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

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Abstract: This study is an attempt to find a causal relation between financial ratios and tax avoidance. Aside from direct financial responsibilities, we conjecture that firms that avoid taxes will also face indirect negative financial repercussions, such as degradation of their reputation in the investment market. Corporate Social Responsibility (CSR: Corporate Social Responsibility) activities are reflected in the market as firms make a commitment to society, and investors perceive a positive value in an investment in such firms. Between the two contradictory drivers, tax avoidance and CSR activities, we seek to find their interplaying relation with financial ratios. From this study, tax authorities can regulate firms that engage in tax avoidance and encourage firms to conduct CSR activities. We summarize our findings as below: First, CSR activities deter tax avoidance, specifically in firms that are actively engaged in CSR. On the other hand, passive involvement in CSR does not have any influence on tax avoidance. Secondly, we find that current asset turnover, the labor-to-equipment ratio, the noncurrent liabilities ratio, and the net income-to-equity ratio all have a positive and significant influence on corporate tax avoidance. Conversely, common equity growth has been shown to be negatively related with corporate tax avoidance. From this empirical study, we contribute to the studies on tax avoidance by showing that there can be a voluntary method to reduce corporate tax avoidance in firms, which is by encouraging them to engage in CSR activities.

Keywords: Corporate Social Responsibility (CSR); Book-Tax Differences (BTD); Tax Avoidance (TS)

1. Introduction

The recent rise in interest in Corporate Social Responsibility (CSR) has cultivated the influence of ethical management and CSR activities of sustainable and respectable firms. The increase in demand for CSR activities is in step with the reinforcement of various regulations in the international and political arenas as well. To name a few, the Sarbanes-Oxley Act (2002), which sets out to preclude accounting fraud, and the Global Compact (1999) in the US, all highlight the importance of ethical management and CSR activities. Following this trend, the International Organization for Standardization enacted International Standard 26000 (ISO 26000) for CSR, thereby institutionalizing CSR activities.

In the same vein, the relation between the CSR and taxation has also gained interest in academia. Firms innately have the incentive to minimize corporate tax expenses, which is a cash outflow. Even when a firm is not avoiding tax itself, it still has the motivation to manipulate earnings in the Book-Tax Difference (BTD). Tax avoidance is where a firm can either explicitly or implicitly reduce its tax burden without incurring additional expenses from tax investigations, in both the short-term and long-term. When tax authorities determine a firm's tax avoidance to be tax evasion and not tax savings activities, the firm incurs a direct tax expense that includes the original tax and an additional fine. It may be additionally detrimental for the firm in that it can damage its reputation, which eventually can lead to a decrease in firm value and a decline in sales. In other words, the secondary non-tax

expense burden is considerable. For a firm that is actively involved in CSR, there is the possibility that the firm may suffer from a huge loss in firm reputation when it is revealed to have avoided taxes. On the other hand, for a firm with a passive involvement in CSR, the firm may suffer less from a negative firm image, compared to the firm with a high involvement in CSR.

We conjecture that firms are motivated to avoid taxes, regardless of CSR involvement. A firm that is less engaged in CSR has the incentive to increase its firm value by reducing corporate tax expense; a firm that is more engaged in CSR is also motivated to avoid taxes through long-term tax planning.

Financial Ratio Analysis is an analysis methodology that evaluates the profitability, stability, liquidity, activity, growth, and productivity of a firm through data extracted from financial statements. This analysis is utilized to process basic information, so decisions can be made regarding a firm's future value, credit, and loan screening. Although there have been various studies on firm valuation and bankruptcy prediction, none have studied the relation between tax avoidance and the financial ratio of firms that engage in CSR. If we can establish that financial ratios partially explain the tax avoidance of the firms that have CSR activities, then this will allow tax authorities to predict whether these firms will conduct tax avoidance activities in the long-run.

This study conjectures that a firm's tax avoidance strategy, tax planning, and tax-paying tendency will vary depending on a firm's CSR activities. To establish a culture that encourages fidelity in paying taxes, tax authorities can utilize CSR activities to fulfill this goal, based on the methods proposed in this paper. In addition, we expect that the financial ratio analysis will offer additional information regarding CSR and tax avoidance to the decision makers in the market.

The structure of this article is as follows: Section 1 is the introduction, and Section 2 reviews previous research. Section 3 sets the hypotheses and designs research model. Section 4 explains empirical results, and, lastly, Section 5 summarizes the results and describes contributions, future research, and caveats.

2. Literature Review

2.1. Literature Review of Tax Avoidance and CSR

The concept of tax avoidance differs across researchers. Prior studies define tax avoidance as a concept that encompasses all activities that a firm conducts to reduce its tax burden, disregarding legitimacy. A similar concept, tax saving, is a broader concept than tax avoidance, referring to legal and rational tax reduction activities, whereas tax evasion refers to illegal activities including fraud, exclusion of profit, and the excessive recognition of expenses. In other words, tax avoidance lies in between tax evasion and tax saving, and is mostly related to activities that do not correspond with the purpose of tax legislation.

A few studies have investigated the relation between tax avoidance and CSR activities. Grant and Roman [1] empirically demonstrate that firms with high involvement in CSR are less likely to avoid taxes. Watson [2] measures tax avoidance tendency as the difference between earnings before tax and taxable income, the difference between earnings before tax that cannot be explained by total accruals and taxable income, and the cash effective tax rate. By dividing the total sample of firms into three groups according to their CSR activity, the tests show that the group with the highest CSR score was not significantly different from the middle group regarding tax avoidance tendency. However, the group with the lowest CSR score displayed a significantly higher tendency to avoid tax. Ki [3] studies the effect of CSR activities on the market reaction to tax avoidance news. Her findings show that there is a negative relation between CSR activities and the estimated amount of tax avoidance. Additionally, results support the causal relation between CSR activities and the market reaction to prior tax avoidance. This implies that the CSR activities of a firm can alleviate the negative market reaction towards tax avoidance.

