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# Does national culture influence corporate social responsibility on firm performance?

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In recent years, the influence of corporate social responsibility (CSR) on firm performance has received increasing attention, with academic research deepening in this field. This study introduces national culture as a moderating variable and explores the relationship between national culture, CSR, and firm performance to determine the role of national culture in the impact of CSR on firm performance. Data of listed companies from 15 different countries, between 2011 and 2020, were collected for empirical analysis. Comprehensive environmental, social and governance (ESG) score was used to measure the degree of CSR fulfillment. The results reveal that CSR hinders firm performance. In terms of national culture, power distance index, and uncertainty avoidance have a negative relationship with firm performance, while individualism has a positive impact. Conversely, power distance index can enhance the negative correlation between CSR and firm performance. This study suggests that governments should appropriately intervene in the implementation of CSR and take the initiative to foster a national cultural climate of individualism and democracy.

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## Introduction

While the world faced severe challenges due to the COVID-19 pandemic in 2020, different cultures around the globe have caused contrasting situations in various countries. Gokmen et al. (2021) suggested that actions taken by various countries to prevent the pandemic are consistent with their cultural characteristics, which indirectly leads to varying degrees of pandemic severity and differing impact on economic development due to national culture. At the micro-level, firms in different countries impacted by the pandemic make different management decisions due to differences in cultural atmosphere. Pernicious decisions that are unable to cope with the pandemic are likely to plunge firms into a crisis, thereby posing risks that can lead to reduced performance, shutdown, or even closure. Therefore, it is evident that national culture is a critical factor that influences decision-making behavior, and its impact on firm development is an objective economic law.

Research on national culture is a new perspective to study firm status and performance. At present, related studies, such as those conducted by Chen et al. (2015, 2017) and Chui et al. (2016), suggest that in the national culture dimension, uncertainty avoidance has a negative relationship with innovation efficiency and financing costs among firms, and is able to stimulate an increase in cash holdings. Cultural dimensions with individualistic tendencies have the opposite impact to that of uncertainty avoidance. Simultaneously, some studies have also argued that banks with high uncertainty avoidance, high power distance, or a collectivist culture perform relatively well during crises (Boubakri et al. 2017). Additionally, national culture is equally significant for corporate social responsibility (CSR). Thanetsunthorn (2015), who empirically studied the social responsibility performance of 3055 firms in 28 East Asian and European countries to examine the impact of national culture on CSR, found that firms in a cultural atmosphere with a higher power distance index and greater individualistic tendencies are less socially responsible, whereas uncertainty avoidance stimulates CSR among firms. Meanwhile, Gallen and Peraita (2018) argued that CSR reports are more prevalent in individualistic societies and countries with a low power distance index. In summary, national culture plays an essential role in firm performance and CSR.

Both improving firm performance and fulfilling CSR are necessary for the healthy development of firms and countries. Studying the role of national culture in the relationship between CSR and firm performance can help establish a deeper understanding of why geographical differences exist during the development of firms and provide valuable guidance in subsequent development efforts. As can be observed from research on Western and Chinese economic environments, factors such as firm capability and transformation of the economic environment have a contingent effect on the relationship between CSR and firm performance (Luo and Bhattacharya, 2006). Although some studies have investigated the relationship between CSR fulfillment and firm performance from different perspectives, only a handful have explored how cultural differences influence the impact of CSR on firm performance from the perspective of national culture as a moderating variable. Hence, the current study aims to complement the existing literature by analyzing the impact of CSR on firm performance from the perspective of national culture.

The study contributes to the finance literature and the cross-cultural psychology literature. The current study covers countries in multiple countries where the conclusions drawn are both representative and universal to a certain extent and are able to reflect the impact of CSR on firm performance at the present stage around the world. The conclusions of this study suggests that governments should appropriately intervene in the

implementation of corporate social responsibility and take the initiative to foster a national cultural climate of individualism and democracy.

## Literature review and hypotheses development

**Relationship between CSR and firm performance.** There are currently numerous topics on CSR and firm performance (Adamkaite et al., 2023). Due to changes in the overall policy environment, countries worldwide are gradually attaching importance to sustainable and healthy development, while the academia has also begun focusing on how to help firms improve their performance and fulfill social responsibility at the same time. Existing studies have differing arguments on the relationship between CSR and firm performance, and adopt different approaches to prove their arguments, which can be divided into three types of views.

The first view argues that CSR improves firm performance. Most existing studies, such as McWilliams et al. (2006), Flammer (2013), Cheng et al. (2014), Al-Shammari et al. (2022), and Liu et al. (2023) maintain this view and use a variety of methods to prove the positive relationship between CSR and firm performance. Furthermore, Weber (2008), who strongly emphasized a specific stimulation process, suggested that the benefits of CSR to firm performance are realized through various key performance indicators (KPIs) and drivers. For example, improving brand value, consumer attraction, reputation, employee incentives, and so on can indirectly result in increased sales and more government subsidies, as well as reduce internal costs and taxes, thereby improving firm performance.

The second view suggests that CSR hinders firm performance, supported by some analyses. Based on regression analysis conducted using samples from British and German manufacturing industries, Wagner and Schaltegger (2004) found that for the “machinery and equipment” and “electrical and optical” industries that measure CSR using enlightened shareholder value, CSR fulfillment has a negative relationship with their development in the market. Moore (2001), who collected data on the supermarket industry in the U.K., discovered that contemporaneous CSR and financial performance are negatively related, but prior-period corporate financial performance is positively correlated with subsequent corporate social performance.

