is likely to be lower (Shaheer et al., 2017). In particular, bribery may lead to serious public doubts about the legitimacy and *raison d'être* of SOEs, which, in turn, may deter the government from supporting and subsidizing them, ultimately impairing SOEs' effective response to the negative shocks of EPU. Therefore, we formulate our final hypotheses:

Hypothesis 3a SOEs in China are more likely than non-SOEs to respond to EPU by increasing corporate philanthropy.

Hypothesis 3b SOEs in China are less likely than non-SOEs to respond to EPU by increasing bribery expenditure.

Methodology

Sample and data

To test our hypotheses, we constructed a longitudinal dataset of all Chinese A-share listed companies on the Shanghai and Shenzhen stock exchanges for the period 2008–2019. Firm-level financial data were obtained primarily from the China Securities Market and Accounting Research (CSMAR) database (Lu et al., 2022). Data for the marketization index were obtained from the China Marketization Index by Province Report (2016) (Fan et al., 2018). In addition, we manually coded regional anti-corruption data for each Chinese province from the Central Disciplinary Committee website and the China Statistical Yearbook, published by the Chinese Supreme People's Procuratorate (Lu et al., 2022). With reference to previous relevant literature, we sorted and screened the raw data as follows: (1) removing the sample of companies in the financial sector (Xu et al., 2019), and (2) removing the samples with missing data (Ren et al., 2022b). After the above collation and screening, we obtained 14,993 firm-year observations covering 2904 listed companies. Firm-level continuous variables were winsorized at the 1% and 99% levels to avoid the effect of extreme values on the results (Ren et al., 2022b; Zhong et al., 2022).

Measurements

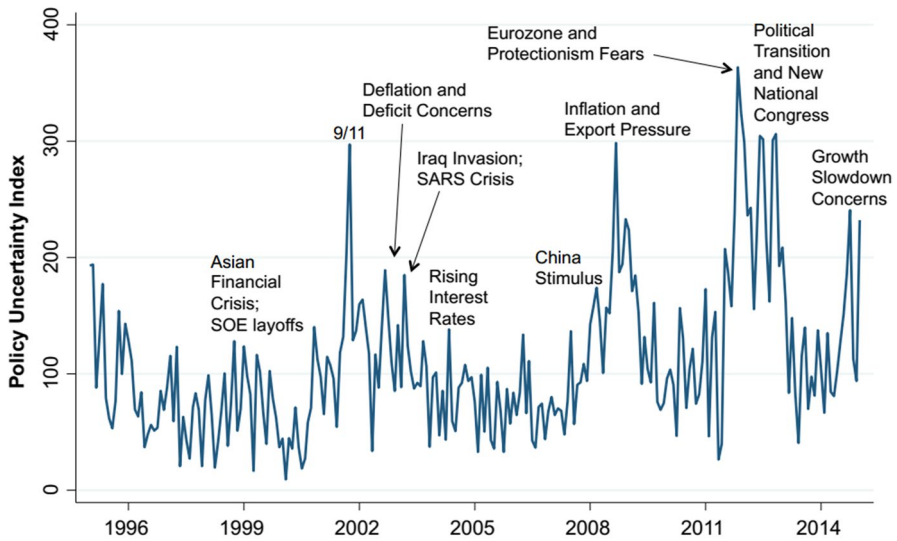
Dependent variables *Corporate philanthropy* is assessed as the total amount of charitable donations made by a company in a given year, which is obtained from the "non-operating expenses" section of the profit and loss items in the notes to the financial statements database of listed companies (Wang & Qian, 2011). The data on charitable donations is based on the line item, "donation expenses," which includes public welfare donations and poverty alleviation donations. The activities to which these donations flow are often highly relevant to the performance of government social responsibilities, or even directly called for by the government. For example, the Chinese government actively calls for companies to participate in, or donate toward, poverty alleviation initiatives.

In reality, there are huge disparities in the amounts of charitable giving by different companies. In view of this, scholars have adopted the following two approaches to eliminate the adverse effects of highly skewed charitable giving: (1) Total charitable donations divided by total firm assets or sales. (2) Take the natural logarithm for (total charitable giving + 1). The former approach implicitly assumes that large companies may have a stronger incentive to engage in philanthropic activities. However, to a large extent, the above situation does not hold true in the Chinese context. For example, the public severely criticized large real estate developer, Vanke, a company with net profit exceeding 4.8 billion yuan in 2007, for donating only 2 million yuan to relief efforts after the Wenchuan earthquake, while praising Gadobao, a small company producing beverages, for donating 100 million yuan (Zhang et al., 2021). In view of this, and continuing the approach of existing studies examining the charitable giving behavior of Chinese firms (Wang & Qian, 2011; Zhang et al., 2021; Zhong et al., 2022), we measure charitable giving of Chinese firms based on the second approach.

Regarding bribery, primary data are often difficult to obtain because of the hidden nature of business corruption. Existing measures of *bribery expenditure* in the literature include questionnaire surveys and direct observations, but these methods may be affected by personal factors or sample selection bias (Cai et al., 2011; Xu et al., 2019). Based on this, and continuing the practice of Xu et al. (2019), abnormal entertainment and travel expenses are adopted to measure *bribery expenditure*, because managers of Chinese listed companies usually use “abnormal entertainment and travel expenses” to cover expenses for bribing government officials. However, both normal business entertainment expenses and corruption-related costs are present in entertainment and travel expenses (Cai et al., 2011). Therefore, we took the following steps to capture corruption-related costs. We first predicted normal business entertainment expenses based on a firm’s total sales, total assets, ratio of marketing expenses to total sales, capital intensity, and the average compensation of the three highest-paid executives. Second, we adopted the residuals of the above functions to measure abnormal entertainment and travel expenses (Ren et al., 2022a; Xu et al., 2019). Finally, we calculated *bribery expenditure* as the ratio of abnormal entertainment and travel expenses to general and administrative expenses (Xu et al., 2019).

Independent variable EPU is the independent variable. *EPU* assesses the level of external economic uncertainty risk faced by firms in terms of national strategy formulation, macro-policy orientation, and economic regulation, which is an unavoidable systemic risk shared by all participants in an economy. Regarding the measurement of *EPU*, the corresponding index constructed by Baker et al. (2016), which is based on the index created by the *South China Morning Post* (which covers news reports from Mainland China, Hong Kong, and other regions of the world), and includes text retrieval and filtering methods, has been widely used.⁵ Specifically, Baker et al. (2016) calculated the number of articles in the *South China Morning*

⁵ https://www.policyuncertainty.com/china_epu.html



Notes: Index reflects scaled monthly counts of articles containing 'China' or 'Chinese', 'uncertain' or 'uncertainty', 'economic' or 'economy' and satisfying the 'policy' text filter specified for China in Appendix A. The series is normalized to mean 100 from 1985 to 2011 and based on the South China Morning Post, the leading English-language newspaper in Hong Kong.

Fig. 1 EPU Index for China (January 1995 to January 2015). Source: Baker et al. (2016)

Post that included the keywords “China,” “economy,” “uncertainty,” and “policy” as a share of the total number of articles per month. Figure 1 shows the line graph constructed by Baker et al. (2016) between January 1995 and January 2015 to match the fluctuation of EPU index data with the uncertainty of China’s actual economic policy. Referring to previous studies, this study extracts annual arithmetic averages to transform monthly *EPU* into annual *EPU*. For robustness, we also adopted *EPU*, as measured by Davis et al. (2019), which is based on models created by two official mainland Chinese newspapers, *Renmin Daily* and *Guangming Daily*.

Despite it being a macro-level factor, the sensitivity to EPU varies across firms and the impact is greater for stocks with greater EPU exposure. Given this, and continuing from Cui et al. (2021), we also consider the impact of EPU exposure on corporate philanthropy and bribery expenditures. The fraction of individual stock movements that can be explained by market movements is the market exposure of individual stocks (Brogaard & Detzel, 2015). Drawing on Brogaard & Detzel, (2015) and Cui et al. (2021), we combine EPU with the Fama–French five-factor and Fama–French three-factor models, as shown in Eqs. (1) and (2). Using the past 36 months ($\tau-36$, $\tau-1$) and the past 60 months ($\tau-60$, $\tau-1$) as the rolling window for Eqs. (1) and (2), respectively, we adopt the regression coefficients of individual stocks’ excess returns and *EPU* (*EPU*) to measure the degree to which individual stocks are affected by EPU.

$$R_{i,\tau} - r_{i,\tau} = \beta_0 + \beta_{i,\tau}^{mkt} MKT_{\tau} + \beta_{i,\tau}^{smb} SMB_{\tau} + \beta_{i,\tau}^{hml} HML_{\tau} + \beta_{i,\tau}^{rmw} RMW_{\tau} + \beta_{i,\tau}^{cma} CMA_{\tau} + \beta_{i,\tau}^{epu} EPU_{\tau} + \varepsilon_{i,\tau}; \quad (1)$$

$$R_{i,\tau} - r_{i,\tau} = \beta_0 + \beta_{i,\tau}^{mkt}MKT_{\tau} + \beta_{i,\tau}^{smb}SMB_{\tau} + \beta_{i,\tau}^{hml}HML_{\tau} + \beta_{i,\tau}^{epu}EPU_{\tau} + \varepsilon_{i,\tau}, \quad (2)$$

where $R_{i,\tau} - r_{i,\tau}$ is the excess return on stock i in month τ and EPU_{τ} is the EPU in month τ . The remaining variables represent the Fama–French five-factor and three-factor models. $\beta_{i,\tau}^{epu}$ is the sensitivity of stock i to EPU_{τ} . $EPU_{exposure}$ is an indicator of individual stocks’ exposure to EPU , which equals $-\beta_{i,\tau}^{epu}$. Finally, we adopted the average monthly stock value to obtain annual measures of $EPU_{exposure}$, $CMff5_36$, $CMff5_60$, $CMff3_36$, and $CMff3_60$ (36 indicates 36 months; 60 indicates 60 months; 3 indicates the three-factor model; and 5 indicates the Fama–French 5-factor model).

