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Moderated mediation effects of corporate social responsibility performance on tax avoidance: evidence from China

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ABSTRACT

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Using data of publicly listed Chinese companies practicing corporate social responsibility (CSR) activities between 2009 and 2016, this study empirically examines whether CSR performance has a conditional indirect effect (or moderated mediation effect) on the level of corporate tax avoidance. We find that corporate profitability serves as a full mediator in the association between CSR performance and corporate tax avoidance. CSR performance reduces corporate profitability, and corporate profitability in turn increases the level of corporate tax avoidance. In other words, CSR performance first reduces corporate profitability, and therefore results in lower corporate tax avoidance.

In this article



ce does not significantly moderate the effect of corporate
ax avoidance. Therefore. our results suggest that CSR

performance has an indirect, but not a conditional, effect on the level of corporate tax avoidance.



KEYWORDS: Corporate social responsibility, tax avoidance, profitability, moderated mediation effect. JEL: M40, M48, M14, H26

1. Introduction

Tax avoidance activities are often witnessed in the real world. Therefore, research on tax avoidance frequently attracts attention from scholars in a variety of academic fields. Hanlon and Heitzman (2010) conduct a comprehensive review of both the theoretical and empirical literature on tax avoidance. The researchers broadly define tax avoidance as legally or illegally reducing explicit taxes. In addition, they claim that tax avoidance represents a continuum of tax-planning strategies. The legal reduction of explicit tax is at one end of the continuum, whereas tax noncompliance, tax evasion, tax aggressiveness, and tax sheltering are situated closer to the other end.

A variety of determinants of the decision to engage in tax avoidance engagement are discussed in the literature. Public finance economists (e.g., Slemrod and Yitzhaki 2002) suggest that tax rates, the probability of detection and punishment, penalties, and risk aversion are fundamental factors influencing the decision to engage in tax avoidance or noncompliance. One branch of the literature (e.g., Gupta and Newberry 1997; Wilson 2009; Kubick et al. 2015) adds a few firm-level characteristics such as the firm size, leverage, and profitability as crucial determinants of the decision to engage in corporate tax avoidance. Since the early 2010s, a group of researchers have begun to hypothesize that corporate social responsibility (CSR) activities are associated with the decision to engage in corporate tax avoidance (e.g., Huseynov and Klamm 2012; Hoi, Wu, and Zhang 2013; Lanis and Richardson 2012, 2015). According to corporate culture theory proposed by Kreps (1990), the causal effect of CSR on the level of corporate tax avoidance is argued to be negative. Engaging in CSR activities is normally considered an aspect of corporate culture involving a shared belief within a corporation about a correct course of action. However, aggressive tax avoidance activity is commonly regarded as irresponsible (e.g., Landolf 2006; Hasseldine and Morris 2013). Therefore, CSR activities



performance.

The negative association between CSR and corporate tax avoidance may not be always true if the strategic risk management effect of CSR activities is considered. According to strategic risk management theory proposed in the literature (e.g., Godfrey 2005; Godfrey, Merrill, and Hansen 2009), we can argue that a corporation can enhance its positive reputation by increasing the frequency of engaging in responsible CSR activities. Such an enhanced reputation can provide the corporation with a certain degree of insurance protection against a variety of sanctions associated with engaging in aggressive tax avoidance. Consequently, it is likely that a corporation with strong CSR activity performance may expect negligible sanction costs associated with aggressive tax avoidance practices. Therefore, the level of corporate tax avoidance can be positively or at least non-negatively associated with CSR activity performance.

Because of the coexistence of corporate culture and strategic risk management effects, the causal effect of CSR activity performance on the level of corporate tax avoidance is ambiguous. The causal effect is expected to be negative if the corporate culture effect dominates the strategic risk management effect, and vice versa. Empirical evidence from recent studies employing a variety of data mainly shows that the level of corporate tax avoidance is negatively associated with responsible CSR activities. However, such empirical evidence is mainly from developed countries in the West. Therefore, finding empirical evidence from developing economies, particularly those in the East, is essential. In the present study, we choose China, the largest emerging economy in the East, as the study sample because China has witnessed significant growth in the frequency of corporate tax avoidance activities and CSR activities in recent years. Using a sample of publicly listed companies in China, our estimation results show that CSR activity performance has a negative and significant effect on the level of corporate tax avoidance.

