評估揭露企業社會責任公司之租稅規避：來自會計資訊品質的觀點

廖益興* 單騰笙** 蔡元棠***

摘要：本文旨在探討公司自願揭露企業社會責任報告與租稅規避間之關聯性，同時亦探討會計資訊品質對兩者之關聯是否具有間接影響。實證結果顯示，不論使用財稅差異或有效稅率作為租稅規避之替代變數，公司自願揭露企業社會責任報告將降低其租稅規避之程度。此外，本研究亦發現公司自願揭露企業社會責任報告將提升其會計資訊品質，從而降低公司租稅規避之程度，顯示公司自願揭露企業社會責任報告的背後動機是源自於資訊透明的考量。另外，公司若被要求強制揭露企業社會責任報告，對於提升其會計資訊品質及抑制租稅規避行為亦有所幫助。

關鍵詞：企業社會責任、租稅規避、會計資訊品質

Tax Avoidance Assessments in the CSR Firms: Insights from Accounting Information Quality

Yi-Hsing Liao[*]　　Teng-Sheng Sang[**]　　Yuan-Tang Tsai[***]

Abstract: This study aims to examine the relationship between voluntary corporate social responsibility (CSR) reporting and tax avoidance, and to explore whether accounting information quality has an indirect impact on this relationship. The empirical results show that a firm voluntarily releasing CSR has a lower level of tax avoidance regardless the proxy of tax avoidance is measured by book-tax difference or by the effective tax rate. In addition, this study finds that firms with voluntary CSR reporting improve their account information quality, so as to reduce the level of tax avoidance.

This supports the argument that information transparency is the main incentive for a firms with voluntary CSR reporting. Finally, in a situation where the CSR reporting is mandatory, it is beneficial for firms to improve their accounting information quality and to curb the tax avoidance behavior.

Keywords: corporate social responsibility, tax avoidance, accounting information quality

[*]　Professor, Department of Accounting, Chung Yuan Christian University
[**]　Associate Professor, Department of Accounting, Chung Yuan Christian University
[***]　Assistant Professor, Department of Accountancy, National Taipei University (Corresponding author, Email: tsaiyt@mail.ntpu.edu.tw)

I. Introduction

The main purpose of this study is to examine the relationship between voluntarily releasing corporate social responsibility (hereafter CSR) report and tax avoidance, and further examine the indirect impacts of CSR report on tax avoidance through accounting information quality. CSR has recently received increasing attention in practical and academic areas, and although there is no clear definition about what CSR entails, a general and acceptable explanation for the public is that CSR is an approach for how an enterprise takes responsibility for the social and environmental impacts on its business operations. Since CSR describes an interaction among society, environment, and enterprises, companies voluntarily issuing CSR reports are usually viewed as caring about public interests and thus receive a better reputation by the public. Therefore, companies are focusing on CSR and realizing the importance of CSR reports more than before. Extended research covering CSR is also growing (e.g., Dhaliwal, Li, Tsang, and Yang, 2011; Dhaliwal, Radhakrishnan, Tsang, and Yang, 2012; Kim, Park, and Wier, 2012; Cho, Lee, and Pfeiffer Jr., 2013), and while the research topics related to CSR vary, one of them is studying the relationship between CSR and tax issues (Hanlon and Heitzman, 2010; Sikka, 2010; Huang and Watson, 2015).

Tax avoidance is one of the important research streams in the accounting literature, as any tax avoidance influences not only investors and creditors, but also governments and public interests. According to Dyreng, Hanlon, and Maydew (2008), tax avoidance is when a company employs some methods to pay a low amount of taxes relative to its pre-tax earnings. Because the legal methods that companies can use to engage in tax avoidance are broad, it does not necessarily imply that it is improper for a company to exhibit tax avoidance behavior. However, it is still very difficult to avoid a negative impression from the public when a company engages in tax avoidance, especially when the behavior is aggressive in its amount.

Because both CSR activities and tax avoidance are related to a company's strategy about its resource allocation, the link between the two has attracted considerable attention in recent studies. Many researchers have put forth great effort on how CSR activities affect tax avoidance (Lanis and Richardson, 2012; Hoi, Wu, and Zhang, 2013; Davis, Guenther, Krull, and Williams, 2016; Lanis and Richardson, 2015; Watson, 2015).