Moderating variable The moderating variable is *SOEs*. This study used *SOE* as a dummy variable that equals 1 if the enterprise is an SOE and 0, otherwise (Zhong et al., 2022). Regarding robustness, following Lu et al. (2022), we also replace *SOEs* with state ownership, with ownership being a continuous variable that measures the percentage of government ownership.

Control variables First, at the firm level, we controlled for *firm size* (the natural log of total assets for the year (that is, year at time t)) and *firm age* (a firm’s age from establishment). We regarded *ROA* and *Tobin’s Q* as control variables to account for the impact of a firm’s long- and short-term performance in terms of its non-market strategy. Using every three years ($t-2$ to t) as an observation period, as shown in Eq. (3), the standard deviation of *Adj_ROA* is calculated separately, on a rolling basis, as a proxy variable for the risk-taking level. To reflect changes in a firm’s resource allocation (e.g., the layout of resources in different industries), which may also have an impact on a firm’s non-market strategy, we also controlled for *product diversification* and *digital transformation* (Cardinali & De Giovanni, 2022). For example, digital transformation may bring about creative destruction, which in turn leads to a legitimacy crisis and controversy (Ferreira et al., 2019). In this case, such companies have an incentive to take non-market strategic actions to maintain or increase their legitimacy (Cardinali & De Giovanni, 2022). *Product diversification* was calculated using the Herfindahl index, as shown in Eq. (4), where $p_{i,t}$ is the share of the industry in total revenue; the larger the index, the lower the level of *product diversification*. For *digital transformation*, in accordance with the CSMAR database, digital transformation was divided into two modules: “underlying technology use” and “practical application of technology.” *Digital transformation* was measured by counting and aggregating the frequency of digital transformation terms appearing in the annual reports of listed companies. The numerically transformed data were non-negative count variables with certain “right skew” characteristics, and were logarithmically processed to ensure the reliability of the results.

$$Risk_{i,t} = \sqrt{\frac{1}{T-1} \sum_{t=1}^T (Adj_ROA_{i,t} - \frac{1}{T} \sum_{t=1}^T Adj_ROA_{i,t})^2} \quad |T = 3 \quad (3)$$

$$HHI_{i,t} = \sum p_{i,t}^2 \quad (4)$$

Executives' experiences significantly affect their interpretation of the situations they face and their strategic choices. Previous research has found that executives with overseas study and work experience reduce *corporate philanthropy* (Zhang et al., 2021); therefore, we also controlled for executives' *international experience*, by measuring the number of executives with overseas study or work experience as a proportion of the total number of executives. Additionally, we controlled for *executive compensation incentives*. Public companies are required to disclose the salaries of their three highest-paid executives (Jing et al., 2011). Consistent with prior research, we took the natural logarithm of total executive compensation to measure *executive compensation incentives* (Conyon & He, 2011). We also controlled for *CEO duality* (dummy variable: the CEO also serves as board chair, taking a value of 1) and *political connection* (dummy variable: the CEO or chairman is a local or central government official, taking a value of 1) (Zhang et al., 2021).

At the internal governance level, we controlled for *ownership concentration* (the largest shareholder's shareholding ratio) and *board size* (the natural logarithm of the number of board members). Since independent directors and female directors tend to represent a better level of corporate governance, we also controlled for *independent directors* (percentage of independent directors) and *female directors* (proportion of female directors on the board). Finally, we also controlled for *the chairman's military experience* (dummy variable; 'the chairman has military experience' takes a value of 1) because military experience reflects a personal sense of responsibility and dedication, and board chairs with such experience are more active in monitoring the non-market strategic decisions of their executives.

Finally, at the external governance level, we controlled for *institutional shareholding*, associated with monitoring and exerting return pressure on the CEO, measured as the number of shares held by institutions, as a share of total equity (Martin et al., 2019). In addition, we controlled for *anti-corruption*, referring to Lu et al. (2022). We adopted the number of corruption, bribery, and malfeasance infringement crimes filed/number of public officials per year in each province to measure the anti-corruption effort in each province. The data for "number of crimes of corruption and bribery, dereliction of duty, and infringement of duty" were obtained from the annual work report of the provincial people's procuratorates in the Procuratorial Yearbook of China. The "number of public employees" was derived from the "number of employees by industry" in the China Statistical Yearbook for each year. As the data on corruption were only updated in 2018, we linearly extrapolated the values to all years for which data were unavailable (Li et al., 2019b). Finally, we controlled for the *marketization index*. There is substantial evidence of large differences between regions in China, and Fan et al.'s (2018) *marketization index* provides a systematic tool for quantitatively distinguishing between regions. Since the published marketization index of Fan et al. (2018) spans the time interval 2008–2016, and data for 2017 and beyond are missing because they have not been updated, we linearly extrapolated the values to all years for which data were not available; that is, the average growth of the marketization index from 2008–2016 was used to predict the marketability index for 2017–2019, which is used to measure the marketability of the provinces where each listed company was located (Li et al., 2019b).

Modeling

As this study uses unbalanced panel data, unobserved individual effects of firms may exist in the sample. Fixed and random effects models are two of the most common estimation methods used to address such problems. The Hausman test was used to determine which model was appropriate. The test results rejected the original hypothesis and indicated that the unobservable individual factors were correlated with the explanatory variables, indicating that the fixed-effects model is appropriate for this study. In addition, our baseline model was empirically tested using Driscoll-Kraay standard errors, which can better address the problems of heteroscedasticity, autocorrelation, and cross-sectional dependence (Driscoll & Kraay, 1998; Ren et al., 2022b).

In our analysis, several processes were adopted to address the potential endogeneity problem. First, to reduce the possibility of reverse causality, we set the explanatory variables at period $t + 1$ and the independent, moderating, and control variables at period t (Xu et al., 2019; Zhong et al., 2022). Second, we adopted the instrumental variables approach and the Gaussian mixture model (GMM) method to eliminate possible endogeneity problems, and conducted several sensitivity tests to ensure the robustness of the study's findings. Third, we controlled for a series of control variables that may affect firms' non-market strategies, as well as for *industry*, *province*, and *year* effects, in the regression models.

Results

Table 1 presents the descriptive statistics for the variables. As Table 2 illustrates, the correlation coefficient between any two variables does not exceed .5. To further test for multicollinearity, we calculated the variance inflation factor (VIF) of the regression model. The mean VIF value was 1.23 (the maximum VIF was 1.74), indicating that multicollinearity was not an issue in our analysis, because the VIF was below 10.

Table 3 presents the baseline regression and regression models after replacing the *EPU* measurement of *corporate philanthropy*. Model (1) in Table 3 shows the baseline regression results; Models (2) and (3) in Table 3 are the regression results of *CMff5_36* and *CMff5_60*, based on five-factor rolling regression measures, respectively; Models (4) and (5) in Table 3 are the regression results of *CMff3_36* and *CMff3_60*, based on three-factor rolling regression measures, respectively.

Model (1) in Table 3 illustrates that the coefficient of *EPU* is positive and significant ($\beta = .0041$, $p < .01$), suggesting that *EPU* has a significant impact on *corporate philanthropy*, which supports Hypothesis 1. Models (2)–(5) illustrate that the significant positive impact of *EPU* on *corporate philanthropy* remains unchanged, which indicates that the results we obtained regarding Hypothesis 1 are robust.