In contrast to previous empirical studies that focus only on the direct effect of CSR activity performance on the corporate tax avoidance level, this study investigates whether indirect effects also occur. We propose that CSR activity performance indirectly affects the level of corporate tax avoidance because CSR performance initially affects corporate profitability (mediator), and corporate profitability (mediator) in turn affects

claims that CSR activities can provide positive feedback to corporate business opportunities, thereby enhancing corporate profitability (e.g., Tsoutsoura 2004; Scholtens 2008; Callan and Thomas 2009; Aras and Crowther 2009; Schadewitz and Niskala 2010; Garcia-Castro, Ariño, and Canela 2010; Gras-Gil, Manzano, and Fernández 2016). However, another group of studies argue that CSR activities do not enhance corporate profitability because they increase operating costs, lower the market competitiveness of products, and make corporations to exert less effort in profit-seeking activities (e.g., Cardebat and Sirven 2010; Shen and Chang 2008). Based on these two opposite effects, we hypothesize that CSR performance negatively influences corporate profitability if a variety of negative effects dominate the positive feedback effect, and vice versa. Furthermore, prior research (e.g., Frank, Lynch, and Rego 2009; Wilson 2009; Kubick et al. 2015) finds that the effect of corporate profitability (mediator) on the level of corporate tax avoidance is positive; therefore, we hypothesize that corporate profitability positively affects the level of corporate tax avoidance.

In addition to the indirect effect (mediating effect) of CSR activities on the decision to engage in corporate tax avoidance, this study assumes the existence of a conditional indirect effect (or moderated mediation effect) of CSR activities on the level of corporate tax avoidance (Figure 1). We assume that the strength of the mediating effect (or indirect effect) may be conditional on the value of CSR activity performance (moderator). To explain this assumption, we argue that a corporation with a higher CSR performance score (value) is likely to have a strong corporate culture. Therefore, as corporate profitability increases, the level of tax avoidance may decrease, or at least would not increase significantly. However, we argue that a corporation with high CSR performance has obtained a high degree of insurance protection against the risk of sanctions for practicing tax avoidance. Consequently, a corporation with high CSR performance may raise its level of tax avoidance as corporate profitability increases. Therefore, we hypothesize that the moderating effect of CSR performance on the mediating effect may be nonsignificant if the corporate culture and risk management effects offset each other.

Figure 1. Conceptual moderated mediation model.



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In this article



hypotheses, we employ the following models. First, the simple test whether corporate profitability is a mediator in the

association between corporate tax avoidance and CSR performance. Second, the moderated mediation effect model is used to verify whether CSR performance has a conditional indirect effect on the level of corporate tax avoidance. Our estimation results show that corporate profitability fully mediates the association between CSR performance and corporate tax avoidance. In other words, the reason for the decline in corporate tax avoidance is that CSR performance reduces corporate profitability. Moreover, our results reveal that the moderating effect of CSR performance on the mediating effect is statistically nonsignificant. According to these results, we conclude that CSR performance has an indirect effect, but not a conditional indirect effect, on the level of corporate tax avoidance.

This study contributes to the empirical literature by being the first to determine the moderated mediation effect of CSR on tax avoidance; therefore, we employed the moderated mediation effect model, which is a structural equation modeling (SEM) model comprising two simultaneous equations, namely a profitability equation and tax avoidance equation. In other words, two regressions are simultaneously estimated in this model. The remainder of this paper is organized as follows. [Section 2](#) reviews related studies, and [Section 3](#) discusses econometric strategies. [Section 4](#) describes the variable selection process. Data and samples are described in [Section 5](#), and the estimation results are presented in [Section 6](#). [Section 7](#) checks the robustness. Concluding remarks are put in the last section.