Some studies, which shared arguments similar to Moore’s (2001) conclusion, suggested that CSR does not have an unequivocal effect on firm performance, or an inverted U-shaped relationship is present between CSR and firm performance. For instance, McWilliams and Siegel (2000) argued that the relationship between CSR and financial performance could not be proven due to the insurmountable shortcomings of empirical studies. However, they found in subsequent research that CSR is able to maximize firm profits to a certain extent while satisfying firm needs at the same time, where the optimal degree of CSR fulfillment can be determined through cost-benefit analysis. Based on data analysis using samples in the EU manufacturing industry, Wagner and Schaltegger (2004) found that CSR impacts firm performance in the form of an inverted U-shaped curve.

Despite various views on the relationship between CSR and firm performance, this study argues that CSR weakens the ability of firms to improve their performance due to the following reasons. First, shareholders are more concerned about the benefits they actually receive; however, fulfilling social responsibility inevitably leads to a decline in cash flow over the short term, thereby affecting firm performance. Second, fulfilling social responsibility reduces a firm’s cash holdings, brings more

liabilities, and influences its capital structure, which may cause problems such as cash flow shortage and credit crisis, thereby affecting its subsequent operations or investments. In contrast, existing accounting standards in most countries stipulate that most of the expenditures incurred for the fulfillment of CSR are expensed, which has not substantially improved firm profits and performance. Furthermore, fulfilling social responsibility can help build firm reputation or potential social capital. However, firms still have to operate for a period to realize their value, and are unable to achieve cost recovery over the short run because firms are unable to generate goodwill or intangible assets internally as far as accounting treatment is concerned. Hence, this study proposes the following hypothesis:

**H1:** with other conditions remaining unchanged, CSR fulfillment has a negative correlation with firm performance, and CSR fulfillment hinders firm performance.

### Relationship between national culture and firm performance

*National culture.* The term “national culture” was introduced by Hofstede (2001; 2010) through a questionnaire survey in the late 1960s. Despite appearing highly rhetorical, the six dimensions of national culture are, in fact, closely connected to firms because firms do not detach themselves from the macro environment when they operate, while national culture produces different business outcomes through its influence on corporate culture, employees, customers, and suppliers (Bloom et al. 2012). In addition to transmission through internalization, national culture also influences each aspect of firms, including assumption of risk, dividend distribution, and revenue quality (Hirshleifer et al. 2013). Some studies have even argued that regardless of institutions and systems, national culture plays a vital role in innovation activities among firms around the world. Assumption of risk, dividend distribution, revenue quality, and firm innovation are highly correlated with firm performance (Chen et al., 2017; Chen et al., 2015; Chui et al., 2016)

*Relationship between power distance and firm performance.* National culture can influence firm performance. Existing studies have primarily investigated related situation among firms from three perspectives—power distance, individualism versus collectivism, and uncertainty avoidance—where these cultural dimensions also profoundly affect firm structure as well as the methods of thinking and decision-making among the management of firms. Farooq et al. (2020) revealed that the management of firms with a high power distance index are more inclined toward debt financing. Earlier, Haq et al. (2018) had also reached the same conclusion. Meanwhile, scholars such as Umer (2014) argued that firms with more equity perform better.

In summary, the management’s possible inclination toward debt financing squeezes the room for equity financing in firms, possibly causing a decline in firm performance. Additionally, the current study derives hypotheses by starting from the conceptual understanding of power distance. Power distance refers to the range of acceptance of power inequality in an organization by society or individuals, where the greater the power distance index, the more indifferent are the members of the organization toward power inequality, and the more severe the tyranny of power. Conversely, members of the organization react more radically and the cultural environment tends to become more democratic (Moore, 2001). In a cultural atmosphere with a high power distance index, there is more insensitivity toward unreasonable distribution of power while organizational management becomes more gravitated toward a centralized structure. Under such a structure, major cash flow, investment, and financing decisions are made and communicated from top to bottom by the parent

company or the management of the firm, which can easily result in poor decisions due to errors and asymmetry in the information communication process, and eventually lead to lower returns on investment and operations, thereby affecting the firm’s performance. Hence, this study proposes the following hypothesis:

**H2-1:** With other conditions remaining unchanged, power distance index has a negative correlation with firm performance, where firms with a higher power distance index demonstrate poorer performance.

*Relationship between individualism and firm performance.* Individualism and collectivism are vital issues in national culture as these dimensions measure whether society, in general, is more concerned with individual or collective interests. In a cultural atmosphere with individualistic tendencies, people are more concerned with how to differentiate themselves from others, demonstrate overconfidence and self-attribution bias, and focus more on individual interests. In a cultural atmosphere with collectivist tendencies, people attach greater importance to collective interests, reflected in firm in-group relationships and organizational belonging (Hofstede, 2001). As mentioned by Farooq et al. (2020), individualism tends to cause overconfidence among the management in their own capabilities. With more forms of financing solutions, firms assume significant costs arising from information asymmetry, which, in turn, leads to higher financing costs and forces firms to undertake more debt financing (Haq et al., 2018). Such a tendency in financing decisions hinders firms’ financial performance and operational efficiency (Umer, 2014). Conversely, Chui et al. (2010) argued that the management of a firm in a culture with individualistic tendencies are fully confident in their professional capabilities and will strive to increase the wealth and value of the firm, thereby improving the performance of the firm in the future. We employ Tobin’s Q, rather than traditional financial performance indicators, to measure firm performance. With this indicator, firm value can reflect the greatest extent the level of firm performance. This study therefore proposes the following hypothesis:

**H2-2:** With other conditions remaining unchanged, individualism has a positive correlation with firm performance, where firms perform better in a national culture with greater individualistic tendencies.