Table 4 presents the baseline regression and regression models after replacing the *EPU* measurement of *bribery expenditure*. Model (1) in Table 4 is the

Table 1 Descriptive statistics

	Variable	Obs	Mean	Std.Dev	Min	Max
1	Corporate philanthropy _{t+1}	14,493	10.515	5.072	.000	20.240
2	Bribery expenditure _{t+1}	14,493	-.012	.060	-.708	.869
3	EPU	14,493	260.922	129.083	98.888	460.470
4	SOEs	14,493	.328	.470	.000	1.000
5	Firm size	14,493	22.074	1.211	17.049	27.667
6	Firm age	14,493	17.220	5.580	5.000	62.000
7	ROA	14,493	.039	.066	-.707	.245
8	Tobin's Q	14,493	2.059	1.940	.153	126.951
9	Risk-taking level	14,493	.027	.042	.000	.488
10	Product diversification	14,493	.786	.245	.138	1.000
11	Digital transformation	14,493	.860	1.225	.000	5.727
12	Executives international experience	14,493	4.633	10.681	.000	100.000
13	Executives compensation incentives	14,493	14.259	.688	12.109	16.327
14	CEO duality	14,493	.293	.455	.000	1.000
15	Political connection	14,493	.385	.487	.000	1.000
16	Ownership concentration	14,493	20.420	17.747	.013	89.409
17	Board size	14,493	2.428	.263	1.609	3.611
18	Independent director	14,493	38.114	7.234	16.667	75.000
19	Female director	14,493	14.047	11.988	.000	71.429
20	Chairman military experience	14,493	.026	.159	.000	1.000
21	Institutional shareholding	14,493	36.493	22.544	.000	97.490
22	Anti-corruption	14,493	.002	.001	.000	.005
23	Marketization index	14,493	8.069	1.951	-1.140	10.830

baseline regression result, Models (2) and (3) in Table 4 are the regression results of $CMff5_36$ and $CMff5_60$, based on the five-factor rolling regression measures, and Models (4) and (5) in Table 3 show the regression results of $CMff3_36$ and $CMff3_60$, based on three-factor rolling regression measures, respectively.

Model (1) in Table 4 illustrates that the coefficient of *EPU* is positive and significant ($\beta = .0053$, $p < .01$), suggesting that *EPU* has a significant impact on *bribery expenditure*, which supports Hypothesis 2. Models (2)–(5) illustrate that the significant positive impact of *EPU* on *corporate philanthropy* remains unchanged, which indicates that the results obtained regarding Hypothesis 2 are robust.

Table 5 presents the moderating effects of the ownership structure. Models (1) and (2) show the moderating effect of SOEs on the relationship between *EPU* and *corporate philanthropy* and *bribery expenditure*, while Models (3) and (4) show the moderating effect of state ownership on the relationship between *EPU* and *corporate philanthropy* and *bribery expenditure*.

Model (1) in Table 5 illustrates that $EPU \times SOEs$ is significantly and positively associated with *corporate philanthropy* ($\beta = .0015$, $p < .01$), indicating that SOEs are more likely than non-SOEs to respond to *EPU* by increasing

Table 2 Correlation analysis

Variables	1	2	3	4	5	6	7	8	9	10	11
1 Corporate Philanthropy ₍₊₁₎	1										
2 Bribery expenditure ₍₊₁₎	.089***	1									
3 EPU	.106***	-.053***	1								
4 SOEs	-.020**	-.072***	-.129***	1							
5 Firm size	.276***	-.057***	.119***	.332***	1						
6 Firm age	.034***	-.058***	.265***	.088***	.163***	1					
7 ROA	.154***	-.002	-.056***	-.087***	-.037***	-.088***	1				
8 Tobin's Q	-.111***	-.024***	-.086***	-.074***	-.310***	.015*	.056***	1			
9 Risk-taking level	-.127***	.032***	.138***	-.074***	-.098***	.057***	-.446***	.117***	1		
10 Product diversification	-.034***	-.055***	-.023***	-.141***	-.152***	-.151***	.092***	.041***	-.037***	1	
11 Digital transformation	.002	.042***	.162***	-.143***	.028***	.049***	-.001	.066***	.061***	-.079***	1
12 Executives international experience	.026***	.031***	.083***	-.144***	.020**	.008	.008	.031***	.027***	.023***	.106***
13 Executives compensation incentives	.206***	-.104***	.268***	-.023***	.414***	.167***	.154***	-.078***	-.044***	-.016*	.170***
14 CEO duality	-.009	-.005	.078***	-.282***	-.169***	-.075***	.054***	.024***	.020**	.071***	.077***
15 Political connection	.101***	-.006	-.096***	-.042***	-.018**	-.026***	.027***	-.041***	-.052***	-.020**	-.043***
16 Ownership concentration	.032***	-.052***	-.046***	.381***	.358***	.108**	-.067***	.034***	-.047***	-.107***	-.071***
17 Board size	.025***	-.032***	-.043***	.117***	.087***	-.030***	.025***	-.066***	-.013	.038***	-.032***
18 Independent director	.005	0	-.007	-.133***	-.052***	-.039***	.039***	.035***	-.021**	.043***	.075***
19 Female director	.001	-.022***	.105***	-.163***	-.123***	.028***	.021**	.022***	.030***	.019**	.037***
20 Chairman military experience	-.011	-.006	-.014*	-.021**	-.034***	-.012	-.029***	.008	.018**	.012	.009
21 Institutional shareholding	.045***	-.077***	-.058***	.355***	.335***	.018**	.046***	-.067***	-.079***	-.048***	-.099***
22 Anti-corruption	-.063***	-.009	-.398***	.066***	-.038***	-.037***	-.022***	.028***	-.069***	.004	-.113***
23 Marketization index	.057***	-.014	.295***	-.231***	.001	.146***	.049***	-.027***	-.007	.021**	.222***
12 Executives international experience	1										
13 Executives compensation incentives	.159***	1									
14 CEO duality	.092***	.039***	1								
15 Political connection	.008	-.026***	-.043***	1							

Table 2 (continued)

	12	13	14	15	16	17	18	19	20	21	22
16	Ownership concentration	-.050***	.073***	-.187***	-.013	1					
17	Board size	-.032***	.045***	-.041***	.001	-.085***	1				
18	Independent director	.040***	-.002	.093***	.016*	-.037***	-.134***	1			
19	Female director	.025***	-.019**	.090***	.005	-.078***	-.043***	.056***	1		
20	Chairman military experience	-.012	-.042***	-.023***	.063***	-.004	-.021**	.009	1		
21	Institutional shareholding	-.050***	.115***	-.173***	.012	.438***	-.103***	-.103***	-.085***	1	
22	Anti-corruption	-.101***	-.181***	-.041***	.058***	.038***	-.002	-.057***	-.036***	.016**	1
23	Marketization index	.117***	.287***	.141***	-.039***	-.089***	.056***	.094***	-.043***	-.113***	-.242***

*, **, and *** denote that the statistic was significant at the 10%, 5%, and 1% levels, respectively

Table 3 Regression analysis on EPU affecting corporate philanthropy

	Mode (1)	Mode (2)	Mode (3)	Mode (4)	Mode (5)
	Corporate Philanthropy _{t+1}				
EUP index	.0041*** (5.75)				
CMff5_36		2.2793** (2.10)			
CMff5_60			5.2731** (2.10)		
CMff3_36				3.1000** (2.10)	
CMff3_60					1.3708** (2.10)
Firm size	1.4522*** (27.94)	1.4522*** (13.53)	1.4522*** (13.53)	1.4522*** (13.53)	1.4522*** (13.53)
Firm age	-.0495 (-1.22)	.0002 (.00)	.1923** (2.20)	.1458 (1.60)	.1964** (2.25)
ROA	4.5878*** (5.14)	4.5878*** (6.25)	4.5878*** (6.25)	4.5878*** (6.25)	4.5878*** (6.25)
Tobin's Q	.0663*** (5.83)	.0663** (2.29)	.0663** (2.29)	.0663** (2.29)	.0663** (2.29)
Risk-taking level	-6.8232*** (-15.03)	-6.8232*** (-6.24)	-6.8232*** (-6.24)	-6.8232*** (-6.24)	-6.8232*** (-6.24)
Product diversification	-.6989*** (-7.12)	-.6989** (-2.45)	-.6989** (-2.45)	-.6989** (-2.45)	-.6989** (-2.45)
Digital transformation	.0712*** (5.52)	.0712 (1.41)	.0712 (1.41)	.0712 (1.41)	.0712 (1.41)
Executives international experience	-.0092** (-2.18)	-.0092 (-1.51)	-.0092 (-1.51)	-.0092 (-1.51)	-.0092 (-1.51)
Executives compensation incentives	.0171 (.42)	.0171 (.14)	.0171 (.14)	.0171 (.14)	.0171 (.14)
CEO duality	-.0529 (-1.19)	-.0529 (-.41)	-.0529 (-.41)	-.0529 (-.41)	-.0529 (-.41)
Political connection	.0402 (.76)	.0402 (.34)	.0402 (.34)	.0402 (.34)	.0402 (.34)
Ownership concentration	-.0118*** (-4.74)	-.0118*** (-3.52)	-.0118*** (-3.52)	-.0118*** (-3.52)	-.0118*** (-3.52)
Board size	.2166** (2.05)	.2166 (1.24)	.2166 (1.24)	.2166 (1.24)	.2166 (1.24)
Independent director	-.0210 (-.05)	-.0210 (-.03)	-.0210 (-.03)	-.0210 (-.03)	-.0210 (-.03)
Female director	-.6186** (-2.29)	-.6186 (-1.16)	-.6186 (-1.16)	-.6186 (-1.16)	-.6186 (-1.16)

Table 3 (continued)