2. Literature review

In contrast to other firm-level determinants of the decision to engage in corporate tax avoidance that are addressed in previous studies, CSR activities were not considered as such a determinant until the early 2010s. Huseynov and Klamm (2012) and Lanis and Richardson (2012) are considered the first to investigate the effect of CSR on corporate tax avoidance. To test the effects of a firm's negative and positive social actions on tax avoidance, Huseynov and Klamm (2012) investigate American firms using auditor-provided tax services. The researchers use the following three measures of CSR obtained from the Kinder, Lydenberg, and Domini (KLD) database: corporate governance,

small sample of Australian firms during the 2008 and 2009 fiscal years to estimate the association between CSR performance and the likelihood of tax avoidance. They rely on company self-reported CSR disclosure data. They find a negative association between CSR disclosure levels and effective tax rates (ETRs). Based on these findings, the researchers assert that CSR activities are related to decisions to engage in tax avoidance. However, they also admit that effective tax rates do not accurately reflect aggressive avoidance practices and that CSR disclosure does not necessarily reflect CSR activities.

Lanis and Richardson (2015) extend their study of Australian firms conducted in 2012 to further investigate the effect of CSR performance on the likelihood of corporate tax avoidance, this time among American firms. Instead of using the proxy measures of tax avoidance used in previous studies, they use a direct measure of tax avoidance based on tax disputes. Employing a matched sample of 434 American companies during 2003–2009, their logit estimation results reveal that the higher the level of CSR performance, the lower the likelihood of tax avoidance. Hoi, Wu, and Zhang (2013) further examine the association between irresponsible CSR activities and aggressive tax avoidance.¹ The researchers employ a large sample of American firms during the period 2003–2009. Their results show that only irresponsible CSR activities are significantly positively associated with tax avoidance, whereas responsible CSR activities are not significantly related to tax avoidance. Watson (2015) extends the empirical model of Hoi, Wu, and Zhang (2013) by adding an interaction term, namely CSR performance multiplied by the firm profit dummy variable, as a covariate. The author uses the firm profit dummy variable to divide the sample into high-profit and low-profit firms.² Evidence indicates that in low-profit firms, CSR is positively associated with tax avoidance; however, this effect is diminished in high-profit firms.

In summary, previous studies (e.g., Lanis and Richardson 2015; Hoi, Wu, and Zhang 2013; Watson 2015) generally assume that CSR directly affects tax avoidance, and thus traditional OLS is commonly used to analyze this aspect. Some of these studies (e.g., Watson 2015) treat profitability as a covariate. However, we argue that profitability may serve as a mediator. In other words, CSR may indirectly affect tax avoidance through its effect on profitability. SEM is thus a more appropriate method to examine the mediation effect.

3.1. Traditional linear regression specification

The traditional linear regression specification for corporate tax avoidance in the tax literature considering CSR activities is expressed as follows:

$$btd_{it} = \alpha_1 + \alpha_2 X_{it} + \alpha_3 CSR_{it} + \epsilon_{it} \quad (1)$$

where a subscript it denotes the firm i in year t . X is a vector of firm-level variables influencing the level of corporate tax avoidance (btd). The CSR activity variable CSR is the independent variable of central interest. The coefficient of central interest α_3 measures the strength of the direct effect of CSR performance on the level of corporate tax avoidance.

3.2. Simple mediation effect model specification

We first hypothesize that corporate profitability serves as the only mediator in the association between CSR performance and corporate tax avoidance. Considering only the mediation effect of profitability, we then employed a SEM model to express the simple mediation effect model. This simple mediation effect model comprises of both profitability equation and tax avoidance equation. The simple mediation effect model is expressed as the following SEM model:

$$Profit = \beta_1 + \beta_2 CSR_{it} + \beta_3 Z_{it} + \phi_{it}, \quad (2)$$

$$btd_{it} = \alpha_1 + \alpha_2 X_{it} + \alpha_3' CSR_{it} + \gamma_1 Profit + \omega_{it}. \quad (3)$$

Equation (2) is the specification for the mediator, corporate profitability. Corporate profitability ($Prof$) is regressed on CSR performance as well as a vector of confounding variables (Z) influencing corporate profitability. Equation (3) is the extended specification for the level of corporate tax avoidance, and it simultaneously includes CSR

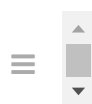


estimated direct effect of CSR performance on corporate tax avoidance is thus α^3 , and the estimated indirect effect (or mediating effect) of CSR performance on the level of corporate tax avoidance is $\beta^2\gamma^1$. Equations (2) and (3) are simultaneously estimated.

