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The real effect of mandatory CSR disclosure: Evidence of corporate tax avoidance

Wei Jiang [a,1], Cheng Zhang [b,*,2], Chengyu Si [a]

[a] School of Economics, Hangzhou Normal University, Hangzhou, China
[b] School of Finance, Nanjing University of Finance and Economics, Nanjing, China

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ABSTRACT

In practice, mandatory corporate social responsibility (CSR) disclosure can lead to lower profitability and increased corporate cost burdens. In this research, we endeavor to examine how companies navigate the adverse effects of mandatory CSR disclosure from the perspective of corporate tax avoidance. Using data from Chinese listed firms, we examine the effect of mandatory CSR disclosure on corporate tax avoidance, applying propensity score matching and difference-in-differences methods. The results indicate that the implementation of mandatory CSR disclosure leads to a significant increase in corporate tax avoidance. The findings are robust to a battery of tests and are more prominent for firms with weaker profitability and cost transferability, and those that are more likely to be affected by the disclosure mandate (i.e., polluting firms, firms with weak social responsibility, firms in high disclosure regions, and firms in high minimum wage regions). In summary, our findings are consistent with the view that mandatory CSR disclosure alters corporate behavior and creates positive externalities for society at the expense of tax payments to the government.

"US-listed Russell 1,000 companies with the top triple-A ESG rating from MSCI, for example, paid an average tax rate of 18.4 per cent last year, while triple-C-rated firms typically paid 27.5 per cent."

"You can get a company to try and protect the environment or have more diversity, it doesn't affect the bottom line, but to make them pay more taxes . . . Right now, they have a legal duty to pay as little tax as they can."

"–*Financial Times*, February 22, 2021"

1. Introduction

The release of CSR reports has become a global trend, attracting growing attention from stakeholders, such as managers, investors, and regulatory authorities. China clarified the requirements for CSR in 2002, and in 2008 determined that a total number of 378 sample companies listed on the Shanghai and Shenzhen stock exchanges must regularly disclose CSR reports. The number of companies that comply with regulations to disclose CSR reports rose with the implementation of the policy. As of 2018, 407 companies on the Shanghai and Shenzhen stock exchanges disclosed CSR reports in compliance with regulations. The implementation of the mandatory CSR disclosure policy has undoubtedly increased the transparency of CSR information and reduced the cost of communication between investors and companies. At the same time, the increase in information transparency has forced regulators and other stakeholders to require companies to engage in increased CSR activities. Related behaviors have led to adverse effects, such as the deterioration of corporate profitability, reduction of dividends, and increased CSR expenditure (Chen et al., 2018; Ni and Zhang, 2019). How will companies respond to this circumstance? To answer this question, we investigate whether companies adopt more tax avoidance behaviors to reduce the adverse effects of mandatory disclosure policies.

We take advantage of a quasi-natural experiment in China that allows us to better identify the causal effect of mandatory CSR reporting on corporate tax avoidance. Using data from Chinese listed companies and applying the propensity score matching (PSM) and difference-in-differences (DID) methods, we empirically test the impact of mandatory CSR disclosure on corporate tax avoidance. The results show that companies with mandatory CSR disclosure requirements exhibit significantly higher levels of tax avoidance. Following a series of robustness and placebo tests, this conclusion remains valid.

* Corresponding author.
E-mail addresses: wjiang@hznu.edu.cn (W. Jiang), ruc-zhangcheng@163.com (C. Zhang), chengyu@hznu.edu.cn (C. Si).
[1] postal address: No. 2318 Yuhangtang Rd., Yuhang District, Hangzhou 311121, China. (Wei Jiang)
[2] postal address: No. 3 Wenyuan Rd., Qixia District, Nanjing 210023, China. (Cheng Zhang)

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We then explore the theoretical path of how mandatory CSR disclosure influences corporate tax avoidance through cross-sectional group analysis. First, we find the impact of mandatory CSR disclosure policies on corporate tax avoidance to be primarily concentrated on companies with weak profitability and cost transfer capabilities. Second, companies with weak CSR performance (i.e., those that need more expenditure to improve CSR activities, such as polluting companies and low-employee welfare companies) are found to be more likely to increase tax avoidance following the implementation of mandatory CSR disclosure policies. Finally, the research indicates that companies in regions with high pollutant emissions and high minimum wage standards are more likely to increase tax avoidance after mandatory disclosure, as high minimum wage standards signify that companies have a heavier burden and are more likely to avoid taxation (Liu and Zhao, 2019).

This article offers three primary contributions. (1) It has important theoretical and practical significance for investigating the impact and consequences of mandatory CSR reporting. From the perspective of corporate tax avoidance, this article examines the potential impact of mandatory CSR disclosure on corporate behavior. The conclusions also expand and deepen the understanding of the impact of mandatory CSR disclosure on different stakeholders, as corporate tax avoidance not only involves corporate stakeholders, such as companies and investors, but also involves a wider group of stakeholders, such as the public, capital markets, and taxation regulatory authorities. (2) It enriches the literature of research on tax avoidance motivations. Studies have examined the impact of different types of stakeholders on corporate tax avoidance, but few have analyzed corporate tax issues from the perspective of CSR disclosure policies. We find mandatory CSR disclosure to also exert an important motivation for corporate tax avoidance, offering new insights regarding the relationship between capital market policies and tax policies. (3) The conclusions have significant policy implications. When policymakers formulate mandatory disclosure policies, they should consider including corresponding corporate tax deductions based on CSR performance, particularly for those companies and sectors that must bear greater expenditure burdens to engage in social responsibilities. This can ensure that the improvement of CSR and information transparency will not put unnecessary pressure on corporate profits and costs, and could reduce the motivations to avoid taxation, maintain the stability of the capital market and protect the authority of the tax system.

The remainder of this paper is organized into six sections. The next section reviews the relevant literature on CSR disclosure and corporate tax avoidance. Additional institutional background and hypotheses development are presented in Section 3. Section 4 summarizes the data and describes the sample summary. Section 5 reports the main findings and Section 6 provides additional supporting results. The final section concludes the paper.

2. Literature review

2.1. Literature related to CSR disclosure

CSR has become an increasingly important topic in global business practice. A growing number of firms are choosing to undertake CSR activities (Kitzmueller and Shimshack, 2012; Crifo and Forget, 2015; Schmitz and Schrader, 2015). Accordingly, a considerable number of studies have examined the impact and economic consequences of companies' engagement in CSR (Porter and Kramer, 2006; Matten and Moon, 2008; Moser and Martin, 2012).

Some documents use CSR and other ratings as explanatory variables to explore its impact on companies or corporate stakeholders (Albuquerque et al., 2019; Kraus et al., 2020). This research is inherently limited to companies that disclose CSR data, but does not incorporate the remaining large sample of companies that have not disclosed CSR. An increasing number of companies around the world, including A-share listed firms, choose to voluntarily disclose CSR activities, and many firms are mandated to disclose CSR reports (Dhaliwal et al., 2014; Christensen et al., 2021). A comparison between companies that do not disclose CSR and the impact of disclosure policies on those companies issuing CSR reports is very worthy of attention.