	Mode (1)	Mode (2)	Mode (3)	Mode (4)	Mode (5)
	Corporate Philanthropy _{t+1}				
Chairman military experience	.4073** (2.13)	.4073 (.91)	.4073 (.91)	.4073 (.91)	.4073 (.91)
Institutional shareholding	-.0087*** (-4.16)	-.0087** (-2.13)	-.0087** (-2.13)	-.0087** (-2.13)	-.0087** (-2.13)
Anti-corruption	100.5076* (1.93)	100.5076 (.94)	100.5076 (.94)	100.5076 (.94)	100.5076 (.94)
Marketization index	-.0678* (-1.86)	-.0678 (-.65)	-.0678 (-.65)	-.0678 (-.65)	-.0678 (-.65)
Year	Yes	Yes	Yes	Yes	Yes
Industry	Yes	Yes	Yes	Yes	Yes
Province	Yes	Yes	Yes	Yes	Yes
Constant	-21.3126*** (-12.15)	-20.6114*** (-5.94)	-24.0951*** (-8.27)	-23.7206*** (-8.09)	-24.7230*** (-8.52)
R-squared	.0548	.0548	.0548	.0548	.0548
F	2.8e + 03***	23.945***	23.945***	23.945***	23.945***
N	14,493	14,493	14,493	14,493	14,493

*, **, and *** denote that the statistic was significant at the 10%, 5%, and 1% levels, respectively

corporate philanthropy. Therefore, Hypothesis 3a is supported. Figure 2 plots these regression results.

Model (2) in Table 5 illustrates that $EPU \times SOEs$ is significantly and negatively associated with *bribery expenditure* ($\beta = -.0049$, $p < .01$), indicating that SOEs are less likely than non-SOEs to respond to EPU by increasing bribery expenditure. Therefore, Hypothesis 3b is supported. Figure 3 plots these regression results.

Model (3) in Table 5 illustrates that $EPU \times state\ ownership$ is significantly and positively associated with *corporate philanthropy* ($\beta = .0036$, $p < .1$), indicating that *state ownership* strengthens the positive effect of *EPU* on *corporate philanthropy*. Model (4) in Table 5 illustrates that the coefficient of $EPU \times state\ ownership$ is significantly and negatively associated with *bribery expenditure* ($\beta = -.0115$, $p < .01$), indicating that *state ownership* weakens the positive effect of *EPU* on *bribery expenditure*. Therefore, the results for Hypothesis 3 are robust.

Endogeneity and robustness tests

Although EPU is relatively exogenous to macro-variables, this test may reduce the problems of sample selection bias and causal inversion. However, it may still cause endogeneity problems due to omitted variables; therefore, we adopted the

Table 4 Regression analysis on EPU affecting bribery expenditure

	Mode (1)	Mode (2)	Mode (3)	Mode (4)	Mode (5)
	Bribery expenditure _{t+1}				
EUP	.0053*** (11.60)				
CMff5_36		1.9016** (2.04)			
CMff5_60			4.3993** (2.04)		
CMff3_36				2.5863** (2.04)	
CMff3_60					1.1436** (2.04)
Firm size	.4915*** (8.18)	.4915*** (5.33)	.4915*** (5.33)	.4915*** (5.33)	.4915*** (5.33)
Firm age	-.6103*** (-19.72)	-.5136*** (-4.62)	-.3534*** (-4.70)	-.3921*** (-5.00)	-.3500*** (-4.66)
ROA	.8611* (1.68)	.8611 (1.36)	.8611 (1.36)	.8611 (1.36)	.8611 (1.36)
Tobin's Q	-.0819*** (-4.27)	-.0819*** (-3.30)	-.0819*** (-3.30)	-.0819*** (-3.30)	-.0819*** (-3.30)
Risk-taking level	6.3091*** (16.38)	6.3091*** (6.71)	6.3091*** (6.71)	6.3091*** (6.71)	6.3091*** (6.71)
Product diversification	-.8451*** (-4.51)	-.8451*** (-3.44)	-.8451*** (-3.44)	-.8451*** (-3.44)	-.8451*** (-3.44)
Digital transformation	.1698*** (5.28)	.1698*** (3.90)	.1698*** (3.90)	.1698*** (3.90)	.1698*** (3.90)
Executives international experience	.0143*** (5.53)	.0143*** (2.73)	.0143*** (2.73)	.0143*** (2.73)	.0143*** (2.73)
Executives compensation incentives	-.4821*** (-5.41)	-.4821*** (-4.67)	-.4821*** (-4.67)	-.4821*** (-4.67)	-.4821*** (-4.67)
CEO duality	-.0775 (-1.59)	-.0775 (-.71)	-.0775 (-.71)	-.0775 (-.71)	-.0775 (-.71)
Political connection	-.2543*** (-2.92)	-.2543** (-2.50)	-.2543** (-2.50)	-.2543** (-2.50)	-.2543** (-2.50)
Ownership concentration	.0016 (.66)	.0016 (.57)	.0016 (.57)	.0016 (.57)	.0016 (.57)
Board size	-1.0779*** (-4.88)	-1.0779*** (-7.19)	-1.0779*** (-7.19)	-1.0779*** (-7.19)	-1.0779*** (-7.19)
Independent director	.0106*** (2.60)	.0106** (2.00)	.0106** (2.00)	.0106** (2.00)	.0106** (2.00)
Female director	-.0033*** (-3.78)	-.0033 (-.73)	-.0033 (-.73)	-.0033 (-.73)	-.0033 (-.73)

Table 4 (continued)

	Mode (1)	Mode (2)	Mode (3)	Mode (4)	Mode (5)
	Bribery expenditure _{t+1}				
Chairman military experience	.2692 (.84)	.2692 (.70)	.2692 (.70)	.2692 (.70)	.2692 (.70)
Institutional shareholding	-.0207*** (-8.36)	-.0207*** (-5.87)	-.0207*** (-5.87)	-.0207*** (-5.87)	-.0207*** (-5.87)
Anti-corruption	242.8856*** (3.01)	242.8856*** (2.64)	242.8856*** (2.64)	242.8856*** (2.64)	242.8856*** (2.64)
Marketization index	.0817 (1.61)	.0817 (.92)	.0817 (.92)	.0817 (.92)	.0817 (.92)
Year	Yes	Yes	Yes	Yes	Yes
Industry	Yes	Yes	Yes	Yes	Yes
Province	Yes	Yes	Yes	Yes	Yes
Constant	6.4786*** (6.11)	6.8264** (2.29)	3.9200 (1.56)	4.2325* (1.68)	3.3962 (1.36)
R-squared	.0686	.0686	.0686	.0686	.0686
F	9.0e+03***	30.3918***	30.3918***	30.3918***	30.3918***
N	14,493	14,493	14,493	14,493	14,493

*, **, and *** denote that the statistic was significant at the 10%, 5%, and 1% levels, respectively. The coefficient is too small due to the small value of bribery expenditure. Therefore, in the empirical test the bribery expenditure is scaled up by a factor of 100 and the same below

instrumental variable method to mitigate this type of endogeneity problem. Previous studies have shown that fluctuations in macro-variables such as exchange rates and interest rates in emerging countries are closely related to changes in United States (US) monetary policy, and most existing studies have used US EPU as an instrumental variable for Chinese EPU (Cui et al., 2021). Therefore, in line with previous studies, we first selected Baker et al.'s (2016) *US EPU* as the first instrumental variable in this study.

The instrumental variable test was conducted using two-stage least squares; GMM was also adopted for the test because of its effectivity for the heteroskedasticity of the nuisance terms. The test results show that the F-value is much greater than 10, indicating that there are no weak instrumental variables. Table 6 presents the regression results of the second stage. It illustrates that the results of the tests conducted using two-stage least squares and GMM show that the coefficients of *EPU* for both *corporate philanthropy* and *bribery expenditure*, are significantly positive, implying that the regression results of Hypotheses 1 and 2 still hold after eliminating the endogeneity problem.