Although the relationship between CSR and tax avoidance is a popular issue, rare papers discuss how voluntarily issuing a CSR report affects a company' behavior of tax avoidance. Most prior studies find that CSR activities has negative relationship with tax avoidance. However, it does not mean that firms releasing their CSR reports have better

CSR performance or do more CSR activities. More specifically, firms releasing their CSR reports voluntarily is not the same as they take CSR activities seriously. In fact, managers may have different incentives when they decide to issue CSR reports voluntarily. In general, researchers believe that companies voluntarily releasing CSR reports should care about their reputation and the public interests. Since (aggressive) tax avoidance strategy is costly to society (Weisbach, 2002) and widely viewed as "unethical" by politicians and the mass media (e.g., Hanlon and Slemrod, 2009; Wilson, 2009), companies that care about their reputation should not engage in such kind of behavior. Therefore, the relationship between voluntarily releasing CSR report and tax avoidance should be negative. On the other hand, if people believe that releasing a CSR report is a signal from the management to deliver the message that a firm cares about its reputation and the public interests, then the management has an incentive to use this "tool" to mitigate the concern from the outsiders when the firm engages in some "improper" behaviors, such as tax avoidance. In other words, because the tax avoidance behavior will harm a firm's reputation, managers has the motivation to find some ways to reduce this damage. Releasing a CSR report voluntarily is one way. In this kind of scenario, the relationship between voluntarily releasing CSR report and tax avoidance should be positive. Therefore, to examine whether disclosing CSR information voluntarily is based on delivering information for the outsiders that firms really care about CSR (information transparency hypothesis/transparent reporting hypothesis) or just wants to mitigate the concern about the tax avoidance behavior (signal hypothesis) becomes an interesting and important issue.

To further test which of the situations we mentioned above does exist, we introduce the concept of accounting information quality. Kim et al. (2012) provide evidence that firms with better CSR performance usually exhibit less earnings management (higher accounting information quality). Intuitively, it is hard to avoid using earnings management when firms want to engage in tax avoidance practices. Therefore, accounting information quality appears to be a mediator to connect the complicated relationship between CSR and tax avoidance. More specifically, if a firm indeed implements its CSR policy, it should have better accounting information quality. Then the CSR report will decrease the level of tax avoidance through higher level of accounting information quality (indirect effect) and other CSR activities (direct effect). To serve this purpose, we use path analysis to disentangle the impact of CSR report on tax avoidance through accounting information quality.

In order to test our hypotheses, we follow Dhaliwal et al. (2011; 2012); Dhaliwal, Li, Tsang, and Yang (2014) in measuring CSR disclosure. Consistent with prior research (McGuire, Omer, and Wang, 2012; Kubick and Masli, 2016; Cen, Maydew, Zhang, and

Zuo, 2017; Hasan, Hoi, Wu, and Zhang, 2017), we adopt four widely used measures to capture different types of corporate tax avoidance practices. And then, we use earnings quality and information asymmetry to proxy for accounting information quality, respectively. By doing so, we can employ path analysis to further examine the indirect effects of CSR report on tax avoidance through accounting information quality. Additionally, similar to previous studies on CSR disclosure (Dhaliwal et al. 2011; 2012), one important concern that should be raised is potential endogeneity due to self-selection biases. To the extent that a firm's choice of reporting CSR is not determined exogenously-that is, the treatment effect (CSR-disclosing versus non-CSR-disclosing) is not a random variable, but rather a firm self-selects into disclosing or non-disclosing status. In an attempt to establish the causal effect of CSR report on tax avoidance, we employ the Heckman two-stage model to control for endogeneity and selection bias. Following suggestions by Dhaliwal et al. (2011; 2012), we identify two instrumental variables satisfying the exclusion restrictions to mitigate problems of misspecifications (Lennox, Francis, and Wang, 2012; Wooldridge, 1995): the growth opportunities denoted as *TOBINQ*, and the liquidity of firms' stock denoted as *LIQUIDITY*.