*Relationship between uncertainty avoidance and firm performance.* Uncertainty avoidance refers to society’s behavior to guard against future uncertainties. In a culture with higher uncertainty avoidance, more regulations will be established to prevent deviant thoughts and actions. Hofstede (2001) further noted that under the same circumstances, people with low uncertainty avoidance usually demonstrate less urgency, whereas those with high uncertainty avoidance feel more anxious and tend to take immediate actions to minimize the likelihood of uncertainty. In a culture that avoids a high degree of uncertainty, individuals often feel uneasy and reluctant while facing scenarios that change the status quo and create uncertainty. As a result, they tend to react to such scenarios with trepidation and a great deal of caution and skepticism. In a cultural atmosphere with high uncertainty avoidance, the management of firms are more inclined toward equity financing rather than debt financing. Since the former incurs higher costs than the latter, firms will demonstrate a decline in financial performance when the cost of equity rises.

In summary, this study argues that the higher the degree of uncertainty avoidance, the lower the level of firm innovation, thereby affecting firm performance. Hence, this study proposes the following hypothesis:

**H2-3:** With other conditions remaining unchanged, uncertainty avoidance has a negative correlation with firm

performance, where the higher the degree of uncertainty avoidance, the poorer the firm performance.

**Impact of national culture on the relationship between CSR and firm performance.** As national culture and CSR become increasingly important by the day, the relationship between the two has gained growing attention from the academia over the years. Thanetsunthorn (2015), who began investigating the effect of cross-regional culture on CSR since 2015, found that national cultures that pay less attention to social issues related to employees, communities, and the environment, and are characterized by a high power distance index, individualism, and masculinity, social responsibility, stimulated by uncertainty avoidance, is generally fulfilled passively. In contrast, Gallen and Peraita (2018), who investigated 44 countries and regions from the perspective of CSR disclosure, discovered that CSR disclosure has a negative relationship with power distance and masculinity, but a positive relationship with indulgence. Having conducted analyses from the perspectives of CSR fulfillment and disclosure, the aforementioned two studies have reached similar conclusions and complement each other.

Some studies adopt the concept of national culture to investigate whether it can directly influence firm performance. Beckmann et al. (2008) argued that in societies with individualistic tendencies, investors are more likely to be overconfident in their ability to obtain and analyze information, and reduce herd behavior, as evidenced by higher momentum profits (Chui et al. 2010) and less stock price volatility (Eun et al. 2015). Based on analyses in the aforementioned studies, coupled with predictions from the over-investment theory, stocks exhibit a stronger momentum of asset growth premium in national cultures with severe individualistic tendencies and low uncertainty avoidance, which may lead to overestimation of firm value and performance.

In academia, there is another argument that national culture influences other aspects of firms, and thus causes differences in firm performance. Chen et al. (2015, 2017) and Chui et al. (2016), who carried out rigorous empirical analyses in a series of studies, suggested that in a cultural environment with individualistic tendencies or low uncertainty avoidance, firms demonstrate a strong tendency toward overinvestment as they have less cash holdings and engage more in capital and innovation investments, thus leading to better firm performance. In summary, this study proposes that the three cultural dimensions above have a

moderating effect on the relationship between CSR and firm performance. Hence, the following three hypotheses are proposed:

**H3-1:** With other conditions remaining unchanged, power distance index has an enhancing moderating effect on the negative relationship between CSR and firm performance, where the higher the power distance index, the stronger the negative impact of CSR on firm performance.

**H3-2:** With other conditions remaining unchanged, uncertainty avoidance has an enhancing moderating effect on the negative relationship between CSR and firm performance, where the higher the degree of uncertainty avoidance, the stronger the negative impact of CSR on firm performance.

**H3-3:** With other conditions remaining unchanged, individualistic tendencies have a weakening moderating effect on the negative relationship between CSR and firm performance, where the stronger the individualistic tendencies, the weaker the negative impact of CSR on firm performance.

**Data and model**

**Sample selection and data sources.** This study adopts both theoretical and empirical methods in parallel. Samples are selected from listed companies in multiple regions between 2011 and 2020, comprising 34,333 observational number in 15 countries—China, Singapore, Hong Kong, the U.S., Japan, India, France, South Korea, Taiwan, Germany, the U.K., Canada, Brazil, Australia, and Russia. Sample data from research institutions, educational institutions, other types of organizations, and financial institutions are excluded. Data are sourced from Hofstede’s survey results, Thomson Reuters Data Stream, and the World Development Index. The definition of all the variables is listed in Table 1.