In addition to the EPU of the US, the EPU of other major economies, such as the EU, Japan, and South Korea, may also affect China's EPU through trade and other channels, which, in turn, affects firms' non-market-oriented strategies. However, it is difficult for China's non-market strategies to affect the EPU of other countries. Therefore, after further improving the above instrumental variables, we also adopt the weighted average of the trade shares of the EPU

Table 5 Regression analysis on the moderating role of the state-owned(State ownership)

	Mode (1) Corporate Philanthropy _{t+1}	Mode (2) Bribery expenditure _{t+1}	Mode (3) Corporate Philanthropy _{t+1}	Mode (4) Bribery expenditure _{t+1}
EUP	.0037*** (4.78)	.0071*** (28.37)	.0040*** (5.73)	.0054*** (13.08)
State-owned	-1.7595*** (-9.23)	.5249* (1.77)		
EUP×State-owned	.0015*** (2.82)	-.0049*** (-4.58)		
State ownership			-.9732* (-1.81)	4.0139*** (9.60)
EUP×State ownership			.0036* (1.95)	-.0115*** (-7.45)
Firm size	1.5034*** (44.72)	.3755*** (7.07)	1.4515*** (27.60)	.4740*** (6.99)
Firm age	-.0828** (-1.99)	-.5757*** (-14.07)	-.0541 (-1.35)	-.5817*** (-18.59)
ROA	4.3704*** (4.86)	1.1688** (2.23)	4.5810*** (5.11)	.8880* (1.70)
Tobin's Q	.0666*** (7.11)	-.0899*** (-4.87)	.0661*** (5.75)	-.0836*** (-4.46)
Risk-taking level	-6.6702*** (-15.62)	5.4844*** (15.72)	-6.7713*** (-14.85)	6.1397*** (16.12)
Product diversification	-.7386*** (-7.27)	-.7513*** (-4.20)	-.7032*** (-7.13)	-.8271*** (-4.53)
Digital transformation	.0842*** (7.26)	.1372*** (4.40)	.0731*** (5.91)	.1622*** (5.16)
Executives international experience	-.0091**	.0135***	-.0091**	.0140***

Table 5 (continued)

	Mode (1)	Mode (2)	Mode (3)	Mode (4)
	Corporate Philanthropy _{t+1}	Bribery expenditure _{t+1}	Corporate Philanthropy _{t+1}	Bribery expenditure _{t+1}
Executives compensation incentives	(-2.10) .0184 (.45)	(5.59) -5524*** (-6.40)	(-2.14) .0186 (.45)	(5.35) -4906*** (-5.41)
CEO duality	-.0923*** (-2.53)	-.0814* (-1.71)	-.0523 (-1.21)	-.0782* (-1.74)
Political connection	.0292 (.55)	-.2254*** (-2.58)	.0387 (.74)	-.2477*** (-2.91)
Ownership concentration	-.0108*** (-4.11)	.0009 (.45)	-.0129*** (-4.94)	.0086*** (6.43)
Board size	.1960* (1.86)	-.9615*** (-4.61)	.2073** (1.96)	-1.0333*** (-5.08)
Independent director	-.0005 (-.11)	.0090** (2.24)	-.0000 (-.01)	.0097*** (2.68)
Female director	-.0057** (-2.04)	-.0037*** (-4.86)	-.0061** (-2.20)	-.0035*** (-4.06)
Chairman military experience	.3515* (1.91)	.2058 (.66)	.4019** (2.12)	.2843 (.86)
Institutional shareholding	-.0098*** (-3.82)	-.0179*** (-7.82)	-.0088*** (-3.89)	-.0213*** (-7.44)
Anti-corruption	75.2343 (1.49)	306.8343*** (3.23)	96.9514* (1.89)	260.2302*** (3.10)
Marketization index	-.0479 (-1.34)	.0797* (1.75)	-.0647* (-1.80)	.0710 (1.50)

Table 5 (continued)

	Mode (1) Corporate Philanthropy _{t+1}	Mode (2) Bribery expenditure _{t+1}	Mode (3) Corporate Philanthropy _{t+1}	Mode (4) Bribery expenditure _{t+1}
Year	Yes	Yes	Yes	Yes
Industry	Yes	Yes	Yes	Yes
Province	Yes	Yes	Yes	Yes
Constant	-21.3204*** (-14.94)	8.7665*** (10.05)	-21.1924*** (-11.58)	6.2536*** (4.97)
R-squared	.0567	.0758	.055	.0718
F	430.43***	7698.84***	1693.72***	9019.02***
N	14,493	14,493	14,493	14,493

*, **, and *** denote that the statistic was significant at the 10%, 5%, and 1% levels, respectively

Fig. 2 Schematic diagram of SOEs moderating effect on the relationship between EPU and corporate philanthropy

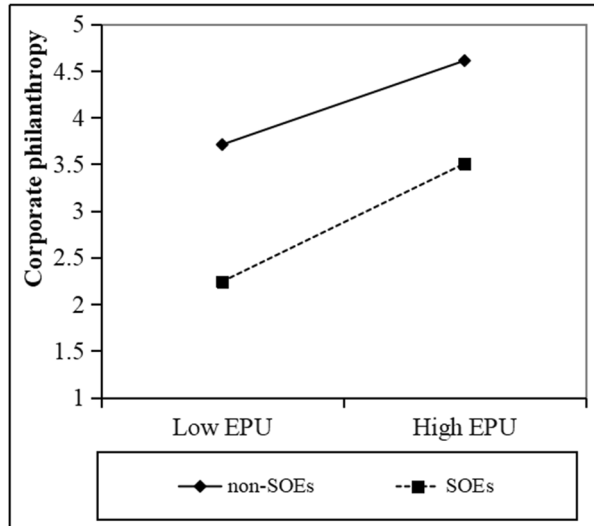
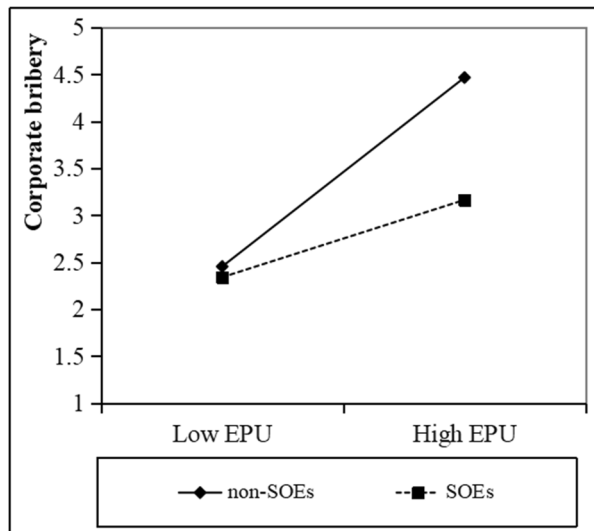


Fig. 3 Schematic diagram of SOEs moderating effect on the relationship between EPU and corporate bribery



of China's major trading partners as an instrumental variable. Specifically, we choose the EPU of six countries, namely, the United States, Japan, Korea, the United Kingdom, Germany, and Italy,⁶ and calculate the total import and export shares of China from 2008 to 2019 as weights to obtain the instrumental variable *integrated EPU* using the weighted average method. We also adopted GMM

⁶ Data source: http://www.policyuncertainty.com/China_monthly.html. We selected the news reports method.

Table 6 Regression analysis on EPU affecting corporate philanthropy and bribery expenditure: instrumental variable method of USA EPU

	Mode (1) Corporate Philanthropy _{t+1}	Mode (2) Bribery expenditure _{t+1}	Mode (3) Corporate Philanthropy _{t+1}	Mode (4) Bribery expenditure _{t+1}
	IV = USA EPU		GMM	
EPU	.0064*** (8.95)	.0034*** (4.03)	.0064*** (8.95)	.0034*** (4.03)
Controls	Yes	Yes	Yes	Yes
R-squared	.164	.105	.164	.105
Wald chi2	.1641***	1325.49***	2962.31***	1325.49***
N	14,493	14,493	14,493	14,493

*, **, and *** denote that the statistic was significant at the 10%, 5%, and 1% levels, respectively

Table 7 Regression analysis on EPU affecting corporate philanthropy and bribery expenditure: instrumental variable method of integrated EPU

	Mode (1) Corporate Philanthropy _{t+1}	Mode (2) Bribery expenditure _{t+1}	Mode (3) Corporate Philanthropy _{t+1}	Mode (4) Bribery expenditure _{t+1}
	IV = integrated EPU		GMM	
EPU	.0048*** (6.99)	.0014* (1.77)	.0048*** (6.99)	.0014* (1.77)
Controls	Yes	Yes	Yes	Yes
R-squared	.166	.107	.166	.107
Wald chi2	2911.20***	1326.26***	2911.20***	1326.26***
N	14,493	14,493	14,493	14,493

*, **, and *** denote that the statistic was significant at the 10%, 5%, and 1% levels, respectively

for testing. Table 7 presents the second-stage regression results. The results of the two-stage least squares and GMM tests indicate that the estimated coefficients of *EPU* for either *corporate philanthropy* or *bribery expenditure* are significantly positive, implying that, after eliminating the endogeneity problem, the regression results of Hypotheses 1 and 2 still hold.

Baker et al.'s (2016) *EPU* index, based on the *South China Morning Post*, has been widely used. For robustness, we also used Davis et al.'s (2019) *EPU* index, which was based on *Renmin Daily* and *Guangming Daily* (Davis et al., 2019). Unlike the *South China Morning Post*, *Renmin Daily* and *Guangming Daily* are the most influential news agencies of the Chinese government, and they rely on government policies in mainland China (Cui et al., 2021). Table 8 presents the regression results obtained by replacing the *EPU* measurement. All the regression results hold after changing the *EPU* measurement.