Previous studies have found that CSR disclosure provides investors with more useful information and improves the accuracy of analysts' forecasts (Dhaliwal et al., 2012). Mandatory CSR disclosure also improves the quality of corporate financial statements and reduces information asymmetry (Wang et al., 2018). Mandatory CSR disclosure has increased CSR behaviors, and although it entails increased CSR expenditure (Chen et al., 2018; Fiechter et al., 2018), CSR can elicit positive externalities, such as fewer security incidents and environmental issues (Christensen et al., 2017; Gramlich and Huang, 2017; Chen et al., 2018). Some research has found that the positive externalities of CSR disclosure are achieved by sacrificing the interests of shareholders (Chen et al., 2018). From this perspective, mandatory CSR disclosure will reduce corporate profitability (Chen et al., 2018).

In summary, mandatory CSR disclosure is a "double-edged sword" for both companies and corporate stakeholders. In view of the adverse effects on companies, no research has investigated its countermeasures from the perspective of corporate tax decision-making. This article seeks to expand the existing research from this perspective.

2.2. Literature related to corporate tax avoidance

Tax avoidance is a common phenomenon among enterprises. The motivations for corporate tax avoidance can be divided into internal and external factors, according to the characteristics of internal and external stakeholders. Internal factors include corporate characteristics (Wilson, 2009; Lisowsky, 2010), management characteristics (Christensen et al., 2015), owner structure (Chen et al., 2010), and internal company governance (Armstrong et al., 2015; Bauer, 2016; Arena et al.,2021). External factors include institutional factors (Atwood et al., 2012; Tang et al., 2017), external investors (Khan et al., 2017), labor protection (Chyz et al., 2013; Liu and Zhao, 2019), political connections (Kim and Zhang, 2016; Chen et al., 2021), and suppliers (Cen et al., 2017). In addition, since CSR involves multiple internal and external stakeholders, its impact on corporate tax avoidance is also more complicated (Dowling, 2014; Wang et al., 2020). However, minimal studies have explored corporate tax avoidance from the perspective of CSR disclosure.

There are two opposing views in the literature regarding the relationship between CSR and tax avoidance. One perspective is that taxation is a basic social obligation of enterprises, and can be used to improve social welfare (Sikka, 2010). Subsequently, tax avoidance is considered to be a socially irresponsible behavior, and companies with high CSR are assumed to reduce tax avoidance (Hoi et al., 2013; Lanis and Richardson, 2012; 2013). Another perspective asserts that the resources generated by tax avoidance can be used to reduce product prices, increase employee wages, create employment opportunities, and enhance corporate value, behaviors that are beneficial to corporate stakeholders, such as consumers, employees, and investors. Consequently, CSR and taxation are substitutions for each other, so if a company assumes more social responsibility, it will increase tax avoidance accordingly (Dowling, 2014; Davis et al., 2016).

In summary, although previous studies have explored the relationship between CSR and corporate tax avoidance, the conclusions are inconsistent. Furthermore, these studies only examine the impact of corporate CSR performance and voluntary CSR disclosure on corporate tax avoidance, but no research has examined the impact of mandatory CSR disclosure on corporate tax avoidance. This article attempts to expand on the existing research from this aspect.

3. Institutional background and hypothesis development

3.1. Institutional background

"In success, one tries to let others benefit."—Mencius. Social responsibility emerged in China's pre-Qin period, and has been continuously establishing and improving with the development of the nation's capital market. China began to clarify the requirements for companies to perform CSR in 2002, and issued the "Guidelines for Social Responsibility of Listed Companies" in 2006, advocating companies to actively engage in and voluntarily disclose CSR. To ensure the transparency of CSR information, the China Securities Regulatory Commission (CSRC), Shanghai and Shenzhen stock exchange, issued the "Notice on improving the 2008 annual reports of listed companies" at the end of December 2008. The notice requires companies in the "SSE corporate governance sector", companies that issue overseas-listed foreign stocks and financial companies in Shanghai stock exchange, and companies listed on the "Shenzhen stock exchange 100 Index" of the Shenzhen stock exchange to disclose CSR activities as an integrated component of 2008 annual reports. Due to the implementation of the disclosure policy, both the number of companies that disclose CSR and the quality of disclosures have increased significantly. The number of companies disclosing CSR reports in the Shanghai and Shenzhen stock markets increased from 371 in 2009 to 851 in 2018, growing at a rate of 129%, with an average annual growth of 48 companies. Among them, the number of mandatory disclosure companies increased from 339 to 407. The average score of CSR Ratings, which measure the quality of disclosure, increased from 29.5 points in the first year to 42.5 points. The increase of 44% indicates that a growing number of companies are fulfilling social responsibilities.

3.2. Hypotheses development

Mandatory CSR disclosure has many adverse effects on companies. First, it leads to a decline in corporate profitability. Chen et al. (2018) found that compared with companies that did not disclose CSR reports, ROA and ROE of companies mandated to disclose CSR decreased by 26% and 20%, respectively after the mandatory policy took effect. Second, the mandatory CSR disclosure policy will lead to an increase in corporate expenditure, which includes both CSR expenses and the cost of preparing reports. Theoretically, even if companies that have already undertaken CSR prior to the policy do not need to add new CSR costs, companies that have never undertaken CSR activities usually increase socially responsible behavior, thus corporate costs, to present CSR reports because companies usually do not publish CSR reports with no activities.

We contend that, on average, the disclosure policy increases corporate CSR costs. In addition, Chen et al. (2018) found that after the mandatory disclosure policy, political pressure has increased CSR costs year by year. Companies' global social responsibility rating scores are also getting higher and higher (the higher the score, the more CSR the company engages in), signifying that CSR costs have risen. Furthermore, with the increase in corporate CSR costs, investigations not reported in this article found that the mandatory disclosure policy was not correlated with increased operating incomes. This indicates that the mandatory disclosure policy increases companies' net expenditure. In addition, even if all companies assumed CSR expenses prior to the disclosure policy, it does not mean that they are willing to release CSR information disclosure reports since the release of the report requires extensive effort and considerable cost (Gamerschlag et al., 2011). Finally, while CSR disclosure provides the market with more corporate-related information (Dhaliwal et al., 2014), companies' non-socially responsible behaviors are correspondingly exposed (Dhaliwal et al., 2012; Dowling, 2014), increasing potential risks.