Corporate profitability can be confirmed as the mediator if the estimated coefficients α^3 , β^2 , and γ^1 in Equations (1-3), respectively, are statistically significant (Baron and Kenny 1986). Moreover, Baron and Kenny recommend that the statistical significance of the estimated mediating effect (or estimated indirect effect) of CSR on the level of corporate tax avoidance ($\beta^2\gamma^1$) can be assessed by the Sobel z-test (Sobel 1982), which is expressed as follows:

$$z = \frac{\beta^2 \times \gamma^1}{\sqrt{\gamma^1 s_{\beta^2}^2 + \beta^2 s_{\gamma^1}^2}} \quad (4)$$

where $s_{\beta^2}^2$ and $s_{\gamma^1}^2$ are the squared standard errors of β^2 and γ^1 , respectively. However, because the estimated mediating effect (or estimated indirect effect) is the product of two parameters, the sampling distribution of the Sobel z-test is not normal. The bootstrap test, a resampling strategy for estimation and hypothesis testing discussed in Preacher, Rucker, and Hayes (2007), can be used to solve this problem. The sampling distribution of such an indirect effect is estimated through bootstrapping by resampling for n times. For each resample, $\beta^2 + \gamma^1$ is computed. Subsequently, we obtain the sampling distribution of such an indirect effect by sorting the n bootstrap values of $\beta^2 + \gamma^1$ in ascending order. The lower bound of the $100(1-\alpha)\%$ confidence level for $\beta^2\gamma^1$ is defined as the $(\alpha/2)n$ th value in the sorted distribution, and the upper bound is defined as the $[1+(1-(\alpha/2))n]$ th value. If the confidence interval does not contain a zero, then CSR performance is considered to have a significant indirect effect (mediating effect) on the level of corporate tax avoidance.



In addition to serving as the independent variable in the corporate tax avoidance equation, CSR performance is hypothesized to function as a moderator of the mediating effect. We extend Equation (3) from the simple mediation effect model to the following equation representing the moderated mediation effect model:

$$btdit = \alpha_1 + \alpha_2 X_{it} + \alpha_3' CSR_{it} + (\gamma_2 + \gamma_3 CSR_{it}) Profit + v_{it} \quad (5)$$

Equation (5) differs from Equation (3) by including the cross term $CSR \times Prof$ as the regressor. The moderated mediation effect (or conditional indirect effect) of CSR on btd is quantified as $\beta^2(\gamma^2 + \gamma^3 CSR)$, which is conditional on the value of the moderator CSR. The SEM model for estimating the moderated mediation effects is expressed as follows:

$$Profit = \beta_1 + \beta_2 CSR_{it} + \beta_3 Z_{it} + \phi_{it}, btdit = \alpha_1 + \alpha_2 X_{it} + \alpha_3' CSR_{it} + (\gamma_2 + \gamma_3 CSR_{it}) Profit + v_{it}$$

If the effect of the interaction between CSR performance and corporate profitability is close to 0, then γ^3 should also be close to 0. Therefore, CSR performance has little influence on the mediating effect (or indirect effect). In this case, the conditional indirect effect of CSR performance on corporate tax avoidance decreases to $\beta^2 \gamma^2$ for all moderator (CSR performance) values. In other words, the effect of CSR performance on the level of corporate tax avoidance is indirect, but not conditionally indirect. By contrast, if γ^3 is not close to 0, CSR performance influences the mediating effect (or indirect effect). We can further use the bootstrap approach to test the statistical significance of the conditional indirect effect (or moderated mediation effect) of CSR performance on corporate tax avoidance.