Table 8 Regression analysis on EPU affecting corporate philanthropy and bribery expenditure: Replacing of EPU measurement

	Mode (1) Corporate Philanthropy _{t+1}	Mode (2) Bribery expenditure _{t+1}	Mode (3) Corporate Philanthropy _{t+1}	Mode (4) Bribery expenditure _{t+1}
EPU_2	.0094*** (9.03)	.0079*** (14.27)	.0083*** (8.78)	.0098*** (21.94)
SOEs			-1.9982*** (-7.50)	.2081 (.68)
EPU_2 × SOEs			.0040*** (11.69)	-.0059*** (-3.49)
Controls	Yes	Yes	Yes	Yes
R-squared	.0548	.0686	.0571	.0715
F	3003.431***	11,000***	1386.628***	15,000***
N	14,493	14,493	14,493	14,493

*, **, and *** denote that the statistic was significant at the 10%, 5%, and 1% levels, respectively

Table 9 Regression analysis of alternative relationship and intrinsic mechanisms

	Mode (1) Bribery expenditure _{t+1}	Mode (2)	Mode (3)	Mode (4)	Mode (5) Corporate Philanthropy _{t+1}
EUP	.0063*** (12.54)	.0096*** (5.43)	.0189*** (5.03)	.0083*** (3.94)	.0161*** (14.51)
Corporate Philanthropy	.0515*** (6.32)				
Corporate Philanthropy × EUP	-.0001*** (-4.94)				
Government subsidies		.1397*** (5.46)		.0541 (1.46)	
Government subsidies × EUP		-.0003*** (-3.77)		-.0002*** (-2.71)	
SA			-11.9732*** (-8.06)		-3.4773*** (-10.72)
SA × EUP			.0034*** (3.22)		.0031*** (9.00)
Controls	Yes	Yes	Yes	Yes	Controls
Constant	6.3997*** (5.52)	2.8336** (1.99)	-25.9627*** (-8.03)	-20.6011*** (-9.78)	-31.0073*** (-20.53)
R-squared	.0696	.0668	.0892	.0533	.0562
F	15,000***	2000***	17,000***	1800***	314.6387***
N	14,493	14,053	14,493	14,053	14,493

*, **, and *** denote that the statistic was significant at the 10%, 5%, and 1% levels, respectively. Corporate philanthropy in Mode (1) is at period t , the same as EUP. In addition, the observations are reduced to 14,053 due to partial missing government subsidies data

Further analysis

Our study shows that Chinese firms actively increase their corporate philanthropy and bribery expenditures in response to EPU. We further test whether the relationship between corporate philanthropy and bribery expenditures is alternative or complementary. Model (1) in Table 9 illustrates that the coefficient of *corporate philanthropy* × *EUP* is significantly and negatively associated with bribery expenditure (beta = -.0001, $p < .01$), indicating that *corporate philanthropy* weakens the positive effect of EPU on bribery expenditure. These results indicate that the relationship between corporate philanthropy and bribery expenditure is alternative rather than complementary.

In addition, we believe that firms will aggressively increase their philanthropic and bribery expenditure in order to acquire scarce government-controlled resources to cushion adverse EPU shocks. If the inherent mechanisms mentioned above exist, then it is reasonable to assume that these incentives will diminish for firms that are already well positioned to acquire government-controlled scarce resources, or

currently have greater resource power. In light of this, we predict that firms with higher government subsidies and those with fewer financing constraints will have relatively weaker incentives to improve their relationships with the government by increasing charitable giving or spending on bribes. Following existing research (Hadlock & Pierce, 2010), we use the SA index to measure the financing constraints faced by a firm. Specifically, $SA = -0.737 * Size + 0.043 * Size^2 - 0.04 * Age$. *Size* is firm size and *Age* is the year of the sample firm minus the year of the firm's establishment. Government subsidies are measured by the natural logarithm of the amount of subsidy the firm receives from the government, plus one.

Model (2) in Table 9 illustrates that the coefficient of *government subsidies* × *EUP* is significantly and negatively associated with bribery expenditure (beta = -0.0003, $p < .01$), indicating that *government subsidies* weaken the positive effect of EPU on bribery expenditure. Model (3) in Table 9 illustrates that the coefficient of *SA* × *EUP* is significantly and positively associated with bribery expenditure (beta = 0.0034, $p < .01$), indicating that financing constraints strengthen the positive effect of EPU on bribery expenditure. Model (4) in Table 9 illustrates that the coefficient of *government subsidies* × *EUP* is significantly and negatively associated with corporate philanthropy (beta = -0.0002, $p < .01$), indicating that *government subsidies* weaken the positive effect of EPU on corporate philanthropy. Model (5) in Table 9 illustrates that the coefficient of *SA* × *EUP* is significantly and positively associated with corporate philanthropy (beta = 0.0031, $p < .01$), indicating that financing constraints strengthen the positive effect of EPU on corporate philanthropy.

Discussion

In recent years, EPU has shown an overall increasing trend worldwide and has had a negative impact on the normal conduct of business activities of various companies (Baker et al., 2016). Scholars have invested considerable time and effort in examining firms' strategic actions in response to EPU. While previous research has yielded a range of insightful findings (Cui et al., 2021; Lou et al., 2022; Zhong et al., 2021), we still know very little about whether, and when, companies in emerging economies, such as China, will implement non-market strategic actions in response to EPU.

As a useful attempt to expand and enrich the existing literature, we systematically examine the impact of EPU on two types of non-market strategic actions (e.g., charity and bribery) using Chinese firms as a sample. Using the index by Baker et al. (2016) to measure firms' economic policy uncertainty, we find that Chinese companies respond to EPU by increasing their spending on philanthropy and bribery. We attribute this to the fact that both increased charitable donation and bribery spending help to improve the relationship between business and government (Ren et al., 2022a; Wang & Qian, 2011), making it more likely for Chinese companies to acquire additional scarce government-controlled resources to counter the adverse impact of EPU. We also find that SOEs are more likely than non-SOEs to respond to EPU by increasing charitable giving, whereas they are less likely to respond to EPU by increasing bribery spending. We believe this relationship is as such for the following reasons: there is an innate connection between SOEs and the government (Li

et al., 2019a); when SOEs engage in corporate philanthropy, the government tends to provide more compensation and support to them. Moreover, SOEs are subject to more external attention, and increasing bribery spending can lead to serious public doubts about the legitimacy and *raison d'être* of SOEs. As a result, compared with non-SOEs, SOEs have fewer (more) incentives and less (more) freedom to take bribery actions (charitable actions) in response to EPU. This study makes several contributions by providing the first empirical evidence on whether and when EPU affects charitable and bribery spending.

Theoretical contributions

First, this study contributes to the emerging academic literature on firms' strategic actions in the face of EPU. Scholars have increasingly devoted efforts to developing conceptual models of firms' responses to EPU threats in market environments (Guedhami et al., 2021; Gulen & Ion, 2016; Zhong et al., 2021). However, little is known about why and how such threats affect firms' strategic actions in non-market environments. This study integrates EPU and firms' strategic actions in non-market environments to fill this research gap. While previous studies have highlighted that firms in China actively implement non-market strategic actions to address threats posed by the institutional environment (Lange & Deborah, 2016; Liedong et al., 2017; Peng & Luo, 2000; Rodgers et al., 2021), they ignore the particular factor of EPU. This study provides empirical evidence that threats to normal business operations from EPU can cause focal firms to actively participate in efforts to construct reciprocal relationships with government.

Second, this study extends the non-market strategy literature in two ways that deepen our understanding of the heterogeneity of non-market strategic actions by firms, especially those in emerging economies, such as China. An important difference between this study and existing non-market strategy literature is that it examines both legal (corporate philanthropy) and illegal (bribery expenditure) non-market strategic actions, in contrast with the existing literature, which primarily examines the former (Luo & Wang, 2019; Sun et al., 2019; Zhao et al., 2021). Although a few scholars have also focused on illegal non-market strategic actions (Iriyama et al., 2016; Xu et al., 2019), very few studies have included both in their analytical framework to examine their common antecedents. This study extends the existing non-market strategy literature by providing theoretical arguments and empirical tests of the common antecedents of firms engaging in two types of non-market strategic action, and the conditions under which they are more likely to engage in either of these activities. In addition, this study is one of the first to examine firms' non-market strategic actions from the perspective of the economic policy environment, thereby contributing to a more comprehensive understanding of firms' non-market strategic actions from the institutional environment perspective (Luo & Wang, 2019; Zhang et al., 2021), and complementing the existing literature.

Finally, this study contributes to a more nuanced understanding of the differences between SOEs and non-SOEs in terms of their interaction with the institutional environment, thus enriching SOE literature. Given the clear differences between SOEs

and non-SOEs in terms of the resources they possess, the goals they operate with, and the main points of conflict in corporate governance (Li et al., 2019a; Lu et al., 2020), many scholars have argued that it is essential to distinguish between the two entities when examining the interactions between firms and the institutional environment (Shaheer et al., 2017; Wang et al., 2022). Meanwhile, this literature stream calls for researchers to consistently and comprehensively examine the differences between SOEs and non-SOEs in their engagement in non-market strategic activities (Lu et al., 2020; Shaheer et al., 2017; Zhang et al., 2010). This study provides new evidence for the above dialogue, revealing that SOEs and non-SOEs prioritize different non-market strategic activities in response to EPU. In doing so, it provides a fuller understanding of the joint impact of the economic policy environment and the nature of firm ownership on firms' non-market strategic actions.