To resist profit decline, increased expenditure, and potential risks, reserving cash flow through tax avoidance has become a realistic choice for enterprises. Certainly, from the perspective of costs and benefits, CSR disclosure will attract more public attention (Dhaliwal et al., 2012), and public pressure will raise the cost of corporate tax avoidance (Dyreng et al., 2016). If the increase in corporate tax avoidance costs exceeds that of corporate tax avoidance income, enterprises are more likely to choose to reduce tax avoidance. CSR reports are non-financial reports that provide information on companies' environmental and social welfare activities. We assert that such CSR reports provide limited information for the public to monitor corporate taxation behavior, implying that increased corporate tax avoidance costs due to CSR disclosure are limited. In summary, if the cost of tax avoidance does not increase significantly, but companies face a decline in profits, as well as increased costs and risks, then corporate tax avoidance will undoubtedly increase significantly; thus, this research assumes that mandatory CSR disclosure will increase enterprises' tax avoidance.

Tax avoidance is generally considered to be an irresponsible behavior toward society (Sikka, 2010; Hoi et al., 2013), so why do companies engage in tax avoidance behaviors while also assuming CSR? According to the above analysis, the extent of corporate tax avoidance is related to the trade-off between corporate financial performance and CSR behavior. Tax avoidance is engaged to reduce corporate tax burdens through investment and commercial activities within the scope of the law. Cash flow reserves gained through tax avoidance can also be allocated to reducing product prices, increasing employee wages, and enhancing corporate value. From this perspective, tax avoidance is not necessarily socially irresponsible (Dowling, 2014; Davis et al., 2016). Based on existing vague perspectives toward tax avoidance, we assert that when the mandatory disclosure increases the burden on companies, they will be more inclined toward corporate financial performance when weighing financial performance and CSR, thereby raising the degree of tax avoidance of enterprises.

Finally, while it is certainly possible for companies to resist the possible adverse effects of mandatory disclosure policy through other means, in the context of China's system, companies are at a greater advantage to reserve cash flow to withstand possible negative shocks through tax avoidance compared to reductions in advertising or R&D expenditure, reducing investment, or layoffs. We contend that it is a realistic choice for companies to avoid the adverse effects of mandatory CSR disclosure policies through tax avoidance.

To sum up, we propose the following research hypothesis:

Hypothesis 1: When other conditions remain constant, mandatory CSR disclosure increases corporate tax avoidance.

If tax avoidance is a response to the adverse effects of mandatory CSR disclosure, corporations that are already facing hardship are more likely to avoid taxes. Therefore, we propose Hypothesis 2.

Hypothesis 2: The promotion of corporate tax avoidance through mandatory CSR disclosure is concentrated in corporations with poor profitability and cost-shifting capabilities, as well as enterprises in industries and provinces that are more impacted by the disclosure policy.

4. Data description, variable definition and summary statistics

4.1. Data description

The mandatory CSR disclosure policy was promulgated at the end of December 2008, and did not affect companies' behavior in 2008; therefore, we use 2009 as the starting period for the mandatory disclosure policy to take effect. Referencing Chen et al. (2018), the data of all listed companies in China's Shanghai and Shenzhen stock exchanges in the three years (2006–2011) before and after the policy took effect were selected as the initial research sample, with the following treatments made on this basis: (1) We exclude companies that issue B-shares or H-shares in Shanghai and Shenzhen stock exchanges to avoid the impact of different regulatory rules; (2) We do not include companies that voluntarily disclosed CSR reports during the sample period; (3) We omit the financial industry, special treatment companies, companies with a

lack of control variables required for our research, and companies with observations less than or equal to 1. Finally, a full sample of 7,168 firms/year observations are obtained, of which mandatory CSR disclosure firms are defined as the treatment group, with 1,432 firms/year observations; the non-mandatory disclosure companies, containing 5, 736 firms/year observations, are the control group. All financial and stock transaction data used in this research are from the WIND database, while the number of analysts tracked and corporate governance data are from the China Stock Market & Accounting Research database. The data on polluting industries are from the CSRC's "List of Listed Companies Environmental Inspection Industry Classification Management List 2008."

The above analysis suggests that the regulatory authorities do not randomly select companies mandated to disclose CSR reports. To address the problem of non-random company selection in the treatment group, we employ the PSM method to identify a corresponding sample of control group companies for the treatment group company samples to ensure that treatment and control groups are comparable. During the PSM process, referencing Chen et al. (2018), the sample before the mandatory disclosure policy took effect (2006–2008) is used to perform logit regression on the binary explanatory variable (whether it is in the treatment group, recorded as Treated) to estimate the probability of being in the treatment group. Matching variables include company size (Size), ROA, turnover rate (Turnover), and the natural logarithm of the number of analysts that follow the firm (Analysts). There are also two dummy variables, whether it is a state-owned enterprise (SOE), and whether it is a polluting firm (Pollution). Variable definitions are presented in Table 1. In addition, the regression process also controlled for industry and year fixed effects and the robust standard errors clustered at the firm level. Panel A in Appendix A presents the results of logit regression, revealing the probability of companies belonging to the treatment group to be significantly positively correlated with firm size, ROA, and the nature of the company, whereas it is significantly negatively correlated with high-polluting industries. In contrast, correlations with turnover rate and the number of analysts following the firm are insignificant.

According to the propensity score obtained through logit regression, the nearest neighbor matching technique is used to conduct retracted and one-to-many nearest neighbor matching between treatment and control groups, and the caliper is set to be 0.25 times the standard error of the propensity score. Finally, the control group matching the treatment group is obtained. Panel B in Appendix A reports the effectiveness of the PSM process. According to the table, the PSM method significantly reduces the difference between the treatment group sample and the control group sample before the policy took effect. A total of 2,490 companies/annual data of PSM samples are finally obtained, including 1,101 in the treatment group and 1,389 in the control group.

4.2. Variable definitions

In this paper, mandatory CSR disclosure is regarded as a quasi-natural experiment, and the DID method is used to evaluate the policy's impact on corporate tax avoidance behavior. The benchmark model of the DID method is set as follows:

$$TA\_CETR_{i,\,t} = \beta_0 + \beta_1 Post_t \times Treated_i + \beta_2 Treated_i + \beta_3 Post_t + \beta_j Controls_{itj} + Industry\ FEs + Province\ FEs + \varepsilon \quad (1)$$

For the explained variable on the left side of the equation, referencing Hanlon and Heitzman (2010), $TA\_CETR_{i,t}$ represents the measures of the degree of corporate tax avoidance for firm i in year t. $TA\_CETR = ATR - CETR$, where ATR stands for the actual income tax rate applicable to the firms, $CETR$ (Cash ETR) stands for the actual cash tax rate for firms, which equals (enterprises' income tax expense − deferred income tax expense + income tax payable at the beginning of the period − income tax payable at the end of the period)/ total profits.