Consistent with most studies in this issue, we find that voluntarily releasing CSR report is negatively associated with tax avoidance, which implies that the incentive for firms to release CSR reports voluntarily is mainly driven by information transparency hypothesis. Path analysis shows that releasing CSR report lowers the level of tax avoidance indirectly through increased accounting information quality. These results still hold even in the setting of mandatory regulation. Additional analysis also indicates that the CSR report effect in tax avoidance behavior is more pronounced for firms with better CSR performance.

This study enriches the research on CSR and tax avoidance in three parts. First, we provide a deeper understanding of how releasing CSR report influences tax avoidance behavior. Since the relationship between disclosing CSR information voluntarily and tax avoidance exists two different viewpoints, our findings help to disentangle the main incentive for managers to issue CSR reports. By using path analysis, our results indicate that releasing CSR report constrains tax avoidance indirectly through better accounting information quality, showing enhanced accounting information quality may explain why CSR-disclosing firms are valued more and why they would pay more taxes. Second, we contribute to the growing tax avoidance literature by documenting evidence that releasing CSR report causes a reduction in tax avoidance regardless of whether such disclosure is voluntary. This finding may provide some implications for regulators in loosening the policy on CSR disclosure which may induce unintended consequences such as aggressive

tax avoidance behavior. Third, using CSR performance dataset, our further analysis indicates that the CSR report effect in tax avoidance behavior is more pronounced when firms have better CSR performance, which signifies that the issuance of CSR report and exhibiting better CSR performance have different but complementary information attributes. Stakeholders and regulators can benefit more from having access to both public information in the tax avoidance setting, implying that concrete public information complements claimed public information to assist them in assessing corporate tax avoidance.

The remainder of the paper is organized as follows. Section 2 lays out the hypotheses. Section 3 describes the research design. Section 4 presents the empirical test results. Section 5 reports additional analyses' test results. Section 6 concludes.

II. Literature review and hypothesis development

1. CSR and tax avoidance

Tax avoidance is a term to describe that companies try to reduce their tax payments through some means, some of which are legal and some are questionable. The latter one is called corporate tax aggressiveness. It is well documented that overly aggressive tax avoidance activities influence public interest (Weisbach, 2002) and are viewed as "unethical" by the public (Hanlon and Slemrod, 2009; Wilson, 2009). Because both CSR activities and tax avoidance are related to a company's resource allocation strategy, researchers are interested in exploring the link between these two issues. Prior studies also do a lot of work for these two topics (Lanis and Richardson, 2012; Hoi et al., 2013; Davis et al., 2016; Lanis and Richardson, 2015; Watson, 2015).

Besides CSR activities, how voluntarily releasing CSR report affects tax avoidance behavior is another interesting issue. For the issue, there are two arguments to explain the incentive of companies to choose releasing their CSR report voluntarily. The most broadly accepted view is the information transparency hypothesis. Under this hypothesis, CSR report releases more information about how companies put efforts into reconciling business operations and public interests, it helps reduce the information asymmetry between firms and the public. On the other hand, aggressive tax avoidance means firms use some methods (no matter legal or illegal) to fulfill their target of reducing tax payments - that is, the greater the tax avoidance behaviors are, the lower is information transparency. If CSR activities are primarily driven by the transparent reporting argument, then aggressive tax avoidance practices should be negatively associated with CSR activities. In detail, under information transparency hypothesis, companies that releasing their CSR report voluntarily do care

about their reputation and the public interests. They really implement CSR activities and issue the report to let outsiders to know. Releasing CSR report voluntarily implies better performance for CSR activities. Prior studies have found good CSR performance can constrain tax avoidance (Lanis and Richardson, 2012; Hoi et al., 2013; Lanis and Richardson, 2015; Watson, 2015). Therefore, it is reasonable that voluntarily disclosing CSR report should mitigate the level of aggressive tax avoidance. However, another viewpoint for releasing CSR report claim that companies issuing their CSR report voluntarily do not mean they do really implement CSR activities or care about CSR performance. They just use CSR report as a strategic device for window dressing (Carey, Liu, and Qu, 2017). Thus, there are two contradictive hypotheses for the relationship between voluntarily releasing CSR report and tax avoidance.