Practical implications

The empirical findings of this study provide important insights for the government, businesses, and academia. First, the study provides insights into corporate philanthropy and bribery expenditure in an environment of high EPU, confirming that this kind of uncertainty motivates firms to actively engage in corporate philanthropy and bribery expenditure. Corporate philanthropy enhances a firm's image among the public and promotes social welfare. In contrast, bribery expenditure benefits some firms, but undermines the market principle of fair competition, harming the interests of other firms. Once bribery becomes widespread, and rent-seeking and the trading of power and money become an "unspoken rule," the business environment deteriorates and the interests of all businesses are eventually harmed. Therefore, during a period of high EPU, the government should strengthen the review and punishment of corporate bribery, and introduce measures to promote companies' participation in corporate philanthropy. Moreover, the results of this study also suggest that as EPU increases, it is crucial for business managers to establish reciprocal relationships with the government because this helps firms gain access to scarce resources and policy information, helping them cope more effectively with EPU and achieve better growth and success.

Second, this study shows that SOEs and non-SOEs have different behavioral tendencies in responding to EPU through corporate philanthropy and bribery expenditure. Specifically, non-SOEs are more likely to respond to EPU by increasing their spending on bribes than on charitable donations. Thus, although in the short run illegal non-market instruments, such as bribes, help non-SOE firms adapt better to the external institutional environment to a certain extent, in the long run, such instruments may lead to misallocation of resources. That, in turn, inhibits the pace of building and strengthening core competencies, ultimately harming the long-term value of the enterprise and its shareholders. In other words, short-sighted actions, such as corporate bribery, should be used cautiously by non-SOEs to counter the negative impact of EPU. In addition, to effectively manage bribery to create a fair and orderly market environment, regulators should focus on and prevent the bribery activities of non-SOEs during high EPU.

Limitations and future directions

We need to mention the limitations of this study and suggest potential directions for future research. First, the study used empirical data only from publicly traded firms in China. Thus, on the one hand, the findings of this study may not be generalizable to unlisted firms in China, as publicly traded firms may not be representative of all firms. On the other hand, since corporate philanthropy and bribery expenditure are also prevalent in other emerging economies, it would be prudent to extend the findings of this study to other developing countries around the world. In this sense, scholars can replicate or modify the findings of this study based on data from unlisted Chinese firms or empirical data from firms in other emerging economies.

Second, we used the EPU index developed by Baker et al. (2016) to measure Chinese EPU, and used other alternative indicators for robustness checks. As these measures of EPU are inevitably biased, they also pose a threat to the reliability of the findings of this study. Therefore, we call for future research to develop better EPU measures. Finally, this study included only two types of non-market strategic action: corporate philanthropy and bribery expenditure. Future researchers could introduce other types of non-market strategic action into the analytical framework, to decipher their functions. For example, they could investigate the impact of EPU on corporate lobbying behavior, which is prevalent in developed economies (e.g., the United States). Additionally, while our measure of bribery spending continues the approach of Xu et al. (2019), it inevitably introduces measurement errors, given the covert nature of bribery. Therefore, we call for future research to develop better methods for capturing firms' bribery expenditures.

Conclusions

We have taken a useful step toward a more comprehensive understanding of the unintended consequences of EPU, by examining how firms in China adjust their actions in a non-market environment in response to negative shocks from EPU. We hope that this study will stimulate further discussion among researchers to advance the literature on EPU and non-market strategies.

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Declarations

Research involving human participants and/or animals statement Not applicable.

Informed consent statement Not applicable.

Conflict of interest The authors declare that there is no conflict of interest.

References

- Alvarez, S., Afuah, A., & Gibson, C. (2018). Editors' comments: Should management theories take uncertainty seriously? *Academy of Management Review*, 43(2), 169–172.
- Baker, S. R., Bloom, N., & Davis, S. J. (2016). Measuring economic policy uncertainty. *The Quarterly Journal of Economics*, 131(4), 1593–1636.
- Birhanu, A. G., Gambardella, A., & Valentini, G. (2016). Bribery and investment : Firm-level evidence from africa and latin america. *Strategic Management Journal*, 37(9), 1865–1877.
- Bova, F., & Yang, L. (2018). State-owned enterprises, competition, and disclosure. *Contemporary Accounting Research*, 28(5), 596–621.
- Brogaard, J., & Detzel, A. L. (2015). The asset pricing implications of government economic policy uncertainty. *Management Science*, 61(1), 3–18.
- Cai, H., Fang, H., & Xu, L. C. (2011). Eat, drink, firms, government: An investigation of corruption from the entertainment and travel costs of chinese firms. *Journal of Law & Economics*, 54(1), 55–78.
- Campbell, D., & Slack, R. (2008). Corporate “philanthropy strategy” and “strategic philanthropy” some insights from voluntary disclosures in annual reports. *Business & Society*, 47(2), 187–212.
- Cardinali, P. G., & De Giovanni, P. (2022). Responsible digitalization through digital technologies and green practices. *Corporate Social-Responsibility and Environmental Management*, 29(4), 984–995.
- Carroll, A. B. (1991). The pyramid of corporate social responsibility: Toward the moral management of organizational stakeholders. *Business Horizons*, 34(4), 39–48.
- Chadee, D., Roxas, B., & Kouznetsov, A. (2021). Corruption, bribery and innovation in cee: Where is the link? *Journal of Business Ethics*, 174(4), 747–762.
- Chan, K. C., & Feng, X. (2019). Corporate philanthropy in a politically uncertain environment: Does it bring tangible benefits to a firm? Evidence from China. *European Journal of Finance*, 25(1–3), 256–278.
- Chen, C. J. P., Li, Z., Su, X., & Sun, Z. (2011). Rent-seeking incentives, corporate political connections, and the control structure of private firms: Chinese evidence. *Journal of Corporate Finance*, 17(2), 229–243.
- Chen, H., Liu, S., Liu, X., & Yang, D. (2021). Adversity tries friends: A multilevel analysis of corporate philanthropic response to the local spread of covid-19 in China. *Journal of Business Ethics*, 28(2), 1–28.
- Conyon, M. J., & He, L. (2011). Executive compensation and corporate governance in China. *Journal of Corporate Finance*, 17(4), 1158–1175.
- Cui, X., Yao, S., Fang, Z., & Wang, H. (2021). Economic policy uncertainty exposure and earnings management: Evidence from China. *Accounting & Finance*, 61(3), 3937–3976.
- Davis, S. J., Liu, D., & Sheng, X. S. (2019). Economic policy uncertainty in China since 1946: the view from mainland newspapers. *Working paper*.
- Diaby, A., & Sylwester, K. (2015). Corruption and market competition: Evidence from post-communist countries. *World Development*, 66(2), 487–499.
- Driscoll, J. C., & Kraay, A. C. (1998). Consistent covariance matrix estimation with spatially dependent panel data. *Review of Economics and Statistics*, 4(80), 549–560.
- Eddleston, K. A., Banalieva, E. R., & Verbeke, A. (2020). The bribery paradox in transition economies and the enactment of ‘new normal’ business environments. *Journal of Management Studies*, 57(3), 597–625.
- Fan, G., Wang, X., & Zhu, H. P. (2018). *Marketization index for China's provinces*. Economic Science Press. in Chinese.
- Ferreira, C., Merendino, A., & Meadows, M. (2019). How big data can destroy organisations' legitimacy. *International Corporate Rescue*, 16(3), 174–176.
- Ge, J., & Micelotta, E. (2019). When does the family matter? Institutional pressures and corporate philanthropy in China. *Organization Studies*, 40(6), 833–857.
- Guedhami, O., Mansi, S., Reeb, D., & Yasuda, Y. (2021). Economic policy uncertainty and allocative distortions. *Journal of Financial Stability*, 54(1), 100923.
- Gulen, H., & Ion, M. (2016). Policy uncertainty and corporate investment. *The Review of Financial Studies*, 29(3), 523–564.
- Hadlock, C. J., & Pierce, J. R. (2010). New evidence on measuring financial constraints: Moving beyond the kz index. *Review of Financial Studies*, 23(5), 1909–1940.
- HewaWellalage, N., Locke, S., & Samujh, H. (2019). Firm bribery and credit access: Evidence from Indian smes. *Small Business Economics*, 55(1), 283–304.