Table 1
Variables Definition

Variables	Definition
Measures of tax avoidance	
CETR (Cash ETR)	The cash taxes paid divided by the income.
TA_CETR	Actual tax rate applicable to enterprises (ATR) minus actual cash earnings tax rate (CETR).
GETR	Effective tax rate for enterprises, equal to total tax expense divided by the income.
BTD	Tax difference in accounting, (net income × ATR − current income taxes)/total assets.
Firm characteristics	
Post	A dummy variable equal to 1 if a firm-year observation falls in the post-period (i.e., 2009–2011), and 0 otherwise.
Treated	A dummy variable equal to 1 if the listed firm is mandated to issue CSR reports starting from December 2008, and 0 otherwise.
Post × Treated	A dummy variable equal to 1 for years if the listed firm is mandated to issue CSR reports, and 0 otherwise.
Size	Natural logarithm of total assets at the end of year, the unit is one hundred million yuan.
Age	Natural logarithm of number of years the firm is listed.
ROA	Net income divided by total assets at the end of the year.
Leverage	Firm leverage, total liabilities divided by total assets at the end of the year.
PPE	Long-term investment, the ratio of capital expenditure to total assets at the end of year.
ROI	Return of investment, net income divided by total assets at the end of the year.
Inventory	Net value of inventory divided by total assets at the end of the year.
Intangible	Net value of intangible assets divided by total assets at the end of the year.
MB	Market-to-book ratio, the ratio of market value of equity to book value of equity at the end of the year.
ATR	Applicable tax rate for enterprises.
ΔATR	ATR in the current period minus ATR in the previous period.
Loss	A dummy variable equal to 1 if the enterprise loses money during the previous period, otherwise 0.
Abs(DA)	Absolute value of the accruals calculated from the modified model of Jones by industry and year.
Pollution	A dummy variable equal to 1 if the company belongs to the "List of Listed Company Environmental Protection Industry Classification Management Directory 2008", otherwise 0.
SOE	A dummy variable equal to 1 if the ultimate controlling owner of the company is the government, otherwise 0.
Other matching variables during PSM	
Analysts	Natural logarithm of 1 plus the number of analysts following a firm.
Turnover	The total number of shares traded divided by the total number of shares outstanding (%).

The cash income tax rate $CETR$ directly reflects firms' actual income tax cash flow expenditure, and it is less affected by other factors; thus, it has been widely recognized to measure the degree of corporate tax avoidance of an enterprise applying this method. TA_CETR further eliminates the influence of the applicable corporate tax rate on this basis. In addition, effective tax rate, $GETR$, and accounting-tax difference (BTD), which are commonly used in literature, are also adopted as a robustness test to measure the degree of tax avoidance of enterprises. Specifically, $GETR$=(income tax expense)/(total profits); BTD=(Total profits × Applicable tax rate - current income tax expenses)/(total assets). In general, the smaller the $GETR$ or the larger the BTD, the higher the possibility of corporate tax avoidance. In this paper, $CETR$ and $GETR$ are indented to the interval of [0,1], referring to the common practice of previous research.

Regarding the variables on the right side of the equation, $Post_t$ is a dummy variable of the experiment period, which equals 1 if the period is after the mandatory policy took effect (year ≥2009), otherwise 0. $Treated_i$ is the dummy variable for the control group, which equals 1 if the firm belongs to a mandated CSR disclosure group, otherwise 0. Treatment and control groups are grouped according to the "Notice on Improving the 2008 Annual Reports of Listed Companies" of the Shanghai and Shenzhen stock exchange and the Global CSR Database. β_1

represents the impact of mandatory CSR disclosure on corporate tax avoidance, which is the main focus of this paper. Since many factors affect corporate tax behaviors, we also added several control variables ($Controls_{i,t,j}$). The detailed variable definitions are provided in Table 1. In addition, during the regression process, we also control for the fixed effects of industry and province, classifying industry according to the "2008 Industry Classification Standards" of the CSRC.

4.3. Summary statistics

Panel A in Table 2 presents the distribution of the treatment and control groups in the full sample and PSM sample based on year. From a horizontal perspective, the number of companies in the control group for the full sample each year is far greater than the number of companies in the treatment group. From a vertical perspective, the number of companies in the full sample treatment group was around 340 from 2006 to 2011, and the number of companies in the control group increased from 710 in 2006 to 1,210 in 2011, revealing the addition of a large number of newly listed companies each year during the sample period; therefore, compared with the full sample, the PSM sample exhibits more accurate comparability. The sample distribution also illustrates the rationality of the PSM method used in this article.

Panel B in Table 2 exhibits the descriptive statistics of the PSM sample variables. To minimize the effect of outliers, we winsorize all continuous variables at the 1st and 99th percentiles. *TA_CETR* is the tax avoidance measurement variable which is the focus of this article. In addition, this article also uses *CETR, GETR*, and *BTD* as alternative variables for tax avoidance. The average value of *TA_CETR* is −0.08 and the median is −0.02, indicating that the distribution of corporate tax avoidance is skewed to the left. This is similar to the previous studies indicating that the actual income tax burden paid by some companies is much higher than the applicable tax rate, and firms tend to have a motivation to avoid tax. In addition, about 45% of the companies in the sample have positive *TA_CETR*, which means that the actual income tax burden paid by such companies is lower than the applicable tax rate, indicating that these companies engage in tax avoidance behavior.

Panel C in Table 2 reports the Pearson correlation coefficient of each variable, demonstrating a correlation coefficient between *TA_CETR* and *CETR* of −0.97 that is significant at the 1% level, which suggests that these two variables are highly correlated. In addition, the correlation coefficients between *TA_CETR, GETR*, and *BTD* are −0.38 and 0.16, respectively, and significant at the 5% level, indicating that these indicators for measuring the degree of tax avoidance are consistent. The correlation coefficient between *TA_CETR* and *BTD* is also positive. In general, the larger the *TA_CETR* and *BTD*, the higher the possibility of tax avoidance will be. The correlation coefficients between *TA_CETR* and *CETR* and *GETR* are negative, indicating that *CETR* and *GETR* are negatively correlated with the degree of tax avoidance. Finally, *TA_CETR* has a correlation with most of the control variables at the 5% significance level, which illustrates the rationality of the control variables selected in this article.

5. Empirical results

5.1. Baseline regression

Table 3 reports the results of the DID regression analysis of the mandatory CSR disclosure policy and the results are split into four columns. The regression analysis in column (1), only adds year and industry fixed effects to the DID benchmark model as control variables, and the results indicate that the regression coefficient of *Post* × *Treated* is significantly positive at a 1% significance level. Column (2) adds all control variables except for the fixed effect at the provincial level, and the regression coefficient of *Post* × *Treated* remains significantly positive. Column (3) adds the province fixed effect and the regression coefficient of *Post* × *Treated* remains significantly positive. Finally, in column (4), to alleviate concerns regarding potential missing variables, the firm fixed effect and year fixed effect are added (Chen et al., 2018), and the regression coefficient of *Post* × *Treated* is still positive. In summary, the regression coefficients of *Post* × *Treated* in models (1)–(4) are all significant at the 1% level, indicating consistency of the regression results.