Notwithstanding, there is sufficient empirical evidence to support the idea that voluntarily releasing CSR report can convey better accounting information quality and create a more transparent information environment. For example, Dhaliwal et al. (2011) find that voluntary disclosure of CSR can reduce the cost of equity capital because of improving information transparency. This finding is also robust when the data extends to 31 countries (Dhaliwal et al., 2014). In addition, the voluntary publication of stand-alone CSR reports also can improve financial analysts' earnings forecast accuracy (Dhaliwal et al., 2012).

To the extent that reputation concerns discipline CSR-disclosing firms to have the public's interests in mind, voluntary CSR-disclosing firms should exhibit less tax avoidance. Thus, our first hypothesis is as follows.

H1: Tax avoidance practices are negatively associated with voluntarily releasing CSR report.

2. The role of accounting information quality in determining the influence of voluntarily releasing CSR report on tax avoidance behavior

Prior studies have identified how CSR affects the quality of accounting information. Intuitively, the release of CSR reports seems to improve firms' information disclosure quality, because it can display a better information environment (Dhaliwal et al., 2012; Cho et al., 2013) and attract institutional investors and financial analyst coverage (Dhaliwal et al., 2011). All of these can directly and indirectly reduce information asymmetry. Moreover, firms that issue CSR reports even exhibit less earnings management through discretionary accruals or real activities, thus leading to enhanced financial reporting quality (Kim et al., 2012). The above findings are consistent with the transparent reporting hypothesis postulated by Kim et al. (2012) and Watson (2015) and claimed by numerous

CSR scholars (Donaldson and Preston, 1995; Jones, 1995; Phillips, Freeman, and Wicks, 2003).

Meanwhile, previous literature also suggests that accounting information quality has negative influence on tax avoidance (Blaylock, Shevlin, and Wilson, 2012) and earnings performance plays an important role in the relationship between CSR activities and tax avoidance (Watson, 2015). Based on these findings above, it is eminently reasonable to assume that voluntarily releasing CSR report could constrain corporate tax avoidance through putting better accounting information quality in place. However, one possible alternative explanation for the incentive for CSR disclosure is that companies may releasing their CSR activities as a tool to lessen the expected costs associated with aggressive tax avoidance practices (Hoi et al., 2013; Kim et al., 2012; Watson, 2015). If so, we should observe that firms with releasing CSR report voluntarily cannot improve their accounting information quality.

Nonetheless, prior research finds greater support for the transparent reporting hypothesis, as discussed in our development of H1. Therefore, we predict that a firm that releases CSR report should improve its accounting information quality, which in turn constrain its tax avoidance. The second hypothesis is stated as follows:

H2: Conditional on voluntarily releasing CSR report being associated with accounting information quality, voluntarily releasing CSR report influences tax avoidance indirectly through accounting information quality.

III. Research design

1. Baseline regression for the first hypothesis

In order to test the first hypothesis, we model TAVO (proxies for tax avoidance) as a function of the presence of CSR disclosures and firm attributes related to tax avoidance.

Because the firms choose to disclose CSR reports voluntarily only when they expect that the benefits from reporting CSR are higher than the additional cost, it seems hard to avoid the concern about endogeneity in our study. That is, the treatment effect (CSR-disclosing versus non- CSR-disclosing) is not a random variable, but rather a firm self-selects into disclosing or non-disclosing status. Therefore, a two-stage Heckman model is employed to test our hypotheses. Equation (1) is the first stage equation of Heckman model we use to examine the determinants of voluntarily releasing CSR report. According to prior studies (Larcker and Rusticus, 2010; Lennox et al., 2012), we need at least one variable in the first stage model that correlated with the dependent variable in the first-stage model but uncorrelated with the error term in the second-stage model. Following Dhaliwal et al.