2.2. Literature Review on Financial Ratio

Conner [4] selected 10 financial ratios and examined the usefulness of these ratios when predicting returns of common stocks. The results showed that financial ratios cannot fully predict the future returns of common stocks. Deakin [5] investigated whether 11 financial ratios follow a normal distribution, using data from 1114 firms, over the period of 1953 to 1972, in the US manufacturing sector. Only the leverage ratio was found to follow a normal distribution. On the other hand, Ricketts and Stover [6] cross-sectionally examined 11 financial ratios from a sample encompassing only banks from 1965 to 1974. The results demonstrated that financial ratios from the sample banks follow a normal distribution. According to these results, it is possible to test the normality of financial ratios by industry.

Yoon [7] tested the usefulness of financial ratios with 182 firms sampled over two periods. He introduced a financial ratio prediction model and found that profitability and growth rates are the most essential financial ratios that influence investors' decisions. Eun [8] examined the correlation between reported financial ratios and investment returns to assess the reporting system, thereby explaining the usefulness of financial ratios. The results demonstrated a significant correlation between investment returns and the financial ratios, but the results were weak and inconsistent. Kwon [9] examined the value of financial report information by testing whether the information was reflected in stock prices, and by examining the difference in responses between reactions to earnings information and other financial ratios. Fourteen factors from a factor analysis were obtained as independent variables, and the cumulative abnormal returns were categorized according to the sign around the announcement dates. The results demonstrated that profitability is the most important variable that determines cumulative abnormal returns. Liquidity factors (current account/current liabilities), productivity factors (added value/sales), and sales growth are insignificant, implying that there is a problem in the reporting system or in the credibility of information.

3. Research Design

3.1. Hypothesis Design

Firms are motivated to avoid taxes to reduce the burden of corporate tax expenses. Firms have incentives to avoid taxes through the Book Tax Difference (BTD). 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, among which the latter is more critical to the firm. If the firm had been actively engaged in CSR activities, we conjecture that the news of its tax avoidance can detrimentally impact its image. On the other hand, a firm with passive engagement in CSR activities may suffer less damage to its firm image. Considering the damage, a firm conducting CSR activities may be less likely to avoid taxes. Thus, we conjecture that there is a negative relation between the social responsibility activities of a firm and its tax avoidance. Firms that actively conduct CSR activities are therefore less likely to avoid taxes. However, we cannot be sure that the firms that are involved less in CSR activities are more likely to avoid taxes. Thus, we set our null hypotheses as follows:

Hypotheses 1. *A firm's CSR activities do not have an influence on the firm's tax avoidance.*

Hypotheses 1-1. *A firm actively engaged in CSR does not conduct a different level of tax avoidance.*

Hypotheses 1-2. *A firm passively engaged in CSR does not conduct a different level of tax avoidance.*

We categorize financial ratios into five types, all of which influence the decisions of information users. The financial ratios of CSR firms differ from those of non-CSR firms. We conjecture that these financial ratios can be indicators of the firm's corporate tax avoidance.

First, profitability ratios demonstrate the firm's capacity to generate profits, and are influenced by operational performance. We conjecture that firms with high profitability hold a positive relation with tax avoidance; thus, firms are likely to want to reduce the cash outflow from their increases in profit.

Liquidity ratios are an indicator of risk and are used to assess a firm's ability to redeem current liabilities. Liquidity is the probability of converting firm assets into cash in a short period. Safety ratios are unlike liquidity ratios, as they demonstrate a firm's ability to redeem its long-term liabilities. Firms with both high safety ratios and high liquidity ratios are expected to have less motivation for tax avoidance as the liabilities offer a tax shield through reducing the taxable income with interest.

Growth ratios indicate the firm's competitiveness and future profit generating capacity. We expect growth ratios to hold a positive relation with corporate tax avoidance, because the firms with high growth rates are motivated to reduce cash outflows.

Activity ratios capture how effectively a firm asset has been utilized during an operating cycle. High activity ratios indicate that the firm can reduce expenses, which will entail an increase in taxable income. Thus, we conjecture that corporate tax avoidance and activity ratios will hold a positive correlating relation.

Lastly, productivity ratios identify the financial soundness and rational distribution of investments in a firm, and all of the efforts that the firm makes to pursue long-term management goals. We expect that a higher rate of productivity to be related to higher corporate tax avoidance.

Likewise, various financial ratios demonstrate the profitability, soundness, liquidity, activeness, and productivity of CSR firms. As conducting CSR activities is associated with the management of CSR firms, we believe these ratios and CSR activities are related. To examine this relation, we set our hypotheses as follows:

Hypotheses 2. *The financial ratios of CSR firms are related to tax avoidance (TS).*

Hypotheses 2-1. *Profitability ratios and tax avoidance (TS) have a positive relation.*

Hypotheses 2-2. *Both Safety ratios and Liquidity ratios have a negative relation with tax avoidance (TS).*

Hypotheses 2-3. *Rate of productivity and tax avoidance (TS) have a positive relation.*

Hypotheses 2-4. *Activity ratios and tax avoidance (TS) have a positive relation.*

Hypotheses 2-5. *Growth ratios and tax avoidance (TS) have a positive relation.*

To investigate the relationship between financial ratios and tax avoidance, we conducted empirical analysis with tax avoidance using the first financial ratios with the highest correlation among the representative financial ratios: (1) AR (activity ratio): PPE turnover; (2) RP (ratio of productivity): growth of labor productivity; (3) GR (growth ratio): growth of ROE; (4) SLR (safety and liquidity ratio): leverage of non-current liability; and (5) PR (profitability ratio): net profit to total assets.

3.2. Measuring Variables

3.2.1. Tax Avoidance Measures

This study estimates corporate tax avoidance using the book-tax difference (BTD). BTD can be generated from an increase in reported earnings or a decrease in taxes from tax avoidance. Thus, we soundly infer that BTD can be utilized as a proxy for corporate tax avoidance. Studies that estimate corporate tax avoidance using BTD prove that there is a systematic difference in BTD between firms that avoid taxes and those that do not.

Alongside BTD, Desai and Dharmapala (DD) [10] suggest an estimation of corporate tax avoidance based on the assumption that BTD is composed of earnings manipulation and tax avoidance. They regress BTD on total accruals, thereby extracting abnormal BTD, which is the discretionary portion of total accruals. Recent papers adopt this estimation from DD to capture corporate tax avoidance.