4. Variable selection

In this article



- ▲ main variables. The level of corporate tax avoidance is the
- ▼ CSR performance is the independent variable of central interest

as well as the moderator of the mediating effect. Corporate profitability is the mediator in the association between corporate tax avoidance and CSR performance. We use various measures to capture the level of corporate tax avoidance because each measure has its own limitations (Hanlon and Heitzman 2010; Lisowsky, Robinson, and Schmidt 2013). Two adjusted book-tax difference measures are used to capture tax avoidance practices. These measures are the Khurana and Moser (2013) permanent book-tax difference (*pbtd*), and the Desai and Dharmapala (2006) discretionary book-tax difference (*ddbtd*). In the robustness check, we also use the long-run book effective tax rate (*ltr*) to capture consequences of tax avoidance practices. The overall score of CSR evaluated by a neutral organization serves as the proxy variable of CSR performance. In addition, we employ the ROA as the proxy variable for corporate profitability. We present detailed definitions of all variables in Appendix.

The equation for the level of corporate tax avoidance includes control variables such as firm size, leverage, fixed asset intensity (property, plant, and equipment), inventory density, a dummy variable indicating loss carried forward, and firm growth potential. Firm size (*size*) measured by the natural logarithm of total assets is expected to influence the level of corporate tax avoidance because a larger firm has a higher incentive and more power to engage in tax avoidance activities (Wilson 2009; Lanis and Richardson 2012). Because a corporation with a high debt ratio is under pressure to engage in aggressive tax avoidance to pay off its matured debt, we adopt firm leverage (*lev*), measured as a long-term debt divided by total assets as covariance (Hoi, Wu, and Zhang 2013 ; Kubick et al. 2015). Moreover, due to tax-deductible interest payments, leverage is associated with corporate tax avoidance (Gupta and Newberry 1997; Lanis and Richardson 2015). We expect that the fixed asset intensity variable (*ppe*), measured as fixed assets (property, plant, equipment) scaled by total assets, can influence the level of corporate tax avoidance because the accelerated depreciation charges related to fixed assets cause tax shield effects, thus reducing the tax burden on the firm (Lanis and Richardson 2012; Kubick et al. 2015; Hoi, Wu, and Zhang 2013; Gupta and Newberry 1997; Lanis and Richardson 2015). The inventory density variable (*inv*), measured as the inventory scaled by total assets, is expected to have an influence on the level of tax avoidance, suggesting that inventory-intensive firms are less able to engage in tax avoidance than are capital-intensive firms (Lanis and Richardson 2012, 2015). A firm's

the level of tax avoidance (Kubick et al. 2015; Watson 2015). Furthermore, sales revenue changes (*dsale*) are expected to influence the level of tax avoidance because the growth in future profitability increases the future tax burden and consequently increases the incentive for tax avoidance (Hoi, Wu, and Zhang 2013; Watson 2015). Absolute value of performance-adjusted abnormal accruals (*absda*) are related to tax avoidance (Frank, Lynch, and Rego 2009). Therefore, we use *absda* as a control variable in the regression models. Last, we include cash holdings (*cash*) to control for liquidity and other firm attributes that could potentially affect our tax avoidance measures, such as intangible assets (*intan*) and equity income in earnings (*eqinc*) (Hoi, Wu, and Zhang 2013).

In the equation for corporate profitability, we control two confounding variables: *size* and *lev*. The sign of the estimated effect of CSR performance on corporate profitability is expected to be ambiguous depending on whether the positive business feedback effect or negative operation cost effect dominates. Firm size is expected to have a positive effect on corporate profitability (Shen and Chang 2008). Moreover, a corporation can use long-term debt to finance investment and adjust fund flexibility. Therefore, debt ratio is considered to have a positive effect on corporate profitability (Tsoutsoura 2004).

5. Data source and sample

Our CSR performance data source is the official report of enterprise CSR activities released by the CSR research center at the Chinese Academy of Social Sciences (CASS-CSR). The research center designs overall evaluation systems of an enterprise's CSR activities. Such a development index refers to a group of CSR indices such as International Organization for Standardization 26,000, Global Reporting Initiative, Dow Jones Sustainability Index, Wealth Magazine CSR index, and Financial Times Stock Exchange 4. In addition, the design of such a development index considers China's current CSR situation.