**Definition of variables**

*Independent variable: ESG.* The concept of environmental, social and governance (ESG), better known to the public as “responsible investment,” arises from the negative effects of rapid economic development. However, ESG is not limited to “responsible investment” as its comprehensive score measures three aspects, namely the environmental, social, and governance aspects, which not only concern social responsibility performance, but also focus on the non-financial performance of firms and corporate evaluation standards. The environmental aspect of ESG includes

**Table 1 Variables used in the study.**

Type of variable	Name of variable	Symbol	Description
Dependent variable	Firm performance	TobinQ	(Market value of a firm + total liabilities)/total assets
Independent variable	CSR	ESG	ESG score is a comprehensive score obtained from three aspects—environmental, social, and governance
Moderating variable	National culture		
	Power distance	PD	Relevant data are sourced from Hofstede’s national culture dimension scores
	Individualism	ldv	Relevant data are sourced from Hofstede’s national culture dimension scores
	Uncertainty avoidance	UA	Relevant data are sourced from Hofstede’s national culture dimension scores
Control variable	R&D intensity	RD	R&D investment/sales revenue
	Debt-to-asset ratio	DA	Total liabilities/total assets
	Firm growth	Growth	Net sales growth
	Debt-to-equity ratio	DE	Total liabilities/owner’s equity
	Firm size	LnMV	Net profit/total assets
	Accounts receivable turnover	Receivable	Net credit sales/average accounts receivable × 100%
	Total GDP	GDP	Total GDP of each country
	GDP growth	GDPgrowth	GDP growth of each country
	Stock market development index	MVGDP	Total market value/total GDP

carbon emissions, waste pollution policies, energy use policies, and so on. The social aspect covers employee management, targeted poverty alleviation, public welfare and charities, and so on. The governance aspect comprises corporate governance, corruption and bribery policies, investor relations, and so on. CSR performance and the quality of social responsibility fulfillment can be determined in a fairer manner using ESG ratings. Given that this study involves listed companies from 15 different countries, only ESG ratings can be used as a unified measurement standard to quantify CSR performance among firms all over the world at present. Hence, comprehensive ESG score is incorporated as an independent variable to reduce errors arising from different measurement standards.

**Dependent variable: firm performance (Tobin's Q).** Tobin's Q is chosen to measure firm performance. Tobin's Q originated from a study by the well-known scholar James Tobin, who suggested that a firm's Tobin's Q value could effectively guide investment decisions. Thereafter, numerous scholars (Chung et al. 2003; Lin et al. 2006; Bosworth and Rogers, 2001) have proved that Tobin's Q can reflect firm value to a certain extent.

This study posits that Tobin's Q is suitable for this empirical research. Compared with other indicators used for measuring firm performance, Tobin's Q is not prone to accounting manipulation and can reflect the long-term performance and expected future cash flows of firms better. Unfortunately, return on asset (ROA), return on equity (ROE), or any other accounting profits are unable to fully represent the true performance of firms due to two reasons: (1) ROA, ROE, and accounting profits can only reflect the current or past status of firms. (2) As long as book value is involved, there is always a likelihood of earnings management or financial fraud because such data are not very reliable. In this study, variables, including CSR and national culture, are associated with long-term impact, rather than short-term effect; thus, long-term performance is needed to reflect the real situation. Hence, when analyzing problems from the perspectives of CSR and national culture, more attention should be given to expected values that represent the future situation.

This study calculates Tobin's Q using the following formula: (Firm value + book value of total liabilities)/book value of total assets.

**Control variables.** In this study, the regression process comprises some firm- and country-level control variables that are mainly selected based on firm size and capital structure. This study references domestic and foreign literature associated with the relationship between firm performance and social responsibility, and obtains data regarding 34,333 observational number in 15 countries from the Thomson Reuters Eikon database. By primarily drawing on studies that feature firm performance as the dependent variable, data for variables such as net sales growth, debt-to-asset ratio, firm size, and debt-to-equity ratio are extracted. Additionally, firms with abnormal or missing data are excluded to reduce errors.

To reduce the effects of country-level macro factors, some country-level control variables are incorporated into this study. Hsu et al. (2014) proposed a new concept known as stock market development, which is regarded as a positive factor influencing firm innovation, while innovation influences firm performance to a certain extent. With a view to effectively quantifying this abstract concept, this study introduces the stock market development index, proposed by La Porta et al. (2006), as a control variable. This index is calculated by dividing the market value of firms by total gross domestic product (GDP). Furthermore, considering that a country's macroeconomic development may influence its microeconomic development the

logarithm of each country's total GDP and each country's GDP growth are added as reference variables. All the variables are compiled and presented in Table 1.

**Construction of research model**

**Impact of CSR on firm performance.** To construct Model I, Tobin's Q and ESG are selected as the dependent and independent variable, respectively. Firm size, net sales growth, debt-to-equity ratio, debt-to-assets ratio, accounts receivable turnover, R&D intensity, total GDP, GDP growth, and stock market development index are added as control variables. The model, expressed by Eq. (1), is as follows:

$$TobinQ_{i,t} = \alpha_0 + \alpha_1 ESG_{i,t-1} + \alpha_2 RD_{i,t} + \alpha_3 DE_{i,t} + \alpha_4 DA_{i,t} + \alpha_5 LnMV_{i,t} + \alpha_6 Growth_{i,t} + \alpha_7 Receivable_{i,t} + \alpha_8 LnGDP_{i,t} + \alpha_9 GDPGrowth_{i,t} + \alpha_{10} MVGDP_{i,t} + \epsilon_{i,t}, \tag{1}$$

where  $TobinQ_{i,t}$  is the performance of the  $i$ -th firm in the  $t$ -th period and  $ESG_{i,t-1}$  is the comprehensive ESG score of the  $i$ -th firm in the  $(t-1)$ th period, in which the lag effect is present.  $RD_{i,t}$ ,  $DE_{i,t}$ ,  $DA_{i,t}$ ,  $LnMV_{i,t}$ ,  $Growth_{i,t}$ ,  $LnGDP_{i,t}$ ,  $GDPGrowth_{i,t}$ ,  $MVGDP_{i,t}$  and  $Receivable_{i,t}$  are the control variables.

