# Corporate Social Responsibility (CSR): Focus on Tax Avoidance and Financial Ratio Analysis

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**Abstract**
This study aims to discover the relationship between financial ratios and tax avoidance in firms participating in corporate social responsibility (CSR) activities. Using a sample of 365 Chinese listed firms in the Shanghai and Shenzhen stock exchanges, we find that engaging in CSR activities discourages tax avoidance behaviors, especially in companies that actively participate in CSR activities. Concerning financial ratios, we also find that firms with higher profitability, higher cash flow, and higher sales growth are more likely to participate in tax avoidance. In contrast, firms with high liquidity are less likely to engage in tax avoidance. Based on the results of this study, tax authorities can predict whether a Chinese company will engage in tax avoidance activities in future by referring to its financial ratios. Moreover, tax authorities can use CSR activities to encourage companies to pay tax.
**Keywords:** Corporate Social Responsibility (CSR); Book-Tax Differences (BTD); Tax Avoidance (TS).

## I. INTRODUCTION

Corporate social responsibility (CSR) is becoming a vital element of today's dynamic business world. The World Business Council for Sustainable Development states that CSR is essential for sustainable economic development and social welfare (Garde-Sanchez et al., 2018). CSR can also legitimize an organization's actions (Deegan et al., 2002), improve a company's image (Chen and Tsai, 2007), and offer financial benefits (Sial et al., 2018). Although financial performance remains the most valuable and significant aspect of a firm, stakeholders are recently starting to pay more attention to its performance in social responsibility (Goranova and Ryan, 2013). O'Rourke (2003) suggests that investors may focus not only on financial performance but could also raise social responsibility issues, which reflects their concerns regarding social, environmental, and economic performance (Goranova and Ryan, 2013).

The growing interest in the relationship between CSR and taxation can also be seen in academia. It is well-known that firms always try to minimize cash outflow, which includes tax expenses. Besides avoiding paying tax, corporations also have motivation to manipulate earnings in the book-tax difference (BTD) to reduce tax payable (Kim and Im, 2017). Tax avoidance refers to a company reducing its tax burden explicitly or implicitly in the short and long term without incurring additional costs due to tax investigations (Purwantini et al., 2017). When a tax authority determines that a company's tax avoidance measures constitute tax evasion, rather than legal tax-saving activities, the company will have to pay the original tax amount

as well as additional fines. Besides the direct financial loss, this could have a negative impact on the company's reputation and ultimately lead to a decline in both the company's value and its revenue. Considering a company that is actively involved in CSR, if it is found to have engaged in tax avoidance, it will probably suffer a huge loss in corporate reputation. However, when comparing companies that actively participate in CSR with companies with a passive CSR commitment, the latter may be influenced less by a negative corporate image.

A financial ratio analysis is a method used to evaluate the profitability, stability, liquidity, activity, growth, and productivity of a company through data extracted from its financial statements (Salmi and Martikainen, 1994). This analysis can provide financial information for managers and investors to support future decision making. Kim and Im (2017) stated that Korean companies that are less involved in CSR are motivated to increase their corporate value by reducing corporate taxes; Korean companies that are more involved in CSR are also more motivated to avoid taxes, even though not directly reduce tax expense. They also found that a company's current asset turnover, noncurrent liabilities ratio, and return on equity (ROE) ratio all have a positive and significant influence on its corporate tax avoidance strategies. Conversely, they also showed that shareholders' equity growth ratio was negatively related to corporate tax avoidance. Although there are various studies on corporate valuation, tax avoidance, and CSR, none have investigated the relationship between tax avoidance and the financial ratio in Chinese companies engaged in CSR.

The purpose of this study is therefore to elucidate the relationship between financial ratio and tax avoidance in firms participating in CSR activities in China. We propose that even though avoiding taxes could damage corporate image, corporate firms still have an incentive to avoid taxes, no matter whether and how actively they participate in CSR activities. We also hypothesize that there is a relationship between corporate tax avoidance and financial ratios.

This study uses a quantitative research method based on Kim and Im's (2017) correlation and regression models and employs 365 listed firms on the Shanghai and Shenzhen stock exchanges as a data sample. The findings of this research are: (1) engaging in CSR activities discourages tax avoidance behaviors, especially in companies that actively participate in CSR activities; (2) firms with higher profitability, higher cash flow, and higher sales growth are more likely to participate in tax avoidance; (3) firms with high liquidity are less likely to avoid tax.

This study contributes to the existing academic body of literature by demonstrating that there is a casual relationship between corporate tax avoidance and CSR activities in China, thereby filling this knowledge gap, as no previous research has addressed this issue in China. The results of this study may enable tax authorities to establish a culture of encouraging taxation by using CSR activities and to predict whether a company will take part in tax avoidance activities in the long term. This study also suggests that financial ratio analysis can provide market decision makers with more information on CSR and tax avoidance, enabling them to make more accurate and reasonable investment decisions.

The structure of the remainder of this article is as follows: In section 2, we provide a brief review of the relevant literature and present our hypotheses. In section 3, we

describe the methodology and samples used. Section 4 explains the results of the regression model and provides a discussion, while section 5 concludes our study.