The procedure for evaluating CSR performance scores is described as follows. (1) A company's four CSR items (responsibility management, market responsibility, social responsibility, and environmental responsibility) are scored. (2) The scores of the four items are weighted according to the appropriate weights³ and then summed to obtain

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original score is added to the score of the adjusted items⁵ to
ce score.⁶ The CSR performance score produces a range from

0 to 100.

Data of corporate profitability, tax avoidance level, firm size, debt ratio, fixed assets, inventory, loss deductible, changes in sales revenue, cash holdings, intangible assets, and equity income in earnings are obtained by the Taiwan Economic Journal. The sample enterprises in this study are publicly listed companies in the A-Shares market that engaged in CSR activities during the sample period of 2009–2016. Publicly listed companies that did not engage in any such activity during this period are excluded because some corporations that did engage in such activities receive a score of 0 for performance.⁷ To distinguish these two types of corporation from each other, we exclude the nonpracticing type. The total sample consists of 94 firms. Moreover, all continuous independent variables are winsorized at the 1st and 99th percentiles.

As shown in Table 1, the average *pbt* and *ddbtd* are 1.75% and 1.18%, respectively. Moreover, the average CSR score is 33.48, the highest is 91, and the lowest is 0. The average *ROA* is 5.48%. Table 2 presents the correlation matrix of the explanatory variables. As shown, the highest correlation coefficient between *CSR* and *size* is 0.63. The remaining correlation coefficients are around –0.58 to 0.01, all of which are acceptable when it comes to avoiding the problem of multi-collinearity.

Table 1. Descriptive statistics.

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Table 2. Correlations.

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6. Estimation results

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≡ Estimation results
▲
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The results of traditional tax avoidance models are summarized in [Table 3](#). We use *pbtd* and *ddbtd* as the proxy measures of tax avoidance, respectively. No matter we use *pbtd* or *ddbtd* as the dependent variables, the CSR performance score has a significant negative effect on the level of corporate tax avoidance. This result is consistent with the findings in most literature and suggests that the corporate culture effect of CSR activities still dominates the decisions of listed Chinese corporations to engage in tax avoidance. Moreover, the level of corporate tax avoidance is significantly and negatively associated with the inventory density, and the intangible assets, but positively associated with equity income in earnings.



Table 3. Linear regression model: dependent variable: tax avoidance.



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6.2. Moderated mediation effect

The first column of [Table 4](#) shows that the CSR performance score has a significant negative effect on the ROA, a proxy measure of corporate profitability. This finding suggests that a variety of negative effects of CSR activities dominate the positive feedback effect of CSR activities on corporate profitability, which is consistent with the findings in the literature (e.g., Aupperle, Carroll, and Hatfield 1985; Ullmann 1985; Becchetti, Ciciretti, and Hasan 2007; Shen and Chang 2008; Cardebat and Sirven 2010). Moreover, corporate profitability is positively associated with firm size, but negatively associated with leverage.

Table 4. Moderated mediation model: tax avoidance (*pbtd*).



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The second column of [Table 4](#) shows the estimation results of the corporate tax avoidance equation in the simple mediation effect model and *pbtd* is used as a proxy

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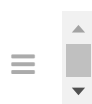
- ▲ The effect of the CSR performance score on the level of
- statistically nonsignificant when the mediator corporate
- ▼

profitability variable (ROA) is simultaneously included as the regressor. Moreover, the ROA variable significantly increases the level of corporate tax avoidance, thereby supporting the theoretical argument proposed in the literature (e.g., Frank, Lynch, and Rego 2009; Wilson 2009; Kubick et al. 2015).