**Effect of national culture on CSR.** To construct Model II, Tobin's Q and the three dimensions of national culture are selected as dependent and independent variables, respectively. Firm size, net sales growth, debt-to-equity ratio, debt-to-asset ratio, accounts receivable turnover, R&D intensity, total GDP, GDP growth, and stock market development index are added as control variables. This model, expressed by Eq. (2), is as follows:

$$TobinQ_{i,t} = \beta_0 + \beta_1 Culture_{i,j} + \beta_2 RD_{i,t} + \beta_3 DE_{i,t} + \beta_4 DA_{i,t} + \beta_5 LnMV_{i,t} + \beta_6 Growth_{i,t} + \beta_7 Receivable_{i,t} + \beta_8 LnGDP_{i,t} + \beta_9 GDPGrowth_{i,t} + \beta_{10} MVGDP_{i,t} + \epsilon_{i,t}, \tag{2}$$

where  $TobinQ_{i,t}$  is the performance of the  $i$ -th firm in the  $t$ -th period and  $Culture_{i,j}$  is the score of the  $j$ -th dimension of national culture for the  $i$ -th firm.  $RD_{i,t}$ ,  $DE_{i,t}$ ,  $DA_{i,t}$ ,  $LnMV_{i,t}$ ,  $Growth_{i,t}$ ,  $LnGDP_{i,t}$ ,  $GDPGrowth_{i,t}$ ,  $MVGDP_{i,t}$  and  $Receivable_{i,t}$  are the control variables.

**Impact of CSR on firm performance in the presence of national culture differences.** To construct Model III, Tobin's Q, ESG, and the three dimensions of national culture are selected as dependent, independent, and moderating variables, respectively. The interaction terms between the three dimensions of national culture and ESG score are also incorporated. Furthermore, firm size, net sales growth, debt-to-equity ratio, debt-to-asset ratio, accounts receivable turnover, R&D intensity, total GDP, GDP growth, and stock market development index are added as control variables. This model, expressed by Eq. (3), is as follows:

$$TobinQ_{i,t} = \mu_0 + \mu_1 ESG_{i,t-1} + \mu_2 Culture_{i,j} + \mu_3 Culture_{i,j}^* ESG_{i,t-1} + \mu_4 RD_{i,t} + \mu_5 DE_{i,t} + \mu_6 DA_{i,t} + \mu_7 LnMV_{i,t} + \mu_8 Growth_{i,t} + \mu_9 Receivable_{i,t} + \mu_{10} LnGDP_{i,t} + \mu_{11} GDPGrowth_{i,t} + \mu_{12} MVGDP_{i,t} + \epsilon_{i,t}, \tag{3}$$

where  $TobinQ_{i,t}$  is the performance of the  $i$ -th firm in the  $t$ -th period and  $ESG_{i,t-1}$  is the comprehensive ESG score of the  $i$ -th firm in the  $(t-1)$ th period, in which the lag effect is present.  $Culture_{i,j}$  is the score of the  $j$ -th dimension of national culture for the  $i$ -th firm.  $RD_{i,t}$ ,  $DE_{i,t}$ ,  $DA_{i,t}$ ,  $LnMV_{i,t}$ ,  $Growth_{i,t}$ ,  $LnGDP_{i,t}$ ,  $GDPGrowth_{i,t}$ ,  $MVGDP_{i,t}$  and  $Receivable_{i,t}$  are the control variables.

**Empirical results**

**Descriptive statistics.** The data cover 34,333 observational number of different countries. The results of descriptive statistics

**Table 2 Descriptive statistics of variables.**

Variable	Obs	Mean	Std. dev.	Min	Max
TobinQ	226,386	5.9841	28.0828	0.0940	249.9362
ESG	29,956	39.7224	19.6477	0.3889	93.4037
PD	343,330	57.2501	17.2386	35	93
UA	343,330	52.4522	22.0294	8	95
IDV	343,330	54.0213	29.3864	17	91
RD	97,312	1.9724	10.9579	0.0001	92.7972
D/E	217,763	0.6606	1.8121	-6.4865	11.0446
D/A	206,546	0.7362	2.8187	0.0003	24.2692
LnMV	269,603	17.7967	3.2487	-13.1224	28.4340
Growth	220,667	0.5261	3.0321	-0.9912	26.5768
Receivable	221,624	0.2740	0.5772	0.0020	4.9509
LnGDP	291,969	29.0579	1.1671	26.2388	30.6960
GDPGrow	291,969	3.4834	2.4728	-3.5458	9.5508
MV/GDP	268,448	143.7833	220.1536	18.7412	1339.6450