## II. LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

### Tax Avoidance and CSR

Hanlon and Heitzman (2010) stated that tax avoidance has no generally accepted definition and that researchers adopt different definitions based on their understanding. Generally, tax avoidance can be defined as a tax reduction attempt that reflects all transactions that affect a company's tax payable (Purwantini, 2017). Taxpayers always want to pay less to minimize cash outflow. As a result, they often practice tax avoidance both by violating (tax evasion) and by not violating (tax avoidance) the country's laws. According to Dyreng, Hanlon, and Maydew's work (2010), tax avoidance includes activities that are permitted by tax law and activities that are tax deductible. Tax avoidance often take advantage of the weaknesses in tax laws, rather than breaking them.

CSR is a hotly debated topic among academic researchers and practitioners. Chamberlain (1973) defined CSR as the action that corporate companies should take as a matter of legal rights in specific situations and further stated that it can only be satisfied by fulfilling obligations to particular individuals. In contrast, Frederick (1983) stated that CSR is required for a corporate's operation system to fulfill the expectations of the public. The production and distribution of corporate should therefore be employed to enhance overall socioeconomic welfare. However, CSR was defined as a more complete concept later. Carrol (1999) proposed three elements—corporate social responsibility, corporate social responsiveness, and social issues—as elements of corporate social performance. They suggested that CSR should cover all corporate obligations to society, such as economic, legal, and ethical obligations. Matten and Moon (2004) stated that CSR includes economic responsibility, public responsibility, and social responsiveness. Overall, defining CSR as a single concept is quite difficult (Carrol, 1999). For the purposes of this study, we assert that CSR reflects the duties of a company to its stakeholders, including shareholders, employees, customers, suppliers, and communities (Orlitzky, Siegel and Waldman, 2011).

Some studies have addressed the relationship between tax avoidance and CSR. Grant and Roman (2012) empirically proved that companies that actively participate in CSR are less likely to engage in avoiding taxes. Watson (2011) used BTD—the difference between accounting profit and taxable income—to calculate tax avoidance. They divided all corporate samples into three groups based on their CSR participation level. The results showed that the BTD of the group with the highest CSR score was not significantly different from the intermediate group. However, the BTD of the lowest CSR group was larger than other two groups, which indicates a higher tendency to avoid taxes. Ki (2012) found a negative correlation between CSR activities and estimated tax avoidance. Kim and Im (2017) stated that CSR activities discourage tax avoidance based on their study in Korea.

### Financial Ratio

Financial ratio analysis is a method used to evaluate profitability, leverage, liquidity, activity, and growth of a company using data extracted from financial statements (Salmi and Martikainen, 1994).Profitability ratio measures the overall performance of

a company and indicates its capacity to generate profits (Kim and Im, 2017). Leverage ratios show a firm's ability to convert its long-term liabilities. Liquidity ratio indicates the possibility of an asset being transformed into cash without risk of loss and measures a company's ability to meet its short-term liabilities (Lin et al., 2011). A company's liquidity ratio includes the current ratio, indicating a company's ability to cover its current liabilities with its current assets, and the solvency ratio, indicating a company's ability to cover its current liabilities with its liquid resources (Edum-Fotwe, 1996). Activity ratios measure how effectively a firm is using its assets, while growth ratios measure the rate at which the company should grow, which reveals its competitiveness and profit generating potential (Kim and Im, 2017).

**Hypothesis Development**

The main motivation for tax avoidance is to maximize profit (Chen et al., 2010). As taxes are considered to be one of the main cash outflows of a company, reducing these expenditures will substantially increase corporate value (Landry et al., 2013). According to Friedman (1970), the sole obligation of a company is to maximize the wealth of its shareholders. This implies that, as long as participating in tax avoidance activities can generate profit (reduce expenses), the company should be involved in those activities. Similarly, according to Huseynov and Klamm (2012), tax evasion can be regarded as contributing to a company's obligation to shareholders to reduce its expenditures and thereby increase shareholders' value. In contrast, Sikka and Willmott (2010) consider tax evasion to be illegal because it has a significant impact on both developed and developing countries and their ability to supply social services, such as education and infrastructure. According to Sikka and Willmott (2010), companies involved in tax avoidance cannot engage in CSR activities at the same time because the two concepts are not compatible. Lanis and Richardson (2012) conducted a study of more than 400 Australian companies from 2008–2009 and found that companies with high CSR disclosures showed less tax evasion or tax reduction strategies.

Different studies have shown different relationships between CSR and taxation. Huseynov and Klamm (2012) studied a sample of 2,337 firm years of Standard and Poor's 500 corporations from 2000–2008. Their results show that companies who actively engage in CSR activities have lower tax payments. Hoi and Wu (2013) tested a sample of 2,620 United States companies from 2003–2009 and found that companies that are less involved in CSR tend to participate in tax avoidance. However, Landry and Deslandes's (2013) study on 168 listed firms in the Toronto Stock Exchange from 2004–2008 was unable to find any relationship between tax behavior and CSR.