We will next explain the economic meaning of our results using column (3), which demonstrates that the coefficient of *Treated* is significantly negative at the 1% level, indicating that companies in the treatment group are, on average, less tax-avoidant than companies in the control group prior to the disclosure shock. In contrast, an insignificant coefficient on *Post* for *TA_CETR*, indicating that our benchmark firms do not exhibit any change in tax avoidance subsequent to the disclosure shock. More importantly, the coefficient of *Post* × *Treated* is significantly positive at the 1% level, indicating that mandatory CSR disclosure has significantly increased corporate tax avoidance.

To facilitate the quantification of the economic significance of the tax increase, model (1) is reanalyzed using *CETR* as the explained variable (see Table 4 Panel A, column (1)). The results show that when the explained variable is *CETR,* the regression coefficient of *Post* × *Treated* is −0.08, and it is significantly negative at the 1% level. This implies that when the mandatory CSR disclosure policy took effect, the cash income tax rate of firms that compulsorily disclose CSR reports will be reduced by 0.08 units compared to those that do not disclose CSR reports, which is equivalent to 28% of the *CETR* (= 0.08/0.286).

Referencing the research by Chen et al. (2018), this article can further roughly estimate the extent to which the cash flow saved by corporate tax avoidance can offset the decline in profitability caused by mandatory CSR disclosure. The average pretax profit of the enterprises in our sample is 443 million yuan. Based on this, the average income tax cash flow of the processing group after the mandatory disclosure policy took effect is calculated to be about 35.4 million yuan (= 443 million yuan × 0.08). According to Chen et al. (2018), after the mandatory disclosure policy took effect, the ROA of companies in the treatment group dropped by an average of about 26% relative to the control group. Additionally, sample companies' average number of total assets is 7.132 billion yuan, and the average ROA is 5%. Based on this, it is calculated that following the implementation of the mandatory disclosure policy, the average profit of the processing group companies dropped by approximately 92.7 million yuan (= 7.132 billion yuan × 0.05 × 0.26); therefore, the cash flow saved through tax shelters can offset 38% of the profit decline (= 35.4/92.7). To sum up, the conclusion stands that tax avoidance has important economic significance for companies to buffer the decline in corporate profits caused by mandatory CSR disclosure.

5.2. Robustness tests

To ensure the robustness of our results, we replace several commonly used indicators in the literature to measure tax avoidance, including corporate actual *CETR*, corporate actual income tax rate (*GETR*), and corporate accounting-tax differences (*BTD*). The results are presented in Panel A ofTable 5, demonstrating that when the explained variable is *CETR,* the regression coefficient of *Post* × *Treated* is −0.08, significant at the 1% level. When the explained variables are *GETR* and *BTD*, the regression coefficients of *Post* × *Treated* are significant at the 10% level, and the sign is consistent with the previous analysis; that is, the smaller the *GETR* or the larger the *BTD*, the higher the possibility of tax avoidance. In summary, after changing the corporate tax avoidance measurement indicators, the conclusions of this article remain valid.

Since the effectiveness of the DID model depends on the establishment of the parallel trend hypothesis, in column (1) of Panel B in Table 4, we test the effectiveness of the parallel trend of the DID model. *Year − 2, Year − 1, Year + 1, Year + 2*, and *Year + 3* are all indicator variables, and represent the years after the policy took effect. For example, *Year − 1* and *Year + 1* indicate the year before the policy took effect (2008) and the first year (2009) after the policy took effect,

Table 2
Sample distribution and descriptive statistics of variables

Panel A: Sample distribution

	Full sample						PSM sample					
	Total		Treatment group		Control group		Total		Treatment group		Control group	
Year	*N*	%	*N*	%	*N*	%	*N*	%	*N*	%	*N*	%
2006	944	13%	234	16%	710	12%	303	12%	159	14%	144	10%
2007	1067	15%	247	17%	820	14%	315	13%	163	15%	152	11%
2008	1104	15%	243	17%	861	15%	298	12%	143	13%	155	11%
2009	1170	16%	240	17%	930	16%	533	21%	216	20%	317	23%
2010	1437	20%	232	16%	1205	21%	518	21%	208	19%	310	22%
2011	1446	20%	236	16%	1210	21%	523	21%	212	19%	311	22%
Total	**7168**	100%	**1432**	100%	**5736**	100%	**2490**	100%	**1101**	100%	**1389**	100%

Panel B: PSM sample descriptive statistics

Variables	Mean	Std	P25	Median	P75	N
TA_CETR	-0.081	0.266	-0.158	-0.020	0.083	2490
CETR	0.286	0.266	0.115	0.214	0.363	2490
GETR	0.193	0.135	0.117	0.174	0.252	2490
BTD	0.002	0.016	-0.001	0.000	0.003	2244
Total Assets	71.32	95.57	19.77	36.66	80.52	2490
Size	3.711	1.013	2.984	3.602	4.389	2490
Age	2.521	0.328	2.303	2.565	2.773	2490
ROA	0.051	0.050	0.021	0.041	0.072	2490
Leverage	0.509	0.184	0.375	0.519	0.646	2490
PPE	0.278	0.188	0.131	0.245	0.407	2490
ROI	0.009	0.019	0.000	0.001	0.009	2490
Inventory	0.187	0.161	0.074	0.148	0.240	2490
Intangible	0.043	0.048	0.011	0.028	0.055	2490
MB	3.656	2.721	1.830	2.842	4.517	2490
ATR	0.205	0.069	0.150	0.180	0.250	2490
Δ*ATR*	0.000	0.058	0.000	0.000	0.000	2490
Abs(DA)	0.092	0.139	0.024	0.053	0.101	2490
Loss	0.064	0.245	0.000	0.000	0.000	2490
Pollution	0.404	0.491	0.000	0.000	1.000	2490
SOE	0.631	0.483	0.000	1.000	1.000	2490