This study adopts both methodologies to measure corporate tax avoidance. The method proposed by DD may not satisfactorily capture corporate tax avoidance in the Korean market. Nonetheless, we intend to adopt the method as the estimation from DD minimizes estimation errors by distinguishing earnings manipulation from BTD.

The calculation for BTD is shown in Equation (1) as the value from dividing the difference between accounting profit and taxable income by total assets. The corporate tax avoidance estimation from DD, namely TS, is demonstrated in Equation (2) as the residual from a regression of BTD on total accruals.

$$\text{BTD}_{i,t} = \frac{(\text{accounting profit} - \text{taxible income})}{\text{total asset}} \qquad (1)$$

$$\text{BTD}_{i,t} = \beta_1 \, \text{TA}_{i,t} + \epsilon_{i,t} \qquad (2)$$

$\text{TS}_{i,t} = \epsilon_{i,t}$

$\text{BTD}_{i,t}$ = (earnings before tax—taxable income) of firm i in t term/total asset;

$\text{TA}_{i,t}$ = (net income—business activities of cash flows) of firm i in t term/total asset; and

$\epsilon_{i,t} = \text{TS}_{i,t}$ = estimated corporate tax avoidance of firm i in t term.

The dependent variable of Equation (2) is BTD and the independent variable is total accruals, which is the difference between accounting profit and operating cash flows. The measure by Desai and Dharmpala [10] has the advantage of controlling the effect of earnings manipulation on BTD to reduce measurement error.

3.2.2. Firm-Level CSR Activity Measures

The definitions of CSR vary, making it difficult to define the concept with one simple statement. This is because the concept of CSR stems from the corporate culture of each individual firm. Different societies hold distinctive characteristics with unique customs, cultures, and their own histories. Such differences between societies create different expectations of what a firm should do to be socially responsible.

This study, following prior studies, utilizes the Korean Economic Justice Institute Index (KEJI Index) created and measured by the Korean Economic Justice Institute (KEJI) to proxy for CSR activities. We categorize CSR activities into: Soundness of a firm, equitability, volunteering activities, customer protection, environmental protection, employee satisfaction, and contribution to economic development. From December 1st 1991, the Korean Economic Justice Institute Index has evaluated "the listed firms based on performance data of the fiscal year" KEJI Index is objectively and impartially evaluated by 7 evaluation items, 49 evaluation indices, and 3 considerable indices. We use both the total quantified evaluation score (comprehensive CSR activities) and the score of each evaluation item (individual CSR activity). Table 1 shows how CSR scores are expressed by composition items. Soundness (25) represents 25 out of 100 total CSR score, soundness is 25, shareholder structure is 12, investment expenses are 3, and capital supply is 10.

3.2.3. Financial Ratio Measures

Firms with a high profitability ratio are expected to be more actively involved in tax avoidance. Conversely, firms with high safety and liquidity ratios have fewer motives for tax avoidance, as they can reduce their tax expenses through interest expenses. High growth ratios can indicate high cash outflows, and thus firms with high growth rates are predicted to conduct tax avoidance more actively. Firms with high productivity have less cash outflow, thereby making taxable income higher. Therefore, these firms are also likely to be engaged in tax avoidance. An increase in activity ratios entails an increase in both assets and profits in general, which can lead firms to commit tax avoidance. Table 2 shows the financial ratios of each company by dividing them into five categories: activity, stability, liquidity, profitability, and growth potential.

Table 1. Social performance evaluation index proxy by KEJI (Economic Justice Research Institute) Index.

Category	Evaluation Item	Index
Soundness (25)	Soundness of Shareholder Structure (12)	Internal shareholding percentage, Number of CEOs, Business inheritance status
	Soundness of Investment Expenses (3)	Consumer expenses
	Soundness of Capital Supply (10)	Riskiness, Cross holding with related firms, Certification of payment firm related
	Related Index	Tax evasion etc.
Equitability (15)	Impartiality (5)	Fair trade, Fair competition
	Transparency (8)	Insincere reporting, Properness of business reports, Activities of outside directors
	Cooperation (2)	Relation with associate firms
	Related Index	① Shareholding percentage of the press ② Shareholding percentage of financial institutions ③ Violation of specific sector of small and medium entities
Societal Contribution (10)	Protection of the underprivileged (6)	Employment rate of the handicapped, Employment rate of women, Employment support for the handicapped and women
	Contribution to society (4)	Donations, Support for social welfare
Customer Satisfaction (10)	Consumer rights protection (5)	Certificate for excellence in after-sales service or service quality, Number of employees with high customer satisfaction out of all sales employees, Awards for customer satisfaction
	Quality (3)	Quality-related certifications
	Advertisement (2)	Excess advertisement expenses
Environmental Protection (15)	Efforts to improve the environment (7)	Environmental accounting reports, Energy efficiency, Environmental investments
	Environmental friendliness (3)	Certifications or awards related to the environment
	Violation and Contamination records (5)	Water, Dust, and Specific hazardous substance contamination, Examination of records on environmental violation
Employee Satisfaction (15)	Workplace welfare and safety certification (2)	Certifications or awards for workplace welfare and safety
	Investment in human resource (4)	Education and training expenses per employee, Growth in training expenses
	Wages and welfare (4)	Compensation systems, Welfare programs
	Labor-management relations (2)	Existence of labor-management committees, Existence of labor-management conflicts, Operation of programs that improve labor-management relations
	Gender equality in employment (3)	Compliance with The Gender Equality in Employment Act, Number of females in higher positions, Number of females on the board of directors
	* Related Index	Labor-management cooperation
Contribution To Economic Development (10)	Investment in R&D (3)	R&D expenses, Number of patents, and the Jang Yeong-sil award
	Management performance and contribution to the economy (7)	Profitability, Growth rate, Investment in construction, Growth rate of employees, Tax payments, Dividend payout tendency, Growth in labor productivity, Percentage of exports