According to Godfrey and Merrill (2009), CSR can mitigate the negative impact of an adverse event by describing its active CSR activities, which is similar to the conclusion of Minor and Morgan (2011).Graham et al. (2013) analyzed survey responses from nearly 600 corporate tax executives and found that reputation issues was one of the most important reasons for not participating in tax avoidance. They concluded that if the public knows that the firm is engaging in tax avoidance, it will negatively influence its stock price. If a firm is revealed to have been involved in tax avoidance by tax authorities, the firm can suffer from both direct tax expenses and non-tax expenses, including damage to firm value, of which the latter is more critical to the firm (Kim and Im, 2017). Gulzar et al. (2018) suggested that companies with a

more responsible corporate culture will be less likely to participate in corporate tax avoidance. Based on these studies, we present our first hypotheses as follows:

$H_1$: *A firm that is actively engaged in CSR does not conduct a different level of tax avoidance.*
$H_2$: *A firm that is passively engaged in CSR does not conduct a different level of tax avoidance.*

According to Manzon and Plesko (2002), companies with high profitability are able to apply tax deductions to reduce tax expenditures. In these companies, managers tend to apply the tax benefits to reduce taxable income. This causes the difference between accounting profit and taxable income to widen (Sodan, 2012). Further, according to Khurana and Moser (2009), there is a positive and significant relationship between profitability and BTD. They suggest that firms with high profitability ratios generally have higher long-run effective cash tax rates and greater BTDs. Thus, we present our next hypothesis:

$H_3$: *Profitability ratios and tax avoidance (TS) have a positive relationship.*

Leverage ratio indicates a firm's ability to convert its long-term liabilities and reflects the capital structure of a firm. A company can use two methods to raise funds: the owner's investment and debt financing. In debt financing, companies enter into contracts with lenders that clarify borrowers' obligations and protect the interests of creditors. Several studies have called for this ratio as a control variable that can be used to explain BTD. Frank, Lynch, and Rego (2009) concluded that companies with high liabilities tend to manage their profit without violating contracts. Managers who are nearly breaking the clauses tend to make accounting choices that can greatly reduce the possibility of violating such terms (Watts and Zimmerman, 1986).As a result, highly leveraged companies tend to exhibit higher information risk, which may enhance their earnings management practices. This means that high leverage may partly explain the results of earnings management and the widening of the difference between accounting profit and taxable income. Therefore, it is likely that there is a positive correlation between leverage ratios and BTD, which leads us to our next hypothesis:

$H_4$: *Leverage ratios have a positive relationship with tax avoidance (TS).*

Liquidity ratio indicates a company's ability to transform an asset into cash without a risk of loss; it is also an accurate measure for a company's ability to meet its short-term liabilities (Lin et al., 2011).Sodan (2012) investigated the relationship between BTDs and liquidity using samples from Croatia and suggested that liquidity will affect the difference between accounting profit and taxable income. He stated that companies with lower liquidity ratios are considered to have liquidity problems and are more likely to manipulate earnings. However, as high income causes a larger tax base, managers are likely to reduce this amount. Thus, we set the next hypothesis:

$H_5$: *Liquidity ratios have a negative relationship with tax avoidance (TS).*

Activity ratios measure how effectively a firm is using its assets. Kim and Im (2017) studied the relationship between tax avoidance and a firm's activity ratios by

investigating 491 firms listed on the Korean stock exchange from 2005–2007. They found a positive association between activity ratios and BTD. They stated that high activity ratios indicate that the firm can reduce expenses, which will increase its taxable income. Therefore, managers tend to perform earnings management to reduce this amount which generates tax expenditure, a major cash outflow. Thus, we set the next hypothesis as follows:

$H_6$: *Activity ratios have a positive relationship with tax avoidance (TS).*

Growth ratios measure the rate at which a company should grow, which indicates its competitiveness and profit generating potential. Tang and Firth (2011) emphasized the universality of a positive correlation between growth ratio and BTD. They suggest that growing companies may prefer to invest in assets which can lead to BTD because of the different expense recognition rules. Furthermore, Kolay, Schallheim, and Wells (2011) found that growing companies may have more freedom in their accounting procedures than stable companies. Khurana and Moser (2009) emphasizes that large companies tend to show more BTDs, while fast-growing companies prefer to have more BTD-generating investments. Thus, we set our last hypothesis as follows:

$H_7$: *Growth ratios have a positive relationship with tax avoidance (TS).*

To investigate the relationship between financial ratios and tax avoidance, we performed an empirical analysis including tax avoidance and the financial ratios with the highest correlation among the representative financial ratios, similar to the method adopted by Kim and Im (2017). These are (1) PR (profitability ratio): return on ROE; (2) LVR (leverage ratio): leverage of noncurrent liability; (3) LQR (liquidity ratio): quick ratio; (4) AR (activity ratio): current asset turnover; and (5) GR (growth ratio): growth of ROE.

## III. RESEARCH METHODOLOGYAND EMPIRICAL RESULTS

### Data Source and Sample Collection

Our sample consisted of 365 firms listed on the Shenzhen and Shanghai stock exchanges. All financial data were collected from the China Stock Market and Accounting Research (CSMAR) database for the period 2010–2017. We adopted the Rankins CSR Ratings (RKS) to indicate each company's CSR performance. RankinsGlobal is an authoritative third-party rating agency for CSR in China. It is committed to providing objective and scientific CSR information to responsible investors, responsible consumers, and the public. After deleting the observations with missing values, our final sample included 2, 406 firm-year observations.