Panel C: Pearson correlation coefficients of core variables

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)
(1)TA_CETR	1																	
(2)CETR	-0.97*	1																
(3)GETR	-0.38*	0.45*	1															
(4)BTD	0.16*	-0.12*	-0.23*	1														
(5)Size	0.06*	-0.04	0.07*	-0.07*	1													
(6)Age	0.01	-0.01	0.04*	-0.04	0.15*	1												
(7)ROA	0.20*	-0.22*	-0.09*	0.20*	-0.07*	-0.05*	1											
(8)Leverage	-0.07*	0.10*	0.13*	-0.08*	0.42*	0.13*	-0.47*	1										
(9)PPE	0.03	-0.02	-0.05*	0.01	0.05*	-0.18*	-0.11*	-0.02	1									
(10)ROI	0.12*	-0.11*	-0.12*	0.14*	-0.01	0.16*	0.16*	-0.13*	-0.17*	1								
(11)Inventory	-0.06*	0.08*	0.13*	-0.06*	0.08*	0.15*	-0.08*	0.28*	-0.51*	-0.08*	1							
(12)Intangible	-0.03	0.02	0.08*	-0.04	-0.07*	0.05*	0.04*	-0.05*	0.04	-0.01	-0.25*	1						
(13)MB	0.14*	-0.15*	-0.08*	0.14*	-0.25*	-0.01	0.33*	-0.04	-0.14*	0.01	0.01	0.03	1					
(14)ATR	0.12*	0.14*	0.29*	0.15*	0.09*	0.00	-0.07*	0.15*	0.06*	0.03	0.07*	-0.01	-0.06*	1				
(15)ΔATR	0.07*	0.04*	0.10*	0.09*	0.00	-0.02	-0.02	0.04	0.02	0.02	0.00	-0.03	-0.01	0.44*	1			
(16)Abs(DA)	0.08*	-0.07*	0.04	0.14*	0.11*	0.12*	0.06*	0.15*	-0.23*	0.03	0.32*	-0.02	0.03	0.06*	-0.02	1		
(17)Loss	-0.06*	0.07*	0.04*	-0.01	-0.09*	0.11*	-0.18*	0.15*	0.07*	0.07*	-0.05*	0.04*	0.07*	0.04*	0.01	0.02	1	
(18)Pollution	0.01	0.01	0.04	0.01	0.10*	-0.05*	0.07*	-0.02	0.43*	-0.13*	-0.23*	0.05*	0.00	0.06*	0.00	-0.12*	0.03	1
(19)SOE	-0.05*	0.05*	0.03	-0.06*	0.24*	-0.11*	-0.10*	0.10*	0.10*	0.01	-0.07*	0.01	-0.07*	-0.01	-0.01	-0.01	0.02	0.04*

Note: * indicates significance at 5%.

Table 3
Impact of mandatory CSR disclosure on corporate tax avoidance

	TA_CETR (1)	TA_CETR (2)	TA_CETR (3)	TA_CETR (4)
Post × Treated	**0.095*** **	**0.080*** **	**0.080*** **	**0.070*** **
	(0.023)	**(0.022)**	**(0.022)**	**(0.025)**
Treated	-0.060***	-0.059***	-0.059***	n.a
	(0.020)	(0.018)	(0.019)	n.a
Post	-0.041**	-0.026	-0.026	n.a
	(0.016)	(0.016)	(0.017)	n.a
Size		0.029***	0.031***	0.076**
		(0.009)	(0.009)	(0.032)
Age		0.004	-0.001	0.013
		(0.021)	(0.023)	(0.154)
ROA		0.684***	0.638***	0.459*
		(0.172)	(0.174)	(0.272)
Leverage		-0.039	-0.035	-0.184*
		(0.052)	(0.053)	(0.106)
PPE		0.084*	0.082*	-0.016
		(0.043)	(0.044)	(0.104)
ROI		1.239***	1.247***	0.795
		(0.353)	(0.342)	(0.515)
Inventory		-0.138**	-0.158***	-0.046
		(0.058)	(0.057)	(0.147)
Intangible		-0.240*	-0.223	-0.390
		(0.138)	(0.136)	(0.253)
MB		0.014***	0.015***	0.015***
		(0.002)	(0.002)	(0.005)
ATR		0.576***	0.570***	0.667***
		(0.103)	(0.105)	(0.166)
ΔATR		0.060	0.054	0.177
		(0.106)	(0.107)	(0.125)
Abs(DA)		0.184***	0.190***	0.129***
		(0.038)	(0.038)	(0.049)
Loss		-0.062*	-0.060*	-0.092**
		(0.032)	(0.032)	(0.038)
Pollution		-0.005	0.004	n.a
		(0.017)	(0.016)	n.a
SOE		-0.029**	-0.019	n.a
		(0.014)	(0.014)	n.a
Cons.	-0.052***	-0.351***	-0.315***	-0.563
	(0.014)	(0.065)	(0.070)	(0.364)
Fixed Effects	Industry	Industry	Industry, Province	Firm, Year
Obs.	2490	2490	2490	2490
Adjust R^2	0.013	0.114	0.124	0.279

Note: ***, ** and * indicate significance at 1%, 5% and 10%, respectively. Robust standard errors clustered at the firm level are reported in parentheses. Same in the following table.

respectively. In the parallel trend hypothesis test, we are interested in *Year* − *2* × *Post, Year* − *1* × *Post, Year* + *1* × *Post, Year* + *2* × *Post*, and *Year* + *3* × *Post.* The table shows that the coefficients of *Year* − *2* × *Post* and *Year* − *1* × *Post* are insignificant, and the values are small, while the signs are also inconsistent, indicating that a parallel trend may be established. Additionally, the coefficients of *Year* + *1* × *Post, Year* + *2* × *Post* and *Year* + *3* × *Post* are all significantly positive and gradually increase, and the significance level also increases, indicating that prior to the mandatory disclosure policy, the tax avoidance of firms in the treatment group and the control group have similar time trends, therefore conforming to the parallel trend assumption. This also further illustrates the rationality of the DID model used in this article.

Finally, in columns (2) and (3) of Panel B in Table 4, we apply several placebo tests to confirm the validity of our conclusions. The second column assumes that the policy has taken effect in 2008, and the sample period is changed from 2006 to 2009 (2006–2007 is before the policy took effect, and 2008–2009 is after the policy took effect). The results demonstrate that the regression coefficients of *Post* × *Treated* are almost zero and insignificant. The 2008 sample is removed in column (3), and the coefficient of *Post* × *Treated* remains significantly positive. Referencing Liu and Zhao (2019), in column (4) data with a profit of less than or equal to 0 are excluded, and the results remain significantly positive at the 1% level. In summary, mandatory CSR disclosure increases tax avoidance behavior.

6. Policy shock heterogeneity

6.1. Heterogeneity of corporate profitability and cost transfer capacity

According to the previous analysis, compulsory disclosure of CSR reports will have an impact on corporate tax avoidance from the perspective of reduced corporate profits and increased corporate expenditure. Based on this, first, if the level of corporate profitability declines, companies that are not profitable have a greater potential for offsetting the decline in profitability by increasing the level of tax avoidance. Second, CSR disclosure increases corporate expenditure. If companies can effectively transfer the cost pressure generated by the disclosure policy, the possibility of companies responding by increasing tax avoidance levels will be lower.

6.1.1. Heterogeneity of profitability

Compulsory CSR disclosure will reduce companies' profitability, and companies use tax avoidance to offset the decline in profitability; therefore, for companies with different profit levels, the mandatory CSR disclosure policy should have different effects. It is expected that the impact of the mandatory disclosure policy on corporate tax avoidance primarily exists in companies with lower profitability. According to whether the profitability level (ROA and ROE) is greater than industry and annual medians, we divide the sample into groups according to low and high corporate profitability. The regression results are presented in Table 5, demonstrating that regardless of whether it is for ROA or ROE, the coefficients of *Post* × *Treat* for the low profitability group are both positive and significant at the 1% level, whereas the *Post* × *Treat* coefficients for the high profitability group are no longer significant. The coefficient of *Post* × *Treat* for the group with low profitability is between 0.126 and 0.145, which is also significant in an economic sense. Thus, the impact of the mandatory CSR disclosure policy on corporate tax avoidance is only evident among companies with low profitability.