(2011; 2012), we include TOBINQ and LIQUIDITY in our first stage equation to meet the exclusion restrictions. We calculate Inverse Mills ratio (MILLS) through equation (1), which is then included as an additional explanatory variable in Equation (2) to control the self-selection bias. Equation (2) presents the second stage equation of Heckman model that we use to test our first hypothesis. Following are the models we use in this study.

$$CSR = \alpha_0 + \alpha_1 SIZE + \alpha_2 LEV + \alpha_3 ROA + \alpha_4 DEP + \alpha_5 BAD + \alpha_6 IFI + \alpha_7 GSI$$
$$+ \alpha_8 GSA + \alpha_9 PON + \alpha_{10} ELEC + \alpha_{11} PPE + \alpha_{12} INTANG + \alpha_{13} MVB$$
$$+ \alpha_{14} TOBINSQ + \alpha_{15} LIQUID + \sum Year + \sum Industry + \mu \qquad (1)$$

$$TAVO = \beta_0 + \beta_1 CSR + \beta_2 SIZE + \beta_3 LEV + \beta_4 ROA + \beta_5 DEP + \beta_6 BAD$$
$$+ \beta_7 IFI + \beta_8 GSI + \beta_9 GSA + \beta_{10} PON + \beta_{11} ELEC + \beta_{12} PPE$$
$$+ \beta_{13} INTANG + \beta_{14} MVB + \beta_{15} MILLS + \sum Year + \sum Industry + \varepsilon \qquad (2)$$

Here, we note that (subscripts are omitted for notational convenience and in later equations; all variables are measured as of time t for firm i unless otherwise indicated):

TAVO : four measures of tax avoidance in year t: the first proxy is the spread value between pre-tax book income and taxable income (*BTD*); the second proxy is the value of discretionary permanent book-tax differences (*TDAX*); the third proxy is total income tax expense divided by pre-tax book income minus special items (*GETR*); the forth proxy is cash taxes paid divided by pre-tax book income before special items (*CETR*);

CSR : 1 if a firm discloses a CSR report voluntarily in year t and 0 otherwise;

SIZE : log value of the market value of equity in year t-1;

LEV : long-term debt divided by lagged assets in year t;

ROA : return on assets, defined as operating income divided by lagged assets in year t;

DEP : depreciation expense scaled by lagged assets in year t;

BAD : bad debt expense scaled by lagged assets in year t;

IFI : investment gains/losses scaled by lagged assets in year t;

GSI : gains/losses on disposal of investments scaled by lagged assets in year t;

GSA : gains/losses on disposal of assets scaled by lagged assets in year t;

PON : years that sample firm is classified as listed company;

ELEC	:	dummy variable, 1 if sample firm is classified as electronics industry; 0 otherwise;
PPE	:	plant, property, and equipment scaled by lagged assets in year t;
INTANG	:	intangible assets scaled by lagged assets in year t;
MVB	:	market-to-book ratio in year t-1, measured as the market value of equity scaled by book value of equity;
MILLS	:	inverse mills ratio, estimate by Heckman two stage model
TOBINSQ	:	Tobin's q ratio;
LIQUID	:	liquidity ratio;
Year	:	year fixed effects;
Industry	:	industry fixed effects;
ε, μ	:	error term.

We use four measures to proxy tax avoidance. The first two measures of book-tax differences *BTD* and *TDAX* are developed by Manzon Jr. and Plesko (2002) and Desai and Dharmapala (2006) and have become widely used in the tax literature to measure tax avoidance in general (e.g., Mills, 1998; Mills and Sansing, 2000; Manzon Jr. and Plesko, 2002; Hanlon, 2005; Desai and Dharmapala, 2006; Wilson, 2009; Chen, Chen, Cheng, and Shevlin, 2010; Hanlon, Krishnan, and Mills, 2012). The underlying logic of these measures is that firms that exhibit more aggressive tax avoidance have higher book-tax differences than other firms. Following the method suggested by Chen (2009), we compute taxable income by using his suggested formula (described in Appendix A). This method has been proven useful in the estimate of taxable income with the smallest measurement error when using financial data to infer information about taxable income for the individual entity. More importantly, it can be verified when trying to link tax return data to financial statement data. For the value of the discretionary permanent book-tax differences (*TDAX*), we use following model[1] to calculate it (Kim and Zhang 2016).

$$BTD\_V = \gamma_0 + \gamma_1 INTANG + \gamma_2 INV\_INC + \gamma_3 MI + \gamma_4 lbtd\_v + \sum Year + \sum Industry + \tau \tag{3}$$

Following are the definitions of new variables within this model:

BTD_V	:	permanent book-tax differences, that is total book–tax difference (for details, please see Appendix A) minus the temporary book–tax difference ;
INV_INC	:	investment revenue that is recognized by the parent company under the equity method scaled by lagged assets in year t;

---

[1] Due to unavailable data for current state tax expense and change in net operating loss carryforwards, we do not include these two variables in the model.