### Tax Avoidance Measures

According to previous researchers, the difference between the profit value (commercial profit) in the company's book and the profit (fiscal profit) in the tax calculation is called the book-tax difference (BTD). This value reflects a company's tax avoidance. Tax avoidance and the resultant BTD value is achieved by the company reporting higher book profits to increase the interests of shareholders but maintain a low tax expenditure. According to Wilson (2009), outsiders can detect a company's long-term and short-term tax avoidance strategies via their BTD values. Even though each of the indicators in a company's financial report is flawed, it is

helpful for researchers (Hanlon & Heitzman, 2010). According to Abdul Wahab and Holland (2015), the BTD is the difference between accounting income and taxable income. Besides BTD, Desai and Dharmapala (2006) proposed corporate tax avoidance estimates (TS) based on the assumption that BTD consists of earnings management and tax avoidance. They performed a regression analysis on total accruals and BTD to find abnormal BTDs, which is the flexible part of total accruals. This method can separate earnings management from BTD, which reduces possible measurement errors. This study uses both these methods to measure corporate tax avoidance.

$BTD_{i,t}$ = (accounting profit -taxable income) / total assets;
$BTD_{i,t} = \beta 1\ TA_{i,t} + \varepsilon_{i,t}$;
$BTD_{i,t}$ = (accounting profit - taxable income)of firm *i* in term *t* / total assets;
$TA_{i,t}$= (net income - business activities of cash flows) of firm *i* in term*t* / total assets;
$\varepsilon_{i,t}$= $TS_{i,t}$= estimated corporate tax avoidance of firm *i* in term*t* from Desai and Dharmapala (2006).

**Model Design**

Equation (3) shows the regression model that examines the impact of CSR activities on tax avoidance by examining BTD and TS.

$$BTD_{i,t}(TS_{i,t}) = \alpha_0 + \alpha_1 CSR_{i,t} + \alpha_2 ROA_{i,t} + \alpha_3 LEV_{i,t} + \alpha_4 SIZE_{i,t} + \alpha_5 PPE_{i,t} + \alpha_6 CFO_{i,t} + \alpha_7 SG_{i,t} + \varepsilon_{i,t} \quad (1)$$

$BTD_{i,t}$ = (accounting profit- taxable income)/ total assets;
$TS_{i,t}$ = estimated corporate tax avoidance from Desai and Dharmapala (2006);
$CSR_{i,t}$ = RKSindex(out of 100);
$ROA_{i,t}$ = net income/ total assets;
$LEV_{i,t}$ = total liabilities/ total assets;
$SIZE_{i,t}$ = natural logarithm of total assets;
$PPE_{i,t}$ = (tangible assets -land - assets under construction)/ total assets;
$CFO_{i,t}$ = operating cash flow/ total assets;
$SG_{i,t}$ = (current term sales- previous term sales)/ previous term sales;
$\varepsilon$ = residuals.

The dependent variables in Equation (3) are BTD and TS, which both represent corporate tax avoidance. We use the RKSindex to represent companies' CSR activity. Other variables—except for CSR—can influence corporate tax avoidance (Watson, 2011). High profit (ROA) companies are more likely to participate in tax avoidance activities. Highly leveraged (LEV) companies tend to exhibit higher information risk, which may enhance the practice of earnings management, thereby eliciting positive tax avoidance. Large companies can establish dominant tax plans, meaning that they have less incentive to avoid taxes. Companies with a large percentage of property, plant, and equipment (PPE) can reduce taxes in various ways, which means that they avoid taxes passively. Companies with large operating cash flow (CFO) are more likely to avoid taxes. If the company has positive sales growth (SG), they probably participate in tax avoidance actively to decrease cash outflow.

## Empirical Analyses and Results

*Descriptive Statistics*

Table 1 reports the descriptive statistics of the main variables. In panel A, the mean value of BTD is 0.0056 with a median of 0.0029, while the mean value of TS is -0.0005 with a median of 0.0010. These values indicate left tail normal distributions of both BTD and TS. The standard deviations of BTD and TS are 0.1337 and 0.1342 respectively, indicating that there is a difference in the tax avoidance procedures of corporate. There is a right tail normal distribution in CSR with an average value of 39.1696 and a median of 35.9915.

Panel B shows that the mean value of activity ratio (AR), which is current asset turnover, is 136.1268 with a median value of 111.04090. The average liquidity ratio (LQR), which is a quick ratio, is 13.7404 and the median is 111.0490. The mean of growth ratio (GR), which indicates the growth of shareholders' equity, is 15.5110 with a median of 7.3380. The leverage ratio (LVR), which is a noncurrent liability ratio, is 110.4091 on average with a median of 92.8337.The mean of the profitability ratio (PR), which indicates the return on ROE, is 8.8671 with a median of 7.6662. They all have a right tail normal distribution.