Our findings match the following three conditions proposed in the literature (e.g. Baron and Kenny 1986; Edwards and Lambert 2007; Hayes 2013).⁸ First, the independent variable (CSR performance) has a significant effect on the dependent variable (level of tax avoidance) when the mediator is excluded. Second, the independent variable (CSR performance) has a significant effect on the mediator (corporate profitability). Third, the independent variable (CSR performance) has a nonsignificant effect on the dependent variable (level of tax avoidance) when the mediator is included. Therefore, corporate profitability (ROA) is a full mediator in the association between CSR performance and the level of corporate tax avoidance. In summary, our results reveal that CSR performance significantly reduces corporate profitability, and corporate profitability in turn significantly increases the level of corporate tax avoidance.

The third column of Table 4 shows the results of the equation of corporate tax avoidance in the moderated mediation effect model. The estimated coefficient of $CSR \times ROA$ is positive and statistically nonsignificant. This finding implies that the moderating effect of CSR performance on the mediating effect is positive, but nonsignificant.

We demonstrate the mediation and moderated mediation effect through the aforementioned Sobel z-test and bootstrap test. The results are shown in Table 5. Through the Sobel z-test, the estimated coefficient of the mediator is -0.01456 and is statistically significant at the 5% significance level. Moreover, through the bootstrap method, the estimated coefficient is -0.00945 and lies in the 95% bias-corrected confidence interval ($-0.0167, -0.0034$) obtained, suggesting statistical significance. Consequently, the results of both tests confirm that the mediating effect exists. Regarding the moderated mediation effect, the estimated coefficient is -0.00943 when the CSR score is low (i.e., mean minus standard deviation) and -0.00929 when the CSR score is high (i.e. mean plus standard deviation). However, according to the results in



moderating effect of CSR performance is not significant.

Table 5. Test results of mediation effect and moderated mediation effect: tax avoidance (*pbtd*).



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Table 6 presents the empirical results of using *ddbtd* as a proxy variable of tax avoidance. Likewise, the empirical result shows that ROA serves as a full mediator in the association between CSR performance and the level of corporate tax avoidance. The estimated coefficient of the interaction term between CSR and ROA is positive but statistically nonsignificant. Therefore, the CSR performance score does not moderate the mediating effect. This mediating effect is verified by a Sobel z-test and bootstrap test in Table 7. The test results obtained from a Sobel z-test and bootstrap method suggest that the CSR performance score has an indirect effect on corporate tax avoidance.

Table 6. Moderated mediation model: tax avoidance (*ddbtd*).



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Table 7. Test results of mediation effect and moderated mediation effect: tax avoidance (*ddbtd*).



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A summary of the results from the moderated mediation model reveals that CSR performance has an indirect effect but not a conditional indirect effect on the level of corporate tax avoidance.

7. Robustness checks

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- ▲ a series of additional tests to ensure the robustness of the
- ▼ include only the table of the empirical results of [Equations \(2\)](#)

and (3) in the manuscript.

7.1. Adoption alternative tax avoidance measurement



To verify our empirical results, we use an alternative tax avoidance proxy in our robustness check. Lower values of the effective tax rates suggest greater tax avoidance. Therefore, we use the 4-year average book effective tax rate to capture consequences of tax avoidance practices. In [Table 8](#), the CSR performance score has a significant positive effect on the level of corporate tax burden. In other words, CSR performance has a negative effect on tax avoidance. Using *ddbtd* as the proxy of tax avoidance, we derive the results summarized in [Table 8](#), showing that ROA still serves as a full mediator in the association between CSR performance and the level of corporate tax burden. The bootstrap test results suggest that the CSR performance score has an indirect effect on corporate tax burden.

Table 8. Robustness checks: tax avoidance (*letr*).



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7.2 Considering the endogenous issue

The decision of CSR activities is taken as exogenous in the empirical model. However, the decision of CSR activities is part of the set of policies established by a company. Thus, the endogenous nature of CSR should be considered. Therefore, we use the lag of CSR performance (CSR_{it-1}) as an instrument to circumvent the bias of endogeneity.

The empirical results in [Table 9](#) demonstrate that the coefficient of *ROA* is significantly positive, whereas that of *CSR* is nonsignificant. The bootstrap results reveal that the indirect effect reaches the 10% level of significance. Consequently, after consideration of the endogenous issue, the conclusion remains unchanged; ROA serves as a full mediator.