MI	:	minority interests scaled by lagged assets in year t;
$lbtd\_v$	:	lag(BTD_V);
τ	:	error term

DTAX is the error term of model (3). In addition, we also use effective tax rate as another two measures. The third one is GAAP effective tax rate (*GETR*), defined as total income tax expense divided by pre-tax book income minus special items. The last measure, cash effective tax rate (*CETR*), is defined as cash taxes paid divided by pre-tax book income before special items. Consistent with Law and Mills (2017) and Chyz et al. (2019), we truncate both effective tax rate measures at [0, 1] to avoid the influence of outliers.

In order to let all tax avoidance proxies in the same direction, we multiply both ETRs (GETR and CETR) by -1 and use the transformed variables as our empirical proxies for tax avoidance. By this construction, a higher BTD, TDAX, GETR, or CETR implies a greater extent of corporate tax avoidance. Thus, the relationships between voluntarily releasing CSR report and these tax avoidance measures should be negative.

Following prior literature (Mills, 1998; Manzon Jr. and Plesko, 2002; Rego, 2003; Dyreng et al., 2008; Frank, Lynch, and Rego, 2009; Chen and Tsai, 2006; Wang and Lee, 2019), this study includes control variables that related to tax avoidance in the testing models. Past studies indicate that larger companies (SIZE) have richer resources and capabilities to engage in tax avoidance (TAVO) and therefore the relationship between SIZE and TAVO should be positive. However, another viewpoint argues that larger companies receive higher attention from various groups in society and are willing to fulfill their tax obligation. Given the mixed results from prior literature, we do not make a directional prediction for variable SIZE. Highly leveraged companies (LEV) usually have higher interest expense to deduct their taxable income and then lower their effective tax rate. On the other hand, some scholars believe that companies enjoying the benefit of tax shield have lower incentive to engage in tax avoidance (Graham and Tucker, 2006; Chen et al., 2010). Therefore, we make non-directional prediction for this variable. Return on assets (ROA) is an important indicator of companies' performance. Generally, companies with higher taxable income should pay higher tax for the government. However, for the companies with higher tax expense, they also have stronger incentive to engage in tax avoidance to mitigate their tax cost. Thus, we make no directional prediction with respect to the association between ROA on TAVO. Different depreciation policies may cause the difference between taxable income and accounting income and this gap will reverse in the future. Following the viewpoint of Chen and Tsai (2006), we do not make a directional prediction for this variable. For bad debt expense (BAD), Chen and Tsai (2006) argue that companies may be charged a higher level of tax from the government by disallowing to

recognize some portion of bad debt expense if companies estimate too much bad debt expense. The relationship between BAD and TVAO should be negative. According to the findings from Chen and Tsai (2006), we predict investment gains/losses (IFI), gains/losses on disposal of investments (GSI), and gains/losses on disposal of assets (GSA) have positive influence on TAVO. This study also includes intangible assets (INTANG) in the models because the differences between the accounting and tax rules for intangibles frequently create permanent differences unrelated to tax planning (Frank et al., 2009). We also contain fixed assets (PPE) and market-to-book ratio (MVB) in our testing models.

Finally, following Petersen (2009), we estimate the regressions with year and industry indicators, adjusting the standard errors based on firm-level clustering.

2. Accounting information quality tests

To investigate if accounting information quality is a mediator in the relationship between issuing CSR report voluntarily and tax avoidance, we use two concepts to evaluate accounting information quality.