3.3. Designing the Model

This study examines the effects of CSR activities on tax avoidance by examining TS, the unexplained part of BTD, which is the difference between accounting profits and taxable income. We test the relation with the following regression model Equation (3)

$$
\begin{aligned}
BTS_{i,t}(TS_{i,t}) = \ & \alpha_0 + \alpha_1 CSR_{i,t} + \alpha_2 ROA_{i,t} + \alpha_3 LEV_{i,t} + \alpha_4 SIZE_{i,t} + \alpha_5 PPE_{i,t} + \alpha_6 CFO_{i,t} \\
& + \alpha_7 RNDS_{i,t} + \alpha_8 SG_{i,t} + \alpha_9 OC_{i,t} + \alpha_{10} FSH_{i,t} + \sum_{j=1}^{n} \delta_j YD + \in_{i,t}
\end{aligned}
\tag{3}
$$

$BTD_{i,t}$ = (Accounting profit-Taxable income)/Total assets;
TS_{it} = Estimated corporate tax avoidance from Desai and Dharmapala (2006) [8];
$CSR_{i,t}$ = KEJI index(out of 100);
$ROA_{i,t}$ = Net income/Total assets;
$LEV_{i,t}$ = Total liabilities/Total assets;

$\text{SIZE}_{i,t}$ = Natural logarithm of total assets;

$\text{PPE}_{i,t}$ = (Tangible assets—Land—Assets under construction)/Total assets;

$\text{CFO}_{i,t}$ = Operating cash flow/Total assets;

$\text{RNDS}_{i,t}$ = R&D/Sales;

$\text{SG}_{i,t}$ = (Current term sales-Previous term sales)/Previous term sale;s

$\text{OC}_{i,t}$ = 1 if the shareholding percentage of the managers is over 5%, 0 otherwise;

$\text{FSH}_{i,t}$ = Foreign investor shareholding percentage (%);

YD = Year dummy; and

ε = Residuals.

Table 2. Financial Ratio.

Classification	Variable	Name of the Financial Ratio	Calculation
Ratio of Productivity	X01	Ordinary Income-to-Total Equity	(Ordinary income/Total equity) × 100
	X02	Net Income-to-Equity	(Net income/Total equity) × 100
	X03	Operating Income to Business Capital	{Operating income /(Total asset-Assets under construction-Financial assets)} × 100
	X04	Ordinary Income Rate of Equity Capital	(Ordinary income/Owner's equity) × 100
	X05	Return on Equity	(Net income/Shareholder's equity) × 100
	X06	Gross Margin	(Net income/Sales) × 100
	X07	Total Growth Rate of Profit	(Total Profit/Sales) × 100
	X08	Ordinary Margin	(Ordinary income/Sales) × 100
	X09	Operating Profit Ratio	(Operating income/Sales) × 100
Growth Ratio	X10	Total Asset Growth	{(Current term total assets-Previous term total assets)/Previous term total assets} × 100
	X11	Common Equity Growth	{(Current common equity-Previous term common equity)/Previous term common equity} × 100
	X12	Sales Growth	{(Net sales-Previous term net sales)/Previous term net sales} × 100
	X13	Net Income Growth	{(Net income-Previous term net income)/Previous term net income)} × 100
Activity Ratio	X14	Inventory Turnover	(Cost of goods sold/Average inventory) × 100
	X15	Total Asset Turnover	(Sales/Total equity) × 100
	X16	Common Equity Turnover	(Sales/Common equity) × 100
	X17	Operating Assets Turnover	{Sales/(Total asset-Assets under construction-Investment assets)} × 100
Safety and Liquidity Ratio	X18	Current Ratio	(Current assets/Current liabilities)1 00
	X19	Quick Ratio	(Current account assets/Current liabilities) × 100
	X20	Cash Ratio	(Cash and cash equivalents/Current liabilities) × 100
	X21	Debt-to-Equity	(Total debt/Total shareholder's equity) × 100
	X22	Current Liabilities Ratio	(Current assets/Total shareholder's equity) × 100
	X23	Noncurrent Liabilities Ratio	(Noncurrent assets/Total shareholder's equity) × 100
	X24	Reliance on Liabilities	(Liabilities/Total equity) × 100
	X25	Fixed Assets to Long Term Capital Ratio	{Fixed Assets/(Owner's equity + Fixed liabilities)} × 100
Profitability Ratio	X26	Wage Distribution Ratio	(Salaries/Value added) × 100
	X27	Labor to Equipment Ratio	{(Tangible assets-Assets under construction)/Number of employees} × 100
	X28	Machinery Equipment Ratio	(Value added/Machinery equipment) × 100
	X29	Total equity investment efficiency	(Value added/Total equity) × 100
	X30	Capital Intensity Ratio	(Total assets/Number of employees) × 100
	X31	Construction Investment Efficiency	Valued added/(Current assets-Assets under construction)
	X32	Value Added Ratio	Value added/Sales
	X33	Value Added per Employee	Value added/Number of employees
	X34	Wage Expense per Employee	Wage expense/Number of employees
	X35	Net Income per Employee	Net income/Number of employees

The dependent variables in Equation (3) are BTD and TS, both of which are the proxies for corporate tax avoidance. We also use the KEJI index as proxy for CSR activity, which is the variable of interest. The explanatory variables, excluding CSR, are variables that are known to influence corporate tax avoidance, from the prior study by Watson [2]. Firms with high profitability (ROA) are expected to be actively involved in tax avoidance. On the other hand, firms with high leverage (LEV) can benefit from the interest tax shield, and therefore can be relatively passive in avoiding taxes. Large firms can establish dominant tax plans, and thus they have less motivation for tax avoidance. Firms with a large proportion of property, plant, and equipment (PPE) can reduce their taxes through various means, implying that they are less likely to avoid taxes. On the other hand, firms with large operating cash flows (CFO) are more likely to avoid taxes. We cannot conjecture how R&D (RNDS) will influence tax avoidance. For sales growth (SG), if firms have an increase in sales, then they are more likely to be actively involved in tax avoidance to reduce cash outflows. Both management owned (OC) firms that utilize after-tax income as dividends and firms with high foreign investor holdings (FSH), which are strictly monitored by the foreign investors, are less motivated to avoid taxes. Lastly, YD is included to control for annual differences.

3.4. Sample Design

This study includes 491 firms listed on the Korean Exchange from 2005 to 2007 that meet the following criteria. We exclude firms: (1) in the financial sector or firms whose closing date is not the end of December; (2) with impaired capital or those under supervision; (3) that do not have taxable income data from their audit report; and (4) that are not covered by the KEJI index or have missing data.