6.1.2. Heterogeneity of risk and cost transfer capacities

Mandatory CSR disclosure will result in increasing corporate costs; thus, if companies can effectively transfer the pressure of rising costs associated with mandatory disclosure, the possibility of increasing tax avoidance will be reduced. In this regard, we established three indicators to measure enterprises' cost-passing capabilities. The first is the *Z-score* proposed by Altman (1968), which measures corporate financial risks. *Z-score* = *1.2* × *working capital/total assets* + *1.4* × *retained earnings/total assets* + *3.3* × *earnings before interest and tax/total assets* + *0.6* × *total market value of stocks/book value of liabilities* + *0.999* × *sales income/total assets*. The smaller the *Z-score*, the higher the enterprise's financial risk, and the weaker its cost transferability. The other two are industry-level indicators, including the number of companies in the industry and the concentration of operating income. *Operating income concentration* = *the square sum of the market share of all companies in the industry.* We divide the sample into two groups according to the median of the annual and industry *Z-score* and the annual median of the two industry indicators, and then conduct group regression. The results in Table 6 demonstrate that the impact of the mandatory disclosure policy on corporate tax avoidance is significant only in the sample groups with higher financial risks and weaker industry power, which have lower risk and cost transfer capabilities.

6.2. Heterogeneity of policy shock intensity

6.2.1. Heterogeneity of firms' different CSR performance

CSR activities predominantly include environmental and social initiatives; therefore, the mandatory disclosure policy may have a greater impact on firms that do not perform well in these two qualities, leading to a greater decline in profitability or higher CSR expenditure, which

Table 4
Robustness Check

Panel A: Alternative measures for corporate tax avoidance			
	CETR	*GETR*	*BTD*
	(1)	(2)	(3)
Post×Treated	**-0.080*** **	**-0.019***	**0.003***
	(0.022)	**(0.010)**	**(0.002)**
Treated	0.059***	0.013	-0.003*
	(0.019)	(0.009)	(0.001)
Post	0.026	0.022***	-0.002***
	(0.017)	(0.008)	(0.001)
Control Variables	YES	YES	YES
Fixed Effects	Industry, Province	Industry, Province	Industry, Province
Obs.	2490	2490	2244
Adjust R^2	0.127	0.169	0.122

Panel B: Additional robustness checks with the dependent variable being *TA_CETR*

	Parallel trend	Placebo test with pseudo adoption year being 2007, pre-period [2006–2009]	Deleting 2008	Excluding sample with profit less than zero
	(1)	(2)	(3)	(4)
Post×Treated	n.a.	**0.011**	**0.061** **	**0.068*** **
	n.a.	**(0.027)**	**(0.026)**	**(0.022)**
Year-2×Treated	0.046			
	(0.043)			
Year-1×Treated	-0.030			
	(0.046)			
Year+1×Treated	**0.079***			
	(0.044)			
Year+2×Treated	**0.081***			
	(0.043)			
Year+3×Treated	**0.092** **			
	(0.044)			
Treated	-0.059	-0.046**	-0.042*	-0.046**
	(0.039)	(0.023)	(0.023)	(0.018)
Post	n.a	0.021	-0.001	-0.018
	n.a	(0.022)	(0.021)	(0.017)
Control Variables	YES	YES	YES	YES
Fixed Effects	Industry, Year, Province	Industry, Province	Industry, Province	Industry, Province
Obs.	2490	1449	2192	2378
Adjust R^2	0.147	0.128	0.127	0.204

Table 5
Analysis by the group of corporate profitability

	ROA		ROE	
	Low	High	Low	High
Post* × *Treated	**0.129*** **	**0.025**	**0.144*** **	**0.024**
	(0.039)	**(0.020)**	**(0.039)**	**(0.019)**
Treated	-0.085***	-0.040**	-0.121***	-0.020
	(0.031)	(0.019)	(0.030)	(0.018)
Post	-0.088***	0.013	-0.075***	0.000
	(0.027)	(0.015)	(0.029)	(0.015)
Control Variables	YES	YES	YES	YES
Fixed Effects	Industry, Province	Industry, Province	Industry, Province	Industry, Province
Obs.	1243	1247	1243	1247
Adjust R^2	0.105	0.175	0.094	0.187

will likely be managed by increasing the level of tax avoidance. We use whether the company is polluting to investigate the company's environmental CSR aspects, as non-polluting companies may perform better. Using per capita wages to examine the table of CSR social welfare, we assume that companies with higher per capita wages will be more likely to care for employees and prioritize stakeholders; therefore, the social CSR aspect will perform better. In addition, companies with low per capita wages are also more cost-sensitive, so they are expected to be more likely to respond to the increase in corporate CSR spending by increasing tax avoidance. Polluting industries are grouped according to the "List of Listed Companies Environmental Inspection Industry Classification Management 2008," and per capita wages are grouped according to the industry and the year median of per capita wages. The results in Table 7 illustrate that the impact of mandatory disclosure policies on corporate tax avoidance is significant only in those sample groups that require greater costs to improve CSR.

Table 6
Analysis by the group of corporate cost transfer capability

	Corporate financial risk		The number of companies within the industry		Operating income concentration within the industry	
	High	Low	High	Low	High	Low
Post* × *Treated	**0.111*** **	**0.047**	**0.080*** **	**0.040**	**0.013**	**0.083*** **
	(0.033)	**(0.030)**	**(0.023)**	**(0.079)**	**(0.067)**	**(0.023)**
Treated	-0.059**	-0.052**	-0.056***	-0.129	-0.073	-0.058***
	(0.028)	(0.025)	(0.019)	(0.100)	(0.077)	(0.019)
Post	-0.058**	0.006	-0.027	-0.046	-0.065	-0.029*
	(0.025)	(0.022)	(0.018)	(0.083)	(0.069)	(0.018)
Control Variables	YES	YES	YES	YES	YES	YES
Fixed Effects	Industry, Province	Industry, Province	Industry, Province	Industry, Province	Industry, Province	Industry, Province
Obs.	1242	1248	2355	135	189	2301
Adjust R^2	0.104	0.164	0.120	0.414	0.306	0.121