TABLE 9. ROBUSTNESS CHECKS, CONSIDERING THE ENDOGENOUS ISSUE.



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7.3 Adoption of long-term ROA as the proxy variable of corporate performance

Most related studies (e.g., Garcia-Castro, Ariño, and Canela 2010; Shen and Chang 2008) regard the relationship between corporate performance and CSR as a short-term aspect, and thus these studies employ current corporate performance and current CSR as variables for analysis. However, this relationship may not be a short-term aspect. In other words, CSR may affect a company's long-term profitability. Consequently, we use the average return on assets of the current and subsequent 3 years (*LROA*) as the proxy variable of corporate performance. As indicated in Table 10, adopting another dependent variable does not qualitatively change the previous results. In addition, the test results obtained from a bootstrap method suggest an indirect effect of CSR performance on tax avoidance.

Table 10. Robustness checks: adoption of long-run ROA as the proxy variable of corporate performance.



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8. Concluding remarks

This paper first contributes to the literature in several manners. First, we employ data for publicly listed companies in China, the largest emerging economy in the East. Similar to evidence obtained regarding the West, in China, the level of corporate tax avoidance is negatively associated with CSR performance. Second, we provide evidence of the indirect effect of CSR performance on the level of corporate tax avoidance. We find that corporate profitability serves as a full mediator in the association between corporate tax avoidance and CSR performance. Initially, CSR performance reduces corporate

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profitability in turn increases the level of corporate tax avoidance. We observe that CSR performance does not moderate the

mediating effect. Therefore, we conclude that CSR performance has an indirect effect (or mediating effect), but not a conditional indirect effect (or moderated mediation effect), on the level of corporate tax avoidance. 

This study investigates only the simple mediation effect and moderated mediation effect. However, other mediators and moderators may affect the association between CSR performance and the level of corporate tax avoidance. Therefore, future research can further investigate additional mediators and moderators.

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Disclosure statement

No potential conflict of interest was reported by the authors.

Appendix Variable Definitions

Table

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1. Irresponsible CSR activities include corporate actions widely regarded as damaging to aspects such as corporate governance, employee relations, communities, public health, human rights, diversity, and the environment (Hoi, Wu, and Zhang 2013).

2. The firm profit dummy variable equals 1 if a firm's ROA is at least 10% (high-profit firms) and 0 otherwise (low-profit firms).

3. The weights are determined based on the relative importance of various social responsibility items. In addition, the weights vary according to the industry to which the company in question belongs.

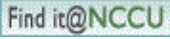


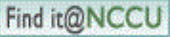
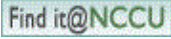
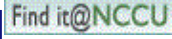

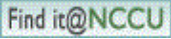
4. The formula for the original score is $\sum_{j=1,2,3,4} A_j W_j$, where j is the social responsibility item, A is the score of each social responsibility item, and W is the weight.

5. The adjusted items include CSR awards and major CSR failure events, etc.

6. In contrast to Western countries, whose CSR evaluation institutions are numerous and possess comprehensive data, China's CSR development is in its preliminary stage. Therefore, China has few CSR evaluation institutions and their data are limited. CASS-CSR research center data are currently China's most crucial CSR assessment data. Thus, although CASS-CSR research center data are imperfect because of problems such as the short time span between making an application and receiving the rating report, we still use this information for analysis.

7. Besides, we exclude financial, insurance, securities, agriculture, forestry, fishing, animal husbandry, education, comprehensive, and non-industry companies.

8. The mediating effect exists when the following conditions are satisfied: First, the independent variable has a significant effect on the mediator. Second, the independent variable has a significant effect on the dependent variable. Third, when the mediator is controlled, the effect of the independent variable on the dependent variable becomes nonsignificant; Under such conditions, the mediator is called the 'full mediator.' However, if the effect of the full mediator is significant but its size is smaller than that of the uncontrolled mediator, it is called the 'partial mediator.'

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