The sample selection process is as follows: First, this study includes all 600 listed firms that are covered by the KEJI index. We excluded firms in the financial sector because their financial statements differ in structure from that of firms in the manufacturing sector, which will eventually lead to a lack of consistency in measuring explanatory variables. We also restricted our sample to the firms with fiscal year-end on 31 December, as they account for more than 95% of all listed firms on the Korean Exchange. By filtering by the fiscal-year end, we can obtain consistency in our results. Thirdly, both firms with impaired equity and firms under supervision are considered to be abnormal and are removed from our sample. We extracted the data from FN-Guide and excluded the firms with missing data. Lastly, we winsorized the data at 2% and 98% to obtain the final sample of 491 firms.

4. Empirical Results

4.1. Descriptive Statistics and Correlation Analysis

Table 3 shows the descriptive statistics of the main variables regarding CSR firms and tax avoidance. The mean value of CSR is 47.2704 and the median is 46.7331. The average BTD value is –0.01505 with a median of –0.0047, indicating that BTD is skewed to the right. Conversely, the mean value of TS is 0.0044 with a median value of 0.0102, illustrating a normal distribution with a left tail. The standard deviation of BTD and TS is 0.0519 and 0.0518, respectively. These values signify that there is a large variation in the tax avoidance of firms.

Table 3, on the other hand, demonstrates the descriptive statistics of the main variables from CSR firms. The mean value of TS is −0.3934 and the median is –0.000, indicating a normal distribution with a left tail. The average value of current asset turnover is 5.396 and the median value is 3.720, suggesting a normal distribution with a right tail. Conversely, the mean of the labor to equipment ratio is 18.510 and the median is 18.720. The growth of shareholder's equity is 14.621 on average and the median is 10.500. The mean value of the noncurrent liabilities ratio is 21.083 with a median of 14.205. Lastly, the return on equity is on average 7.626 with a median of 6.720, indicating a normal distribution with a left tail. The large standard deviation in both the growth of shareholder's equity and the noncurrent liabilities ratio indicate that the financial ratios of firms may vary greatly.

Table 3. Descriptive Statistics (*n* = 491).

Variable	Mean	SD	Min	25%	Median	75%	Max
				A			
BTD	−0.0105	0.0519	−0.2595	−0.2499	−0.0047	−0.2055	0.3192
TS	0.0044	0.0518	−0.2473	−0.2372	0.0102	−0.1924	0.3360
CSR	47.2704	2.4780	43.6086	43.6142	46.7331	43.6521	57.1510
ROA	0.0630	0.0519	−0.1650	−0.1551	0.0578	−0.0863	0.2927
LEV	0.4034	0.1733	0.0094	0.0207	0.4182	0.0716	0.8286
SIZE	19.9585	1.5531	16.9481	16.9705	19.6173	17.1141	24.9011
PPE	0.2015	0.1353	0.0008	0.0015	0.1732	0.0051	0.7009
CFO	0.0744	0.0746	−0.1551	−0.1526	0.0692	−0.1147	0.5388
RNDS	0.0092	0.0239	0.0000	0.0000	0.0021	0.0000	0.3183
SG	0.0666	0.1546	−0.9817	−0.9779	0.0065	−0.4461	0.6891
OC	0.2600	0.4370	0.0000	0.0000	0.0000	0.0000	1.0000
FSH	0.1814	0.1874	0.0000	0.0000	0.1154	0.0000	0.8755
				B			
TS	0.0044	0.0518	−0.2473	−0.2372	0.0102	−0.1924	0.3360
AR	5.396	7.479	0.700	2.420	3.720	120.800	5.845
RP	18.510	2.064	0.000	18.000	18.720	19.340	23.000
GR	14.621	23.432	−73.600	5.220	10.500	17.900	341.760
SLR	21.083	20.577	0.030	6.170	14.205	29.905	168.760
PR	7.626	4.902	−0.870	4.275	6.720	10.115	42.050

Table 4 reports the Pearson and Spearman correlations among the main variables. The findings show that the Pearson correlations between CSR and ROA, SIZE, CFO, RNDS, and FSH are statistically significant and positive, whereas the correlations of CSR with LEV and OC are statistically significant and negative. This indicates that firms with higher profit, a larger size, higher cash flows, active R&D activities, and higher foreign investor holdings tend to have superior CSR performance. In contrast, firms with high leverage and those owned by the management are likely to have lower CSR performance. The results from the Spearman correlation are consistent with the Pearson correlation.

The correlation analysis demonstrates that there is no significant relation between tax avoidance and CSR activities. We later find out that CSR and BTD or CSR and TS are not directly related, but rather, are indirectly related with a mediator variable among the main variables in the regression analysis.

Table 4. Correlation Analysis of Main Variables.