Table 7
Analysis by the group of the cost needed to improve CSR

	Whether to pollution firms		Per capita wage	
	Polluting firms	Non-polluting firms	Low	High
Post* × *Treated	**0.129*** **	**0.041**	**0.131*** **	**0.027**
	(0.034)	**(0.029)**	**(0.033)**	**(0.031)**
Treated	-0.091***	-0.037	-0.103***	-0.017
	(0.027)	(0.027)	(0.028)	(0.025)
Post	-0.053*	-0.005	-0.050**	0.009
	(0.028)	(0.022)	(0.024)	(0.024)
Control Variables	YES	YES	YES	YES
Fixed Effects	Industry, Province	Industry, Province	Industry, Province	Industry, Province
Obs.	1007	1483	1245	1245
Adjust R^2	0.128	0.144	0.129	0.122

6.2.2. Region heterogeneity

Chen et al. (2018) determined that mandatory CSR disclosure will reduce urban pollutant emissions, but this positive externality comes at the expense of shareholders' interests. Furthermore, if the pollutant emissions of the company's region are higher, the company will undoubtedly face greater pressure to reduce emissions, occupy more shareholders' interests, and increase the potential for tax avoidance. In addition, Liu and Zhao (2019) found that companies in regions with higher minimum wages have greater tax avoidance; therefore, when the disclosure policy is implemented in these regions, local companies may have a higher possibility of tax avoidance. Based on the sulfur dioxide (SO_2) emissions in each region and the median of the minimum wage standards in each region in 2008, we divide the sample into two groups and conduct a group regression. The results of Table 8 demonstrate that the impact of mandatory CSR disclosure policies on corporate tax avoidance is significant only in areas with high pollution and high minimum wage standards.

Table 8
Sub-group analysis of regions mostly affected by the policy

	SO_2 emissions in the region		Minimum wage standard in the region	
	High	Low	High	Low
Post* × *Treated	**0.105*** **	**0.037**	**0.091*** **	**0.038**
	(0.029)	**(0.036)**	**(0.025)**	**(0.044)**
Treated	-0.074***	-0.023	-0.062***	-0.070*
	(0.025)	(0.029)	(0.022)	(0.037)
Post	-0.037*	-0.004	-0.021	-0.034
	(0.022)	(0.027)	(0.020)	(0.035)
Control Variables	YES	YES	YES	YES
Fixed Effects	Industry, Region	Industry, Region	Industry, Region	Industry, Region
Obs.	1479	1011	1876	614
Adjust R^2	0.130	0.139	0.119	0.150

7. Conclusions

As one of the mainstream business practices in the world, CSR is gaining increased attention from all levels of society. To ensure the transparency of CSR information, regulatory authorities require companies to compulsorily disclose CSR reports. Mandatory CSR disclosure policy may have adverse effects on companies, and how companies navigate such adverse effects is a critical consideration. In this article, we use data from Chinese listed companies and apply the PSM-DID method to investigate the impact of mandatory CSR disclosure on corporate tax avoidance, finding that mandatory CSR disclosure significantly increased Chinese companies' level of tax avoidance.

This result specifically applies to companies with lower profitability, companies with poorer risk transfer capabilities (high financial risks, a large number of companies in the industry, and high industry concentration), and companies that are more likely to be affected by the mandatory disclosure policy. Polluting companies, companies with low per capita wages, companies in regions with high pollutant emissions, and companies in regions with high minimum wages are more prominent. Companies that have reduced profits and increased expenditures due to mandatory CSR disclosure should be more inclined toward tax avoidance. In summary, our findings are consistent with the view that mandatory CSR disclosure alters corporate behavior, and the difference is that mandatory CSR disclosure generates positive externalities for society at the expense of tax payments to the government. The conclusions of this article expand the existing academic literature regarding the economic consequences of mandatory CSR disclosure and the motivations for corporate tax avoidance.

The conclusions of this article also intimate important policy implications. While compulsory CSR disclosure policies guarantee the transparency of CSR information, they also affect corporate profits and increases corporate cost burdens, thereby forcing companies to take actions that may harm the national interest; therefore, when formulating disclosure policies, regulatory authorities must not only proceed from the perspective of investors, but also fully consider the possible impacts on different stakeholders, such as companies' own profitability and degree of burden.

We contend that an alternative solution is, while requiring companies to disclose CSR information compulsorily, it is possible to appropriately increase the tax deduction for those engaged in CSR-related activities, particularly those that face business difficulties and are more likely to be affected by such disclosure policies.

Finally, the conclusions of this article reflect that management and shareholders do not fully agree that tax avoidance is a violation of CSR; therefore, while tax deductions are made and enterprises are encouraged to assume social responsibility, an alternative policy could be to clarify that tax avoidance is also inherently a violation of CSR.

CRediT authorship contribution statement

Wei Jiang: Conceptualization, Methodology, Software, Writing – original draft. **Cheng Zhang:** Data curation, Validation, Resources, Supervision. **Chengyu Si:** Formal analysis, Investigation, Writing – review & editing, Visualization.

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Appendix A: PSM process

Panel A:Logit model used to find propensity scores

Independent Variables	Dependent Variables Treated
Size	1.092***
	(0.059)
ROA	12.354***
	(1.137)
Turnover	-0.170
	(0.109)
Analysts	0.127
	(0.117)
SOE	0.331***
	(0.109)
Pollution	-0.381***
	(0.121)
Fixed Effect (FE)	Industry, Year
Obs.	3,102
Pseudo R^2	0.237

Panel B:PSM validity checks

Variables	PSM	Mean of treatment group (1)	Mean of control group (2)	T-test of difference (1) – (2)
Size	Pre-match	3.748	2.732	25.75***
	Post-match	3.748	3.693	1.03
ROA	Pre-match	0.061	0.026	12.8***
	Post-match	0.061	0.065	-1.55
Turnover	Pre-match	6.347	6.523	-7.58***
	Post-match	6.347	6.355	-0.28
Analysts	Pre-match	0.132	0.042	5.74***
	Post-match	0.132	0.131	0.03
SOE	Pre-match	0.695	0.530	7.92***
	Post-match	0.695	0.675	0.79
Pollution	Pre-match	0.420	0.393	1.28
	Post-match	0.420	0.430	-0.37

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Wei Jiang, Ph.D., graduated from Tongji University of China. Wei Jiang is a lecturer at School of Economics, Hangzhou Normal University. His research interests include corporate finance, applied financial econometrics and Chinese financial markets. His related relevant research has been published in *The Journal of Quantitative & Technical Economics, Physica A: Statistical Mechanics and its Applications, Fluctuation and Noise Letters, Review of Investment Studies*, etc.

Cheng Zhang, Ph.D., graduated from Renmin University of China. Cheng Zhang is a professor at School of Finance, Nanjing University of Finance and Economics. His research interests include green finance and modern industry development. His related relevant research has been published in *Journal of business research, Economic Modelling, Energy Policy, International Entrepreneurship and Management Journal*, etc.

Chengyu Si, graduated from Auburn University, U.S. Chengyu Si is a lecturer at School of Economics, Hangzhou Normal University. Her research interests include labor economics, resource economics and Chinese financial markets. Her related relevant research has been published in *Applied Economics and Finance, Journal of Convergence Information Technology*.