**TABLE 1**
**Descriptive Statistics for the Control Variables (N=2406)**

| VARIABLES | Mean | STD | Min. | 25% | Median | 75% | Max. |
|---|---|---|---|---|---|---|---|
| **Panel A** | | | | | | | |
| BTD | 0.0056 | 0.1337 | -1.6601 | -0.0222 | 0.0029 | 0.0354 | 1.9196 |
| TS | -0.0005 | 0.1342 | -1.6622 | -0.0309 | 0.0010 | 0.0334 | 1.9167 |
| CSR | 39.1696 | 13.1215 | 11.6900 | 30.2209 | 35.9915 | 45.2746 | 87.9478 |
| ROA | 0.0437 | 0.0407 | -0.0094 | 0.0134 | 0.0323 | 0.0609 | 0.2917 |
| LEV | 0.5125 | 0.1897 | 0.0158 | 0.3702 | 0.3702 | 0.5330 | 0.6626 |
| SIZE | 23.3241 | 1.4739 | 19.5809 | 22.2221 | 23.1872 | 24.2110 | 28.5087 |
| PPE | 0.2512 | 0.1943 | 0.0002 | 0.0885 | 0.2071 | 0.3718 | 0.9363 |
| CFO | 0.0549 | 0.0697 | -0.2665 | 0.0163 | 0.0541 | 0.0961 | 0.4382 |
| SG | 0.0221 | 0.3586 | -0.9541 | -0.0850 | 0.0738 | 0.2136 | 0.9981 |
| **Panel B** | | | | | | | |
| TS | -0.0005 | 0.1342 | -1.6622 | -0.0309 | -0.0309 | 0.0334 | 1.9167 |
| AR | 136.1268 | 106.7747 | 1.2086 | 60.0049 | 111.0490 | 185.8463 | 589.8030 |
| LQR | 13.7404 | 21.5003 | 0.0314 | 3.9385 | 8.6771 | 17.0541 | 388.0610 |
| GR | 15.5110 | 31.9342 | -36.5476 | 2.3974 | 7.3380 | 16.4640 | 477.3262 |
| LVR | 110.4091 | 71.9917 | 2.4769 | 59.7725 | 92.8337 | 142.2858 | 493.9974 |
| PR | 8.8671 | 6.9768 | -3.4505 | 3.1701 | 7.6662 | 12.5966 | 46.4905 |

*Correlation Analysis*

Table 2 presents the Pearson's and Spearman's correlation coefficients among the main variables. According to these results, the correlation of CSR and total liabilities to total assets (LEV), size of total assets (SIZE), property, plant, equipment to total assets (PPE), operating cash flow to total assets (CFO), activity ratio (AR), and leverage ratio (LVR) are positive at a 1% significance level. In contrast, the correlation of CSR and return on assets (ROA), sales growth ratio (SG), liquidity ratio (LQR), and shareholders' equity growth ratio (GR) are negative with the highest significance level of 5%. There are no significant correlations between CSR and BTD or CSR and TS.