Variable	BTD	TS	CSR	ROA	LEV	SIZE	PPE	CFO	RNDS	SG	OC	FSH
BTD	1.000	1.000 (0.000)	0.049 (0.274)	0.100 (0.026) **	0.016 (0.730)	0.254 (0.000) ***	0.141 (0.002) ***	0.074 (0.102)	−0.109 (0.016) **	−0.090 (0.045) **	−0.202 (0.000) ***	0.118 (0.009) ***
TS	0.998 (0.000)	1.000	0.054 (0.233)	0.098 (0.030) **	0.016 (0.716)	0.256 (0.000) ***	0.154 (0.001) ***	0.113 (0.012) **	−0.104 (0.022) **	−0.094 (0.037) **	−0.201 (0.000) ***	0.118 (0.009) ***
CSR	−0.015 (0.740)	−0.013 (0.779)	1.000	0.306 (0.000) ***	−0.073 (0.108)	0.315 (0.000) ***	0.032 (0.479)	0.222 (0.000) ***	0.417 (0.000) ***	0.052 (0.250)	−0.097 (0.031) **	0.348 (0.000) ***
ROA	0.038 (0.406)	0.032 (0.483)	0.282 (0.000) ***	1.000	−0.192 (0.000) ***	0.134 (0.003) ***	−0.116 (0.010) ***	0.433 (0.000) ***	0.052 (0.249)	0.244 (0.000) ***	−0.071 (0.118)	0.417 (0.000) ***
LEV	0.057 (0.211)	0.058 (0.198)	−0.091 (0.043) **	−0.191 (0.000) ***	1.000	0.406 (0.000) ***	0.077 (0.088) *	−0.116 (0.010) ***	−0.125 (0.005) ***	0.227 (0.000) ***	−0.142 (0.002) ***	−0.007 (0.873)
SIZE	0.219 (0.000) ***	0.220 (0.000) ***	0.410 (0.000) ***	0.179 (0.000) ***	0.380 (0.000) ***	1.000	0.152 (0.001) ***	0.057 (0.206)	0.027 (0.545)	0.070 (0.123)	−0.361 (0.000) ***	0.515 (0.000) ***
PPE	0.096 (0.034) **	0.104 (0.021) ***	0.044 (0.334)	−0.131 (0.004) ***	0.108 (0.017) ***	0.215 (0.000) ***	1.000	0.254 (0.000) ***	−0.056 (0.216)	0.019 (0.680)	−0.129 (0.004) ***	0.043 (0.338)
CFO	0.034 (0.446)	0.059 (0.194)	0.243 (0.000) ***	0.393 (0.000) ***	−0.086 (0.057) *	0.141 (0.002) ***	0.214 (0.000) ***	1.000	0.090 (0.047) ***	0.098 (0.030) **	−0.046 (0.308)	0.204 (0.000) ***
RNDS	−0.062 (0.169)	−0.060 (0.186)	0.245 (0.000) ***	−0.019 (0.672)	−0.113 (0.012) **	−0.125 (0.005) ***	−0.041 (0.369)	0.067 (0.139)	1.000	−0.085 (0.061) *	0.149 (0.001) ***	0.090 (0.047) **
SG	−0.122 (0.007) ***	−0.122 (0.007) ***	0.022 (0.623)	0.229 (0.000) ***	0.265 (0.000) ***	0.063 (0.164)	0.044 (0.332)	0.077 (0.090) *	−0.078 (0.085) *	1.000	−0.078 (0.083) *	0.023 (0.606)
OC	−0.174 (0.000) ***	−0.174 (0.000) ***	−0.112 (0.013) **	−0.053 (0.244)	−0.139 (0.002) ***	−0.346 (0.000) ***	−0.161 (0.000) ***	−0.044 (0.326)	0.055 (0.224)	−0.067 (0.140)	1.000	−0.116 (0.010) ***
FSH	0.030 (0.508)	0.030 (0.510)	0.347 (0.000) ***	0.397 (0.000) ***	−0.079 (0.081) *	0.460 (0.000) ***	0.043 (0.338)	0.226 (0.000) ***	0.022 (0.621)	0.025 (0.583)	−0.098 (0.031) **	1.000

1. Lower triangular table: Pearson correlation (in white), Higher triangular table: Spearman correlation (in gray); 2. *, **, and *** indicates statistical significance at the level of 10%, 5%, and 1%, respectively (two-sided test).

4.2. Regression Analysis

4.2.1. Regression Analysis of CSR Activities

Table 5 shows the results of the regression of corporate tax avoidance on CRS activities. The book-tax difference is the proxy for tax avoidance in Model 1, whereas Model 2 uses the estimated corporate tax avoidance, which is calculated as the portion of BTD unexplained by total accruals, to proxy for tax avoidance.

$$BTS_{i,t}\ (TS_{i,t}) = \quad \alpha_0 + \alpha_1 CSR_{i,t} + \alpha_2 ROA_{i,t} + \alpha_3 LEV_{i,t} + \alpha_4 SIZE_{i,t} + \alpha_5 PPE_{i,t} + \alpha_6 CFO_{i,t} + \alpha_7 RNDS_{i,t}$$
$$+ \alpha_8 SG_{i,t} + \alpha_9 OC_{i,t} + \alpha_{10} FSH_{i,t} + \sum_{j=1}^{n} \delta_j YD + \in_{i,t}$$

Table 5. Result from regression analysis.

Variable	Sig.	Tax Avoidance	
		BTD	TS
Intercept	N/A	−0.062 (−1.204)	−0.048 (−0.929)
CSR	−	−0.002 (−2.375) **	−0.002 (−2.383) **
ROA	+	0.094 (1.695) *	0.075 (1.361)
LEV	−	−0.007 (−0.420)	−0.007 (−0.414)
SIZE	+/−	0.009 (4.176) ***	0.009 (4.191) ***
PPE	+	0.017 (0.909)	0.016 (0.891)
CFO	+	0.008 (0.243)	0.030 (0.882)
RNDS	+/−	−0.064 (−0.652)	−0.064 (−0.654)
SG	−	−0.001 (−3.362) ***	−0.001 (−3.345) ***
OC	−	−0.012 (−2.105) **	−0.012 (−2.098) **
FSH	−	0.000 (−1.795) *	0.000 (−1.799) *
Year dummy		Included	Included
N		491	491
Pseudo R^2		0.083	0.084
F		5.405 (0.000) ***	5.493 (0.000) ***

*, **, and *** statistically significant at 10%, 5%, and 1% level, respectively (two-sided).

The regression coefficients of CSR are statistically significant for BTD and TS with values of −2.375 and −2.383, respectively. In other words, firms involved in CSR activities are on average passive in tax avoidance, as expected. The firms convicted of tax avoidance not only confront a levy of the unpaid taxes and a fine, but also a negative impact on reputation, all of which can cause considerable damage to the firm. Overall, the null hypothesis that CSR activities have no influence on corporate tax avoidance is rejected.

As a control variable, in both models firm size (SIZE) is positively significant, whereas sale growth (SG), management owned firms (OC), and foreign investor holding (FSH) all have negative and significant coefficients. The coefficients of firm size (SIZE) are 4.176 and 4.191, and are all positively significant. This implies that, in line with our expectations, large firms aggressively conduct tax avoidance based on tax planning strategies. On the other hand, sales growth (SG) has negative coefficients in both models, −3.362 and –3.345, which is significant at the 1% level. This shows that firms with high sales growth are likely to aggressively conduct tax avoidance to reduce cash outflows.