for all the variables are reported in Table 2. Owing to the presence of extreme values, winsorization is conducted at the 1% level using the Stata 15.1 software. To account for possible lag effect in the impact arising from CSR fulfillment, lag treatment on the comprehensive ESG score for CSR was performed. Based on the results presented in Table 2, Tobin's Q, which represents firm performance, exhibits a minimum, maximum, and mean value of 0.0940, 249.9362, and 5.9841, respectively. This indicates that firm performance may be generally better among all the samples in this study; however, this finding may be because the mean value has been raised by individual outliers. Therefore, this study calculates the median value for this variable, which is 1.051925, indicating a normal level of firm performance. Meanwhile, the CSR indicator (ESG) exhibits a minimum, maximum, and mean value of 0.3889, 93.4037, and 39.7224, respectively, all of which are out of 100 points. This indicates that the sample firms have yet to attach great importance to the practice of CSR as they demonstrate a relatively low level of CSR fulfillment. As far as the national culture variables are concerned, power distance records a mean value of 57.2501, indicating that power distance among sample firms lies in the middle level. Uncertainty avoidance records a mean value of 52.4522 and a median value of 46, while its maximum and minimum values are 8 and 95, respectively, demonstrating that the uncertainty avoidance scores among sample firms are not sufficiently prominent. In contrast, individualism records a mean and median value of 54.0213 and 48, respectively, reflecting little difference in the score of individualistic tendencies among various countries.

**Correlation analysis.** As presented in Table 3, correlation analysis reveals strong correlations between variables, where CSR and the three dimensions of national culture are correlated with most variables. However, the coefficients of correlation between variables are mostly less than 0.5, indicating a low possibility of high correlation.

Furthermore, this study conducts testing using variance inflation factor (VIF). As shown in Table 4, the values of VIF for all the variables are low and less than 10. This indicates a low possibility of multicollinearity interfering in the regression models, which further enhances the reliability of the empirical results.

**Analysis of research results**

*Impact of CSR on firm performance.* The regression results for the impact of CSR on firm performance based on Model I are presented in Table 5. The coefficient of CSR is -0.0096, which is significant at the 1% level, indicating that CSR fulfillment has a

**Table 3 Correlation coefficient matrix.**

	TobinQ	ESG	PD	UA	Idv	RD	D/E	D/A	LnMV	Growth	Receivable	LnGDP	GDP growth	MV/GDP
TobinQ	1.0000													
ESG	-0.076***	1.0000												
PD	-0.134***	0.016***	1.0000											
UA	-0.066***	0.123***	-0.178***	1.0000										
Idv	0.162***	-0.015***	-0.803***	-0.073***	1.0000									
RD	0.138***	-0.117***	-0.209***	-0.050***	0.235***	1.0000								
D/E	-0.090***	0.025***	0.060***	0.025***	-0.044***	-0.050***	1.0000							
D/A	0.586***	-0.024***	-0.054***	-0.105***	0.095***	0.057***	-0.085***	1.0000						
LnMV	-0.121***	0.444***	0.219***	0.077***	-0.311***	-0.169***	0.089***	-0.168***	1.0000					
Growth	0.000	-0.004	0.000	-0.002	0.002	-0.001	0.00100	-0.0010	0.0010	1.0000				
Receivable	0.006**	-0.011*	-0.009**	-0.004*	0.014***	0.150***	0.0000	0.010***	-0.021***	0.0000	1.0000			
LnGDP	0.100***	-0.086***	-0.188***	-0.051***	0.315***	-0.076***	-0.015***	0.119***	0.010***	0.0000	-0.015***	1.0000		
GDPgrowth	-0.041**	-0.132***	0.690***	-0.561***	-0.501***	-0.094***	0.030***	0.023***	0.094***	0.0000	-0.00400	0.080***	1.0000	
MV/GDP	-0.002	-0.013*	0.016	-0.237***	-0.133***	0.016***	-0.023***	-0.021***	0.024***	0.0000	-0.00300	-0.472***	-0.184***	1.0000

\*\*\*, \*\*, and \* denote that the correlation between two variables is significant at the 1%, 5%, and 10% levels, respectively.

**Table 4 Variance inflation factors of variables in this study.**

Variable	Idv	GDPgrowth	PD	UA	LnGDP	MVGDP	ESG	LnMV	Receivable	RD	DA	Growth	DE	Mean VIF
VIF	6.2300	5.7000	5.3600	4.9300	1.6900	1.4400	1.4400	1.4300	1.1900	1.1800	1.0300	1.0100	1.0100	2.59
1/VIF	0.1605	0.1756	0.1865	0.2029	0.5916	0.6921	0.6935	0.7006	0.8414	0.8503	0.9662	0.9858	0.9923	-