**TABLE 2: Correlation Analysis for All Variables**

| Variab | BTD | TS | CSR | ROA | LEV | SIZE | PPE | CFO | SG | AR | LQP | GR | LVR | PR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BTD | 1.000 (0.000) | 0.996* (0.000) | -0.014 (0.496) | 0.121* (0.000) | - (0.006) | -0.026 0.2087 | 0.109* (0.000) | 0.024 ( 0.23 | 0.123* (0.000) | 0.128* (0.000) | -0.018 (0.384) | 0.019 (0.356) | 0.042* (0.038) | 0.089* (0.000) |
| TS | 0.996* (0.000) | 1.000 (0.000) | -0.002 (0.934 | 0.103* (0.000) | - (0.006) | -0.018 0.3689 | 0.142* (0.000) | 0.095* (0.000) | 0.101* (0.000) | 0.147* (0.000) | -0.031 (0.131) | 0.007 (0.746) | 0.067* (0.001) | 0.067* (0.001) |
| CSR | -0.014 (0.496) | -0.002 (0.934 | 1.000 (0.000) | - (0.010) | 0.079* (0.000) | 0.514* (0.000) | 0.062* (0.002 | 0.103* (0.000) | - (0.000) | 0.111* (0.000) | - (0.002) | - (0.032) | 0.147* (0.000) | -0.032 (0.113) |
| ROA | 0.121* (0.000) | 0.103* (0.000) | - (0.010) | 1.000 (0.000) | - (0.000) | - (0.000) | - ( 0.00 | 0.380* (0.000) | 0.327* (0.000) | 0.129* (0.000) | 0.392* (0.000) | 0.135* (0.000) | - (0.000) | 0.846* (0.000) |
| LEV | - (0.006) | - (0.006) | 0.079* (0.000) | - (0.000) | 1.000 (0.000) | 0.468* (0.000) | - ( 0.00 | - (0.000) | 0.062* ( 0.00 | 0.033 ( 0.10 | - (0.000) | -0.024 (0.235) | 0.434* (0.000) | -0.032 (0.114) |
| SIZE | -0.026 0.2087 | -0.018 0.3689 | 0.514* (0.000) | - (0.000) | 0.468* (0.000) | 1.000 (0.000) | 0.063* ( 0.00 | -0.003 ( 0.88 | - (0.000) | 0.141* (0.000) | -0.025 (0.221) | -0.013 (0.526) | 0.308* (0.000) | 0.060* (0.003) |
| PPE | 0.109* (0.000) | 0.142* (0.000) | 0.062* (0.002 | - ( 0.00 | - ( 0.00 | 0.063* ( 0.00 | 1.000 (0.000) | 0.317* (0.000) | -0.030 (0.140 | 0.520* (0.000) | - (0.000) | - (0.000) | 0.590* (0.000) | - (0.000) |
| CFO | 0.024 ( 0.23 | 0.095* (0.000) | 0.103* (0.000) | 0.380* (0.000) | - (0.000) | -0.003 ( 0.88 | 0.317* (0.000) | 1.000 (0.000) | - (0.014) | 0.277* (0.000) | 0.085* (0.000) | - (0.007) | 0.094* (0.000) | 0.262* (0.000) |
| SG | 0.123* (0.000) | 0.101* (0.000) | - (0.000) | 0.327* (0.000) | 0.062* ( 0.00 | - (0.000) | -0.030 (0.140 | - (0.014) | 1.000 (0.000) | 0.289* (0.000) | -0.023 (0.262) | 0.227* (0.000) | -0.017 (0.415) | 0.426* (0.000) |
| AR | 0.128* (0.000) | 0.147* (0.000) | 0.111* (0.000) | 0.129* (0.000) | 0.033 ( 0.10 | 0.141* (0.000) | 0.520* (0.000) | 0.277* (0.000) | 0.289* (0.000) | 1.000 (0.000) | - (0.000) | -0.023 (0.268) | 0.405* (0.000) | 0.145* (0.000) |
| LQR | -0.018 (0.384) | -0.031 (0.131) | - (0.002) | 0.392* (0.000) | - (0.000) | -0.025 (0.221) | - (0.000) | 0.085* (0.000) | -0.023 (0.262) | - (0.000) | 1.000 (0.000) | 0.060* (0.003) | - (0.005) | 0.275* (0.000) |
| GR | 0.019 (0.356) | 0.007 (0.746) | - (0.032) | 0.135* (0.000) | -0.024 (0.235) | -0.013 (0.526) | - (0.000) | - (0.007) | 0.227* (0.000) | -0.023 (0.268) | 0.060* (0.003) | 1.000 (0.000) | - (0.001) | 0.167* (0.000) |
| LVR | 0.042* (0.038) | 0.067* (0.001) | 0.147* (0.000) | - (0.000) | 0.434* (0.000) | 0.308* (0.000) | 0.590* (0.000) | 0.094* (0.000) | -0.017 (0.415) | 0.405* (0.000) | - (0.005) | - (0.001) | 1.000 (0.000) | - (0.000) |
| PR | 0.089* (0.000) | 0.067* (0.001) | -0.032 (0.113) | 0.846* (0.000) | -0.032 (0.114) | 0.060* (0.003) | - (0.000) | 0.262* (0.000) | 0.426* (0.000) | 0.145* (0.000) | 0.275* (0.000) | 0.167* (0.000) | - (0.000) | 1.000 (0.000) |

*Regression Analysis of CSR Activities*

Table 3 shows the results of the two regression analyses of CSR activities, in which the dependent variables are BTD and TS. It shows that CSR can negatively influence BTD and TS with the both values being -0.0011, below the significance level of 1%. The results also demonstrate that return on assets (ROA), operating cash flow to total assets (CFO), and sales growth (SG) have significantly positive impacts on both BTD and TS. Conversely, total liabilities to total assets (LEV), firm size (SIZE), and property, plant, equipment to total assets (PPE) have no significant relationship with BTD and TS.

**TABLE 3**
**Results for Regression Analysis**

| VARIABLES | Tax avoidance | | | |
|---|---|---|---|---|
| | BTD | VIF | TS | VIF |
| CSR | -0.0011** | 1.45 | -0.0011** | 1.45 |
| | -0.0005 | | -0.0005 | |
| ROA | 0.4153*** | 1.85 | 0.1298* | 1.85 |
| | -0.1455 | | -0.1455 | |
| LEV | 0.0102 | 1.85 | 0.0102 | 1.85 |
| | -0.0614 | | -0.0614 | |
| SIZE | -0.0067 | 1.87 | -0.0067 | 1.87 |
| | -0.0169 | | -0.0169 | |
| CFO | 0.0780* | 1.43 | 0.2075*** | 1.43 |
| | -0.0472 | | -0.0472 | |
| PPE | -0.0518 | 1.20 | -0.0518 | 1.20 |
| | -0.0497 | | -0.0497 | |
| SG | 0.0251** | 1.29 | 0.0251** | 1.29 |
| | -0.0107 | | -0.0107 | |
| Constant | 0.2005 | | 0.1912 | |
| | -0.3742 | | -0.3742 | |
| Observations | 2,406 | | 2,406 | |
| R-squared | 0.042 | | 0.0313 | |
| F | 16.69*** | | 10.25*** | |

***, **, * indicates statistical significance at level 1%, 5% and 10%, respectively.

*Regression Analysis of Active-CSR corporates and Passive-CSR corporates*

Table 4 shows the results of the regression analysis on active-CSR and passive-CSR firms in which the dependent variables are BTD and TS respectively. First, we divided the sample into two subsamples based on their CSR scores. The 50% with higher CSR index is therefore the HIGH CSR subsample and the other is the LOW CSR subsample.