The variable coefficients of firms owned by management are significantly negative at −2.105 and –2.098. This can be ascribed to the fact that, as after-tax income is used to pay out dividends, management has no motive to reduce tax expenditures aggressively. Lastly, the coefficients of foreign investor holdings (FSH) are negative and significant at –1.795 and –1.799. Firms monitored by foreign investors are strictly audited and therefore cannot avoid taxes at the expense of hurting their reputations.

4.2.2. Regression Analysis of Active-CSR Firms and Passive-CSR Firms

The empirical results of the regression analysis on active-CSR and passive-CSR firms are tabulated in Table 6. We first divide the sample into two subsamples according to their involvement in tax avoidance. The number of listed firms that are covered by the annual evaluation of CSR activities is 300. We find both active-CSR firms and passive-CSR firms are unlikely to pursue tax avoidance, as being convicted of such activity can impair the firm's reputation.

However, according to the criteria by which firms were selected to be assessed, only 300 firms were covered annually, which is a very small sample compared to the entire population of listed firms. Therefore, having a CSR score that ranks at 200 out of 300 does not imply that a firm is an active CSR firm. This makes it difficult to examine whether firms with a high level of CSR activity (high CSR score) have a smaller incentive to avoid taxes, and whether firms with a low level of CSR activity (low CSR score) have a different likelihood to conduct tax avoidance. Therefore, the sample is divided into firms with active CSR (high CSR score) and firms with low involvement in CSR (low CSR score) in Table 6 to examine how CSR impacts tax avoidance.

$$BTS_{i,t} (TS_{i,t}) = \alpha_0 + \alpha_1 HIGH(LOW)CSR_{i,t} + \alpha_2 ROA_{i,t} + \alpha_3 LEV_{i,t} + \alpha_4 SIZE_{i,t} + \alpha_5 PPE_{i,t} + \alpha_6 CFO_{i,t}$$
$$+ \alpha_7 RNDS_{i,t} + \alpha_8 SG_{i,t} + \alpha_9 OC_{i,t} + \alpha_{10} FSH_{i,t} + \sum_{j=1}^{n} \delta_j YD + \in_{i,t}$$

Table 6. Regression of different CSR activity firms (HIGH, LOW).

Variable	Sig.	Tax Avoidance			
		BTD		TS	
		High Group	Low group	High Group	Low Group
Intercept	N/A	−0.053 (−0.635)	0.0621 (0.384)	−0.039 (−0.471)	0.075 (0.472)
HIGH CSR	−	−0.004 (−2.734) ***		−0.004 (−2.736) ***	
LOW CSR	−		−0.002 (−0.916)		−0.002 (−0.918)
ROA	+	0.292 (3.350) ***	−0.006 (−0.085)	0.273 (3.126) ***	−0.024 (−0.338)
LEV	−	−0.035 (−1.404)	0.010 (0.462)	−0.035 (−1.403)	0.010 (0.467)
SIZE	+/−	0.015 (4.981) ***	0.004 (1.225)	0.015 (4.997) ***	0.004 (1.235)
PPE	+	0.024 (0.817)	0.012 (0.514)	0.024 (0.796)	0.012 (0.505)
CFO	+	−0.030 (−0.545)	0.014 (0.300)	−0.007 (−0.128)	0.035 (0.777)
RNDS	+/−	−0.126 (−1.275)	0.372 (1.447)	−0.126 (−1.278)	0.371 (1.442)
SG	−	−0.001 (−2.793) ***	0.000 (−1.644)	−0.001 (−2.766) ***	0.000 (−1.644)
OC	−	−0.007 (−0.844)	−0.017 (−2.306) **	−0.007 (−0.832)	−0.017 (−2.307) **
FSH	−	0.000 (−1.983) **	0.000 (−1.459)	0.000 (−1.986) **	0.000 (−1.460)
Year dummy		Included	Included	Included	Included
N		243	248	243	248
Pseudo R^2		0.225	0.031	0.223	0.035
F		6.970 (0.000) ***	1.906 (0.044) **	6.904 (0.000) ***	2.031 (0.030) **

, and * signify statistical significance at 5%, 1% level, respectively (two-sided).

The regression coefficients of CSR in the HIGH CSR subsample are statistically significant at the 1% level with negative values of –2.734 and −2.736 in model 1 and model 2 respectively. On the other hand, the coefficients of CSR in the LOW CSR subsample are not statistically significant. This implies that firms actively committed to CSR tend to conduct less tax avoidance, whereas firms with passive involvement in CSR do not have any tendencies towards tax avoidance.

We also find the coefficients of profitability (ROA) and firm size (SIZE) from both models in HIGH CSR to be positively significant. The coefficients of profitability (ROA) are 3.350 and 3.126, which indicate that firms with high profitability are aggressively engaged in tax avoidance to reduce cash outflows. Coefficients for firm size (SIZE) are 4.981 and 4.997. This indicates large firms avoid taxes through tax strategies available to economies of scale. On the other hand, sales growth (SG) coefficients are –2.793 and –2.766, and are all statistically significant. Firms that have better performance

in sales tend to avoid taxes to reduce cash outflows. Lastly, the coefficient of foreign investor holdings (FSH) shows that firms with high foreign investor holdings are passive in avoiding taxes. Firms owned by management are also less involved in tax avoidance. The rest of the control variables are shown to have an insignificant effect on tax avoidance.

4.2.3. Regression Analysis on Financial Ratios of CSR Firms

Table 7 shows the results of the regression of tax avoidance on financial ratios of CSR firms. For TS1, we include only the financial ratios that have a high correlation with tax avoidance to conduct our empirical analysis. TS2 includes the financial ratios that do not have high correlation with tax avoidance. TS3 and TS4 are the additional analyses on the differences between the representative financial ratios and tax avoidance. We categorize the variables by their rank on the correlation with the corporate tax avoidance. The variables that hold the highest correlation with the corporate tax avoidance demonstrate the most significant results in the regression analyses. The variables with lower correlation show weaker but similar results.

$$TS_{i,t} = \alpha_0 + \alpha_1 AR_{i,t} + \alpha_2 RP_{i,t} + \alpha_3 GR_{i,t} + \alpha_4 SLR_{i,t} + \alpha_5 PR_{i,t} + \sum_{j=1}^{n} \delta_j YD + \in_{i,t}$$

Table 7. Regression analysis of financial ratios.