**Table 5 Regression results for the moderating effects of national culture on the impact of CSR on firm performance.**

Variable	Firm performance (Tobin's Q)						
	Model I	Model II	Model II	Model II	Model III	Model III	Model III
cons	-15.0993*** (1.6171)	-3.5802 (2.7254)	3.7649 (3.4326)	1.7572 (2.7467)	-11.3218*** (1.7478)	-9.1120*** (1.9031)	-11.2836*** (1.7238)
ESG	-0.0096*** (0.0012)	-	-	-	-0.0041*** (0.0012)	-0.0044*** (0.0011)	-0.0047*** (0.0011)
National culture	PD	-	-0.1237*** (0.0073)	-	-	-0.0244*** (0.0046)	-
	UA	-	-	-0.0223*** (0.0054)	-	-	-0.0176*** (0.0038)
	Idv	-	-	-	0.0722*** (0.0039)	-	0.0193 (0.0026)
PD*ESG	-	-	-	-	-0.0001*** (0.00002)	-	-
UA*ESG	-	-	-	-	-	-0.0000 (0.0000)	-
Idv*ESG	-	-	-	-	-	-	-0.0000 (0.0000)
RD	-0.0350*** (0.0053)	0.0678*** (0.0067)	0.0754*** (0.0067)	0.0648*** (0.0067)	0.0218*** (0.0069)	0.0226*** (0.0069)	0.0210*** (0.0069)
D/E	-0.0052 (0.0087)	-0.0983*** (0.0222)	-0.1038*** (0.0223)	-0.0956*** (0.0222)	-0.0013 (0.0073)	-0.0016 (0.0073)	-0.0013 (0.0073)
D/A	0.0500*** (0.0141)	0.5310*** (0.0137)	0.5216*** (0.0137)	0.5296*** (0.0136)	-0.0019 (0.0142)	-0.0079 (0.0142)	-0.0013 (0.0141)
LnMV	0.5967*** (0.0217)	0.7636*** (0.0308)	0.6568*** (0.0302)	0.7717*** (0.0307)	-0.6555*** (0.0198)	0.6488*** (0.0197)	0.6587*** (0.0198)
Growth	0.0234*** (0.0079)	0.0145 (0.0140)	0.0206 (0.0140)	0.0080 (0.0140)	0.0236*** (0.0068)	0.0234*** (0.0068)	0.0235*** (0.0068)
Receive	-0.3011** (0.1230)	0.1843* (0.1031)	0.1506 (0.1036)	0.1561 (0.1031)	-0.2422** (0.1104)	-0.2420** (0.1105)	-0.2268** (0.1103)
LnGDP	0.1427*** (0.0526)	-0.0865 (0.0933)	-0.4354*** (0.1098)	-0.6250*** (0.0960)	0.0072 (0.0564)	-0.0714 (0.0604)	-0.0812 (0.0586)
GDP Growth	0.0366*** (0.0132)	0.3036*** (0.0324)	-0.0429803 (0.0334)	0.2337*** (0.0301)	0.0274** (0.0116)	0.0045 (0.0116)	0.0300*** (0.0115)
MV /GDP	0.0023*** (0.0004)	0.0032*** (0.0006)	0.0026*** (0.0007)	0.0023*** (0.0006)	0.0020*** (0.0003)	0.0018*** (0.0003)	0.0018*** (0.0003)
R <sup>2</sup>	0.0324	0.0377	0.0347	0.0402	0.0390	0.0411	0.0481

\*\*\*, \*\*, and \* denote that the coefficient of the variable is significant at the 1%, 5%, and 10% levels, respectively. The figure in the parentheses denotes standard deviation.

significant negative relationship with firm performance. Hence, Hypothesis H1 is supported, that is, with everything else remaining unchanged, the higher the degree of CSR fulfillment, the poorer the firm's performance. The reason is CSR reduces a firm's cash holdings, which in turn brings more liabilities to the firm and sends out a negative signal to investors, thus leading to an increase in agency costs and eventually causing problems such as cash flow shortage and credit crisis. Consequently, these problems restrict the firm's subsequent operations and investments, which then affect its market value, thereby causing a decline in its Tobin's Q value, which represents firm performance. In addition, existing accounting standards in most countries stipulate that most of the expenditures incurred for the fulfillment of CSR are expensed, which has not substantially improved firm profits and performance. Furthermore, fulfilling social responsibility can help

build firm reputation or potential social capital. However, firms still have to operate for a period to realize their value and are unable to achieve cost recovery over the short run, since firms are unable to generate goodwill or intangible assets internally as far as accounting treatment is concerned. Hence, the higher the degree of CSR fulfillment, the lower the level of firm performance.

*Effect of national culture on firm performance.* The regression results for the effects of power distance index, uncertainty avoidance, and individualism on firm performance based on Model II are presented in Table 5. The coefficients of power distance index, uncertainty avoidance, and individualism are -0.1237, -0.0223, and 0.0722, respectively, all of which are significant at the 1% level. This indicates that with other conditions remaining unchanged, power distance index and uncertainty

avoidance have a negative relationship with firm performance; meanwhile, the stronger the individualistic tendencies, the better the firm performance, thereby demonstrating a positive relationship between them. Hence, H2-1, H2-2, and H2-3 are supported.

Having presented support for Hypothesis H2-1, the empirical results indicate that in a cultural atmosphere with a high power distance index, there is more insensitivity toward unreasonable distribution of power while organizational management becomes more gravitated toward a centralized structure, with instructions and commands communicated from top to bottom. Under a centralized structure, major cash flow, investment, and financing decisions are made and communicated from top to bottom by the parent company or the management. This can easily result in poor decisions due to errors and asymmetry in the information communication process and eventually lead to lower returns on investment and operations, thereby affecting growth in firm performance.

Having presented support for Hypothesis H2-2, the empirical results indicate that individualism enables the management of a firm to be confident in their own capabilities and strive to create more wealth and value for the firm, thereby improving firm performance. This is consistent with Farooq et al.'s (2020) empirical results. Furthermore, in the presence of individualistic tendencies, market investors may engage in overinvestment, while increased transaction frequency and volume results in a slight overestimation of firm value, thereby increasing the Tobin's Q value, which represents firm performance.