According to the result, both HIGH CSR and LOW CSR have statistically significant and negative relationships with BTD and TS at a 1%significance level. Moreover, in the HIGH CSR group, the coefficients of profitability (ROA) and sales growth (SG) are 0.4228 (0.1373) and 0.0247 (0.0247) respectively and significant at a 5% level. However, these coefficients are insignificant in the LOW CSR group. Operating cash flow to total assets (CFO) has a significant and negative relationship with tax avoidance in the HIGH CSR subsample, but is insignificant in the LOW CSR

subsample. Total liabilities to total assets (LEV), size of total assets (SIZE), and property, plant, equipment to total assets (PPE) have no significant relationships with BTD and TS in either subsamples, which confirms the results presented in Table 4.

**TABLE 4**
**Regression Analysis for Different CSR Activity Firms**

| VARIABLES | Tax avoidance | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | BTD | | | | TS | | | |
| | High Group | VIF | Low Group | VIF | High Group | VIF | Low Group | VIF |
| High CSR | -0.0007* | 1.40 | | | -0.0007* | 1.4 | | |
| | -0.0008 | | | | -0.0008 | | | |
| Low CSR | | | -0.0018* | 1.07 | | | -0.0018* | 1.07 |
| | | | -0.0009 | | | | -0.0009 | |
| ROA | 0.4228*** | 2.03 | 0.4617 | 1.74 | 0.1373** | 2.03 | 0.1762 | 1.74 |
| | -0.126 | | -0.1857 | | -0.126 | | -0.1857 | |
| LEV | -0.0776 | 2.01 | 0.0208 | 1.73 | -0.0776 | 2.01 | 0.0208 | 1.73 |
| | -0.057 | | -0.1117 | | -0.057 | | -0.1117 | |
| SIZE | -0.0108 | 1.91 | 0.0051 | 1.36 | -0.0108 | 1.91 | 0.0051 | 1.36 |
| | -0.0121 | | -0.0327 | | -0.0121 | | -0.0327 | |
| CFO | -0.0853** | 1.46 | 0.0634 | 1.41 | -0.2002*** | 1.46 | 0.2221*** | 1.41 |
| | -0.0418 | | -0.0648 | | -0.0418 | | -0.0648 | |
| PPE | 0.0114 | 1.24 | -0.1256 | 1.19 | 0.0114 | 1.24 | -0.1256 | 1.19 |
| | -0.0665 | | -0.1025 | | -0.0665 | | -0.1025 | |
| SG | 0.0247*** | 1.40 | 0.0256 | 1.17 | 0.0247*** | 1.40 | 0.0256 | 1.17 |
| | -0.009 | | -0.0205 | | -0.009 | | -0.0205 | |
| Constant | 0.3184 | | -0.0512 | | 0.3091 | | -0.0605 | |
| | -0.2679 | | -0.7074 | | -0.2679 | | -0.7074 | |
| Observations | 1,203 | | 1,203 | | 1,203 | | 1,203 | |
| R-squared | 0.0503 | | 0.0311 | | 0.0346 | | 0.0291 | |
| F | 14.69*** | | 6.27*** | | 9.44*** | | 5.48*** | |

***, **, * indicates statistical significance at level 1%, 5% and 10%, respectively.

*Regression Analysis of Financial Ratios*

Table 5displays the results of the regression analysis of tax avoidance on financial ratios of CSR corporates, including profitability ratio, leverage ratio, liquidity ratio, activity ratio, and growth ratio.

$$TS_{i,t} = \alpha_0 + \alpha_1 AR_{i,t} + \alpha_2 LQR_{i,t} + \alpha_3 GR_{i,t} + \alpha_4 LVR_{i,t} + \alpha_5 PR_{i,t} + \varepsilon_{i,t} \quad (2)$$

$TS_{i,t}$ = estimated corporate tax avoidance from Desai and Dharmapala (2006);
$AR_{i,t}$ = sales / current assets *100;
$LQR_{i,t}$ = current assets/ current liabilities;
$GR_{i,t}$ = (current equity-previous equity)/previous equity*100;
$LVR_{i,t}$ = (noncurrent assets/ total shareholder's equity) *100;
$PR_{i,t}$ = (net income/ shareholder's equity) *100;
$\varepsilon$ = residuals.

The regression analysis results of the financial ratios show that the activity ratio (current asset turnover) and profitability ratio (return on ROE) have positive

coefficients of 0.0001 and 0.0016, which are significant at 1%and 5% level, respectively. In contrast, the coefficient of liquidity ratio (LQR) is -0.0004, which is significant at a 10% level. Growth ratio (GR) and leverage ratio (LVR) have no significant relationship with TS.