Variable	Tax Avoidance			
	TS1	TS2	TS3	TS4
Intercept	−3.157 (−6.906) ***	−1.941 (−1.898) *	−2.931 (−6.258) ***	−2.051 (−1.759) *
AR	0.030 (2.056) **	0.619 (1.593)	0.001 (0.003)	0.004 (1.234)
RP	0.134 (5.787) ***	0.002 (0.127)	0.131 (5.515) ***	0.077 (1.342)
GR	−0.001 (−2.848) ***	0.000 (−0.468)	0.001 (0.225)	−0.001 (−0.262)
SLR	0.001 (1.890) *	−0.004 (−1.268)	0.001 (2.886) ***	0.001 (1.850) *
PR	0.034 (2.855) ***	0.108 (2.719) ***	0.006 (0.831)	0.025 (2.137) **
Year dummy	Included	Included	Included	Included
N	491	491	491	491
Pseudo R^2	0.056	0.028	0.036	0.008
F-value	11.365 (0.000) ***	3.268 (0.006) ***	7.425 (0.000) ***	2.476 (0.031) **

Note: 1. Independent variables included in TS1, TS: estimated corporate tax avoidance; AR (activity ratio): current asset turnover; RP (ratio of productivity): labor-to-equipment ratio; GR (growth ratio): common equity growth; SLR (safety and liquidity ratio): non-current liabilities ratio; PR (profitability ratio): net income-to-equity. 2. Independent variables included in TS2, TS: estimated corporate tax avoidance; AR (activity ratio): common equity turnover; RP (ratio of productivity): wage distribution; GR (growth ratio): net income growth; SLR (safety and liquidity ratio): leverage; PR (profitability ratio): ordinary income-to-total equity. 3. Independent variables included in TS3, TS: estimated corporate tax avoidance; AR (activity ratio): inventory turnover; RP (ratio of productivity): labor-to-equipment ratio; GR (growth ratio): sales growth; SLR (safety and liquidity ratio): current ratio; PR (profitability ratio): ROE. 4. Independent variables included in TS4, TS: estimated corporate tax avoidance; AR (activity ratio): accounts payable turnover; RP (ratio of productivity): capital intensity; GR (growth ratio): sales growth; SLR (safety and liquidity ratio): current ratio; PR (profitability ratio): net income-to-equity. 5. *, **, and *** statistically significant at 10%, 5%, and 1% level, respectively.

The regression analysis results from TS1 show that the ratio of productivity (labor-to-equipment ratio), the profitability ratio (net income-to-equity), the activity ratio (current asset turnover), and the safety and liquidity ratio (noncurrent liability ratio) have the coefficients of 5.787, 2.855, 2.056, and 1.890, which are statistically significant at 1%, 1%, 5%, and 10% level, respectively. This implies that firms with high productivity, high profits, high activity, high liquidity and safety are more likely to avoid tax. On the other hand, we find that the coefficient on the growth rate (common equity growth) is –2.848, with a significance level of 1%. This indicates that firms with higher growth rates are less likely to conduct tax avoidance. Firms with high profitability meet our prediction that they will engage in tax avoidance, whereas firms that have a high level of liability are shown to avoid taxes just as vigorously as other firms despite their tax shield from interest payments. This can be attributed to the fact that

non-current liabilities do not help to reduce the tax burden of firms. Firms that operate efficiently, compared to other firms in the same industry, avoid taxes more to reduce cash outflows. Ironically, the firms that were successfully managed and performed growth well demonstrated less tax avoidance, which is the opposite of our initial prediction that these firms might avoid taxes aggressively to minimize the cash spent on tax expenditures. Overall, the findings signify that financial ratios are relevant to tax avoidance.

TS2 empirically analyzed tax avoidance using the financial ratios of the two indicators of correlation between tax avoidance and financial ratios to reduce the convenience and errors of the financial ratios. Overall, the results are similar to those of TS1, but the significance is not significant. From the third model TS3, the rate of productivity (labor-to-equipment ratio) and the liquidity and safety ratios (current ratio) had a statistically significant and positive effect on tax avoidance. We additionally found from TS4 that profitability (net income-to-equity) and liquidity and safety (liquidity ratio) were significant at 5% and 10%, respectively.

We found similar yet weaker results from the model TS2, which extracted only the variables that held high correlation with tax avoidance.

5. Conclusions

This study was an attempt to find a causal relation between financial ratios and tax avoidance. Aside from direct financial responsibilities, we conjectured that firms would also face indirect negative financial repercussions, such as a degradation of their reputation in the investment market. CSR activities are reflected in the market, as firms make a commitment to society and investors perceive a positive value in an investment in such firms. Between two contradictory drivers, tax avoidance and CSR activities, we found the interplaying relation between financial ratios. From this study, tax authorities can regulate firms that engage in tax avoidance and encourage the firms that conduct CSR activities.

The sample data we used were listed firms covered by the KEJI index from the 2005 to 2007. The KEJI index is a CSR activity assessment issued by the "Korean Citizens Coalition for Economic Justice". Following prior research, we used proxies for tax avoidance: The book-tax-difference (BTD) and the estimated corporate tax avoidance from Desai and Dharmapala [10].

We summarize our findings as below: First, CSR activities deter tax avoidance, specifically in those firms that are actively engaged in CSR. On the other hand, passive involvement in CSR does not have any influence on a firm's tax avoidance. Secondly, from the regression that examines the relation between representative financial ratios and tax avoidance, we find that current asset turnover, the labor-to-equipment ratio, the noncurrent liabilities ratio, and the net income-to-equity ratio all have a positive and significant influence on the corporate tax avoidance. Conversely, common equity growth has been shown to be negatively related with corporate tax avoidance.

With this empirical study, we contribute to the studies on tax avoidance by showing that there can be a voluntary method to reduce corporate tax avoidance in firms, which is by encouraging them to engage in CSR activities. By encouraging social responsibility in firms, tax authorities can motivate firms to refrain from tax avoidance.

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