Having presented support for Hypothesis H2-3, the empirical results indicate that in a cultural atmosphere with high uncertainty avoidance, the management of firms are more inclined toward equity financing rather than debt financing. Since the former incurs higher costs than the latter, firms will demonstrate a decline in financial performance when the cost of equity rises. Moreover, in a cultural atmosphere with high uncertainty avoidance, risk avoidance forces investors to reduce stock transactions, and the market value of firms may drop due to liquidity, thus resulting in poor firm performance. Since the management of firms engage in risk avoidance, innovation efficiency also declines, which in turn leads to poorer firm performance due to deterioration in core competitiveness.

*Moderating effects of national culture.* The interaction terms between the three dimensions of national culture—power distance index, uncertainty avoidance, and individualistic tendencies—and ESG are added to Model III in Table 5. Based on the results, the interaction term (PD×ESG) has a significant relationship with firm performance, where its coefficient is  $-0.0001$  and significant at the 1% level. This indicates that power distance index has a moderating effect on the negative relationship between CSR and firm performance, where the higher the power distance index, the stronger the negative impact of CSR on firm performance; hence, H3-1 is supported. The results obtained using Model II indicate that the higher the power distance, the lower the firm performance. According to Model I, CSR fulfillment has a negative correlation with firm performance. Both models latently prove the presence of the moderating effect of power distance.

Based on the results obtained using Model III, in which uncertainty avoidance is added as a moderating variable, as shown in Table 5, the interaction term (UA × ESG) has no significant correlation with firm performance, demonstrating that uncertainty avoidance does not have a moderating effect on the relationship between CSR and firm performance; hence, H3-2 is not supported. A possible reason is that a cultural atmosphere with uncertainty avoidance has no significant impact on CSR fulfillment. A management team influenced by the culture of uncertainty avoidance is not sufficiently clear about whether to

fulfill social responsibility; thus, uncertainty avoidance is unable to produce a joint effect with CSR on firm performance.

The regression results obtained using Model III, whose moderating variable is individualism, is presented in Table 5. As can be observed, the interaction term between individualism and CSR fulfillment (Idv×ESG) is not significant, indicating that the moderating effect of individualism is not present in the relationship between CSR and firm performance; hence, H3-3 is not supported. A possible reason is that individualism is more inclined toward the self-interest of firms. With the intention of maximizing firm profits, firms pay a certain amount of costs and expenses to establish a good image of actively fulfilling CSR and try to gain more attention from the market, but without receiving substantial benefits in return, thereby leading to a decline in firm performance. Furthermore, the results of empirical analysis also indicate that individualism improves firm performance at the 1% significance level. The relationship between the two mutually offsets their effects on firm performance, causing the moderating effect of individualism to be insignificant.

## Conclusions

By analyzing the data using panel regression models, CSR fulfillment is found to have a significant negative relationship with firm performance, where the higher the degree of CSR fulfillment, the poorer the firm performance. At the same time, power distance index and uncertainty avoidance have a significant negative relationship with firm performance, where the higher the power distance index and the degree of uncertainty avoidance, the poorer the firm performance. In contrast, individualism has a significant positive relationship with firm performance, indicating that firms with greater individualistic tendencies perform better. Additionally, power distance index is able to enhance the negative relationship between CSR and firm performance, but both uncertainty avoidance and individualism have no moderating effect on this relationship.

In this study, Model I confirms that CSR has a significant negative relationship with firm performance. However, most existing studies have proven that there is either a significant positive or an inverted U-shaped relationship between CSR and firm performance. Such differences may be due to different measurement standards or scope of study. When investigating the relationship between CSR and firm performance, many types of indicators can be used to measure independent and dependent variables. Moreover, contrary to similar studies, the current study covers countries in five continents—Europe, Asia, North America, South America, and Australia—where the conclusions drawn are both representative and universal to a certain extent and are able to reflect the impact of CSR on firm performance at the present stage around the world. Hence, subsequent research should add robustness testing, use different indicators to measure independent variables or dependent variables, include more control variables, and expand the regions and scope of study, so that the conclusions derived herein can be more convincing and persuasive.

## Data availability

The datasets generated during and/or analysed during the current study are available from the corresponding author on reasonable request. The data are not publicly available due to them containing information that could compromise research participant privacy/consent.

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Conceptualization, H.-F.H. and T.-Y.Z.; methodology, H.-F.H.; software, H.-F.H.; validation, H.-F.H. and T.-Y.Z.; formal analysis, H.-F.H., T.-Y.Z., and J.W.; investigation, H.-F.H. and T.-Y.Z.; resources, T.-Y.Z.; data curation, J. W.; writing—original draft preparation, H.-F.H., T.-Y.Z., and J.W.; writing—review and editing, H.-F.H., T.-Y.Z., and J.W.; visualization, H.-F.H. and T.-Y.Z.; supervision, H.-F.H. and T.-Y.Z.; project administration, H.-F.H. and T.-Y.Z.; funding acquisition, H.-F.H. and T.-Y.Z.; All authors have read and agreed to the published version of the manuscript.

## Competing interests

The authors declare no conflict of interest.

## Ethical approval

This article does not contain any studies with human participants performed by any of the authors.

## Informed consent

This article does not contain any studies with human participants performed by any of the authors.

## Additional information

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