- Iriyama, A., Kishore, R., & Talukdar, D. (2016). Playing dirty or building capability? Corruption and hr training as competitive actions to threats from informal and foreign firm rivals. *Strategic Management Journal*, 37(10), 2152–2173.
- Jeong, Y., & Weiner, R. J. (2012). Who bribes? Evidence from the united nations' oil-for-food program. *Strategic Management Journal*, 33(12), 1363–1383.
- Jia, N., Mao, X., & Yuan, R. (2019a). Political connections and directors' and officers' liability insurance – evidence from China. *Journal of Corporate Finance*, 58(10), 353–372.
- Jia, M., Xiang, Y., & Zhang, Z. (2019b). Indirect reciprocity and corporate philanthropic giving: How visiting officials influence investment in privately owned chinese firms. *Journal of Management Studies*, 56(2), 372–407.
- Jing, C., Ezzamel, M., & Cai, Z. (2011). Managerial power theory, tournament theory, and executive pay in China. *Journal of Corporate Finance*, 17(4), 1176–1199.
- Kalcheva, I., Ping, M. L., & Sias, R. (2021). Economic policy uncertainty and self-control: Evidence from unhealthy choices. *Journal of Financial and Quantitative Analysis*, 56(4), 1446–1475.
- Kim, O. S. (2019). Does political uncertainty increase external financing costs? Measuring the electoral premium in syndicated lending. *Journal of Financial and Quantitative Analysis*, 54(5), 2141–2178.
- Krammer, S. (2019). Greasing the wheels of change: Bribery, institutions, and new product introductions in emerging markets. *Journal of Management*, 45(5), 1889–1926.
- Lange, D., & Deborah, E. (2016). Legitimation strategies for clean technology entrepreneurs facing institutional voids in emerging economies. *Journal of International Management*, 22(4), 403–415.
- Lee, S. H., Oh, K., & Eden, L. (2010). Why do firms bribe? Insights from residual control theory into firms' exposure and vulnerability to corruption. *Management International Review*, 50(6), 775–796.
- Leung, W. S., & Sun, J. (2021). Policy uncertainty and customer concentration. *Production and Operations Management*, 30(5), 1517–1542.
- Li, J., Li, P., & Wang, B. (2019a). The liability of opacity: State ownership and the likelihood of deal completion in international acquisitions by chinese firms. *Strategic Management Journal*, 40(2), 303–327.
- Li, S., Wu, H., & Song, X. (2017). Principal–principal conflicts and corporate philanthropy: Evidence from chinese private firms. *Journal of Business Ethics*, 141(3), 1–16.
- Li, W., & Wang, P. (2016). Philanthropy, political connection and debt finance: Reciprocal behavior of governments and private enterprises. *Nankai Business Review International*, 7(4), 451–473.
- Li, X., Kim, J., Wu, H., & Yu, Y. (2019b). Corporate social responsibility and financial fraud: The moderating effects of governance and religiosity. *Journal of Business Ethics*, 170(3), 557–576.
- Liedong, T. A., Rajwani, T., & Mellahi, K. (2017). Reality or illusion? The efficacy of nonmarket strategy in institutional risk reduction. *British Journal of Management*, 28(4), 609–628.
- Lin, K. J., Tan, J., Zhao, L., & Karim, K. (2015). In the name of charity: Political connections and strategic corporate social responsibility in a transition economy. *Journal of Corporate Finance*, 32(6), 327–346.
- Lou, Z., Chen, S., Yin, W., Zhang, C., & Yu, X. (2022). Economic policy uncertainty and firm innovation: Evidence from a risk-taking perspective. *International Review of Economics & Finance*, 77(2), 78–96.
- Lu, F., Zhu, Z., Zhu, L., & Gao, H. (2022). Political tie hot potato: The contingent effect of China's anti-corruption policy on cash and innovation. *Research Policy*, 51(4), 104476.
- Lu, T., Sivaramakrishnan, K., Wang, Y., & Yu, L. (2020). The real effects of mandatory corporate social responsibility reporting in China. *Production and Operations Management*, 30(5), 1493–1516.
- Luo, X. R., & Wang, D. (2019). Are politically endorsed firms more socially responsible? Selective engagement in corporate social responsibility. *Journal of Business Ethics*, 170(3), 535–555.
- Martin, G. P., Wiseman, R. M., & Gomez-Mejia, L. R. (2019). The ethical dimension of equity incentives: A behavioral agency examination of executive compensation and pension funding. *Journal of Business Ethics*, 166(3), 595–610.
- Meyer, J. W., & Rowan, B. (1977). Institutionalized organizations: Formal structure as myth and ceremony. *American Journal of Sociology*, 83(2), 340–363.
- Meyer, K. E., Yuan, D., Jing, L., & Hua, Z. (2014). Overcoming distrust: How state-owned enterprises adapt their foreign entries to institutional pressures abroad. *Journal of International Business Studies*, 45(8), 1005–1028.
- Peng, M. W., & Luo, Y. (2000). Managerial ties and firm performance in a transition economy: The nature of a micro-macro link. *Academy of Management Journal*, 43(3), 486–501.
- Pfeffer, J., & Salancik, G. R. (1978). *The external control of organizations: a resource dependence perspective*. Harper & Row.
- Ren, L., Zhong, X., & Wan, L. (2022a). Defending the shell: Differential effects of delisting pressure on r&d intensity and bribery expenditure. *Review of Managerial Science*, 16(2), 1437–1470.

- Ren, G., Zeng, P., & Song, T. (2022b). Corporate fraud as a negative signal: Implications for firms' innovation performance. *Business Ethics, the Environment and Responsibility*, 31(3), 790–808.
- Rodgers, P., Vershina, N., Khan, Z., & Stokes, P. (2021). Small firms' non-market strategies in response to dysfunctional institutional settings of emerging markets. *International Business Review*, 31(4), 1018916.
- Sauerwald, S., & Su, W. (2018). Does corporate philanthropy increase firm value? The moderating role of corporate governance. *Business & Society*, 57(4), 599–635.
- Shaheer, N., Yi, J., Li, S., & Chen, L. (2017). State-owned enterprises as bribe payers: The role of institutional environment. *Journal of Business Ethics*, 159(1), 221–238.
- Shen, L., Zhang, C., Teng, W., & Du, N. (2021). How do business and political networking shape overseas dispute resolution for state-owned enterprise from emerging economies. *International Business Review*, 31(1), 101888.
- Sun, Z., Wu, D., & Zhang, M. (2019). Better late than never? Corporate social responsibility engagement after product-harm crises. *Asia Pacific Journal of Management*, 38(4), 1209–1259.
- Tang, T., Mo, P. L. L., & Chan, K. H. (2017). Tax collector or tax avoider? An investigation of intergovernmental agency conflicts. *The Accounting Review*, 92(2), 247–270.
- Ufere, N., Perelli, S., Boland, R., & Bo, C. (2012). Merchants of corruption: How entrepreneurs manufacture and supply bribes. *World Development*, 40(12), 2440–2453.
- VuralYavaş, Ç. (2021). Economic policy uncertainty, stakeholder engagement, and environmental, social, and governance practices: The moderating effect of competition. *Corporate Social Responsibility and Environmental Management*, 28(1), 82–102.
- Wang, D., Cui, L., Vu, T., & Feng, T. (2022). Political capital and mne responses to institutional voids: The case of chinese state-owned enterprises in africa. *Organization Studies*, 43(1), 105–126.
- Wang, H., & Qian, C. (2011). Corporate philanthropy and financial performance: The roles of social expectations and political access. *Academy of Management Journal*, 54(6), 1159–1181.
- Wu, J. G., Zhang, J., Wu, Y., & Kong, D. (2020). When to go abroad: Economic policy uncertainty and chinese firms' overseas investment. *Accounting and Finance*, 60(2), 1435–1470.
- Xu, D., Zhou, K. Z., & Du, F. (2019). Deviant versus aspirational risk taking: The effects of performance feedback on bribery expenditure and r&d intensity. *Academy of Management Journal*, 62(4), 1226–1251.
- Yu, F., Zhang, H., Tan, J., & Liang, Q. (2022). Non-market strategies and credit benefits: Unpacking heterogeneous political connections in response to government anti-corruption initiatives. *Journal of Management Studies*, 59(2), 349–389.
- Yu, J., & Lee, S. H. (2021). Bending the rules or changing them? Mne responses to institutional challenges in transition economies. *Business & Society*, 60(6), 727–763.
- Zhang, L., Xu, Y., & Chen, H. (2021). Do returnee executives value corporate philanthropy? Evidence from China. *Journal of Business Ethics*, 179(2), 411–430.
- Zhang, M., Ma, L., & Zhang, W. (2013). The effect of enterprise charitable donations, of link between the government and the enterprise. *Management World*, 29(7), 163–171.
- Zhang, R., Rezaee, Z., & Zhu, J. (2010). Corporate philanthropic disaster response and ownership type: Evidence from chinese firms' response to the sichuan earthquake. *Journal of Business Ethics*, 91(1), 51–63.
- Zhao, T., Xiao, X., & Zhang, B. (2021). Economic policy uncertainty and corporate social responsibility performance: Evidence from China. *Sustainability Accounting, Management and Policy Journal*, 12(5), 1003–1026.
- Zhong, X., Chen, W., & Ren, G. (2021). How and when economic policy uncertainty influences firms' strategic change: The role of ceo turnover and organizational inertia. *International Journal of Emerging Markets*. <https://doi.org/10.1108/IJOEM-02-2021-0273>
- Zhong, X., Chen, W., & Ren, G. (2022). The impact of corporate social irresponsibility on emerging-economy firms' long-term performance: An explanation based on signal theory. *Journal of Business Research*, 144(2), 345–357.

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