**TABLE 5**
**Regression Results of Financial Ratios**

| VARIABLES | TS | VIF |
|---|---|---|
| AR | 0.0001*** | 1.96 |
| | 0 | |
| LQR | -0.0004* | 2.51 |
| | -0.0002 | |
| GR | 0.0002 | 1.72 |
| | -0.0001 | |
| LVR | -0.0001 | 1.39 |
| | -0.0001 | |
| PR | 0.0016** | 1.08 |
| | -0.0007 | |
| Constant | -0.0252** | |
| | -0.0125 | |
| Observations | 2,406 | |
| R-squared | 0.0207 | |
| F | 10.69*** | |

***, **, * indicates statistical significance at level 1%, 5% and 10%, respectively.

## IV. DISCUSSION

The results of the correlation analysis shows that total liabilities to total assets (LEV), size of total assets (SIZE), property, plant, equipment to total assets (PPE), operating cash flow to total assets (CFO), activity ratio (AR), and leverage ratio (LVR) are all positively correlated with CSR at a 1%significance level. Moreover, corporates with higher leverage, larger size, larger portion of fixed assets, higher operating cash flow, and higher leverage tend to have active CSR performance. In contrast, the negative correlations between CSR and return on assets (ROA), sales growth ratio (SG), liquidity ratio (LQR), and shareholders' equity growth ratio (GR) indicates that corporates with higher profit, faster sales growth, higher liquidity, and faster shareholders' equity growth have more passive CSR performance. However, Kim and Im (2017) studied samples from Korea and suggested that firms with higher profit tend to show superior CSR performance, which is in conflict with the results of this study. Companies with high profitability usually want to maintain a high profit level, meaning that they tend to avoid tax expenditure as a cash outflow which can reduce its profitability. Moreover, it has been shown that profitability has a positive influence on tax avoidance in manufacturing companies (Irianto et al., 2017).

The results of the regression analysis of CSR activities show that CSR can significantly and negatively influence BTD and TS, which indicates that participating

in CSR activities can discourage tax avoidance behavior. This result also demonstrates that return on assets (ROA), operating cash flow to total assets (CFO), and sales growth (SG) have significantly positive impacts on both BTD and TS. These results also confirm the results of the regression analysis of financial ratios. In other words, firms with higher profitability, higher cash flow, and higher sales growth are more likely to engage in tax avoidance.

According to the results of regression analysis of high and low CSR corporates, both high and low CSR have statistically significant and negative relationships with BTD and TS. This suggests that companies that are actively committed to CSR tend to exhibit less tax avoidance, while companies that are passively involved in CSR have no tendency to avoid tax.

The regression analysis results of the financial ratios show that the activity ratio (current asset turnover) and profitability ratio (return on ROE) are both positive and significant. We therefore postulate that it is more achievable for firms with high profits and high activity to avoid tax. In contrast, the coefficient of liquidity ratio (LQR) is negative and significant at a 10% significance level. This implies that firms with high liquidity are less likely to avoid tax. In this study, we were unable to determine the relationships between growth ratio and leverage ratio and tax avoidance, as these factors have no significant relationship with TS.

**Validity and Reliability**

This study attempts to find a casual association between corporate tax avoidance and CSR activities. The data were collected from the CSMAR database and the Rankins CSR Ratings (RKS) index was adopted to indicate each company's CSR performance. We used a correlation analysis and a regression analysis to generate results with a significant level of at least 10%. A variance inflation factor test was also performed with all the VIF indexes under 10, which implies a low multicollinearity of independent variables in the models. Thus, external validity was established. According to Kim and Im's (2017) work, participating in CSR activities can discourage corporate tax avoidance and financial ratios can reflect corporate tax avoidance activities. Thus, internal validity was established. There are some similar findings in previous studies. Lanis and Richardson (2015) concluded that the higher the level of CSR performance in a firm, the lower the likelihood of tax avoidance. Wilson (2009) stated that the current asset turnover, the noncurrent liabilities ratio, and ROE all have a positive and significant influence on corporate tax avoidance.

**Theoretical Contribution**

This study contributes knowledge to the existing academic body of literature that demonstrates a causal relationship between corporate tax avoidance and CSR activities in China. We fill this knowledge gap as no previous studies have addressed this topic in China. Our results could enable tax authorities to establish a culture of encouraging taxation by using CSR activities and to predict whether a company will conduct tax avoidance activities in the long term. Furthermore, this study suggests that financial ratio analysis can provide market decision makers with more information on CSR and tax avoidance, thereby enabling them to make more accurate and reasonable investment decisions.

## V. CONCLUSION

This study aimed to determine the relationship between financial ratios and tax avoidance. In addition to direct financial influences, we believe that a company that takes part in tax avoidance activities will also be confronted with indirect negative financial effects, such as a passive corporate image in the investment market. Corporate social commitment and the benefits for stakeholders' investments are reflected in CSR activities. Between the two conflicting drivers of tax avoidance and CSR activities, we find that there is an interaction between financial ratios. The results of this study may help tax authorities in regulating companies that are involved in tax avoidance and encourage companies to carry out CSR activities.

The sample data were collected from the CSMAR database and relate to corporates listed in Shanghai and Shenzhen stock exchange with available Rankins CSR indexes. The data set includes financial information from 2010–2017. We use BTD and Desai and Dharmapala's (2006) estimated corporate tax avoidance method to represent tax avoidance. This study adopts quantitative method and includes a correlation analysis and regression analysis.

This study finds that CSR discourages tax avoidance behaviors, especially in companies that actively participate in CSR activities. Firms with higher profitability, higher cash flow, and higher sales growth are more likely to participate in tax avoidance. In contrast, firms with high liquidity are less likely to engage in tax avoidance activities.

Basing on this study, tax authorities can predict whether a Chinese company will engage in tax avoidance activities in future by referring to its financial ratios. Moreover, tax authorities can use CSR activities to encourage companies to pay tax.

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