The first concept to evaluate accounting information quality is earnings quality. Many studies on earnings quality (e.g., Subramanyam, 1996; DeFond and Subramanyam, 1998; Kothari, Leone, and Wasley, 2005; Kim et al., 2012) use discretionary accruals as proxy for earnings quality. Therefore, we also use it as our proxy for earnings quality (and accounting information quality). As in Warfield, Wild, and Wild (1995) and Klein (2002), this study employs the value of discretionary accruals (DA)[2] for the tests, as earnings management can involve either income-increasing or income-decreasing accruals.

Our second concept to describe accounting information quality is information asymmetry. Following prior studies (Diamond and Verrecchia, 1991; Leuz and Verrecchia, 2000), we use the bid-ask spread (SPREAD), the average daily closing bid-ask price over a fiscal year, as the proxy for information asymmetry.

For the second hypothesis, we use path analysis to examine the mediate effect of accounting information quality in the relationship between releasing CSR report voluntarily and tax avoidance.

3. Sample period and data sources

Our sample contains all the listed companies on the Taiwan Stock Exchange (TWSE) or the Taiwan Over-the-Counter market (GTSM, Gre Tai Securities Market) from 2007[3]

---

[2] Following Ashbaugh, LaFond, and Mayhew (2003) and Kothari et al. (2005), discretionary accruals are computed through the cross-sectional modified Jones model adjusted for performance.

[3] The system of Alternative Minimum Tax that came into effect in 2006 has caused an apparent change in Taiwan's taxable environment. In order to make our analysis be based on a similar situation in income tax rules, we choose the year 2007 as the starting point of analysis.

through 2017. From 2014, the authority starts to require the firm that to meet the criteria must release its CSR report. In order to compare if different circumstances (voluntary or mandatory) will change the relationship between releasing CSR report and tax avoidance, we also collect data for firms releasing CSR reports mandatorily. The sample selection differs for each test.

We collect the data from different sources. For the main testing variable *BTD*, we hand-collect the relative data and estimate them by ourselves. To derive taxable income information, we use the parent company's financial statements and its footnote disclosures to identify the relative tax components[4] and then estimate the amount of income tax payable (for details, please see Appendix A). For the variable *CSR* (voluntarily disclosure of CSR reports), we gather the information of CSR reports from several sources. The major source is CSRone Reporting (http://www.csronereporting.com), which is a leading advisor-based repository for CSR reports. We also supplement the data from CSRone Reporting with information from a list of awards for excellence in CSR disclosure hosted by Global Views Monthly and Common Wealth Magazine, and from firms' own websites. Finally, the financial information data are collected from the Taiwan Economic Journal database.

As shown in Table 1 Panel A, our initial sample includes all the listed companies from the years 2007 to 2017, thus providing 18,923 firm-year observations. We exclude 563 firm-year observations for financial services firms. We further exclude 7,653 (4,992+1,442+1,219) firm-year observations due to a lack of data on dependent variables, main independent variables, or the control variables. After deleting 489 mandatory sample, our final sample consists of 10,218 firm-year observations that include firms voluntarily releasing CSR reports (810) and firms not issuing CSR reports. In these samples, all continuous independent variables are winsorized at the 1st and 99th percentiles. Table 1 Panel B shows the information about mandatory sample from the years 2014 to 2017; Panel C provides information about year and industry distribution for the firms with voluntary CSR disclosure and non-CSR disclosure.

IV. Empirical results

1. Descriptive statistics and correlations

Table 2 lists the descriptive statistics for our main and control variables. Panel A is the descriptive statistics for the firms releasing CSR reports voluntarily; Panel B is the descriptive statistics for the firms releasing CSR reports mandatorily; Panel C is the

---

[4] They include non-taxable permanent differences/taxable temporary differences and deferred income tax assets/liabilities.

descriptive statistics for the non-disclosing firms. In Panel A, the mean (median) values of our main test variables, *BTD*, *TDAX*, *GETR*, and *CETR*, are -0.008(-0.010), 0.001(0.000), -0.131(-0.132), and -0.108(-0.078), respectively, which are comparable to previous studies. With respect to the accounting information quality variables, on average, discretionary accruals and bid-ask spread are 0.010 and 1.305, respectively.

TABLE 1 Sample Selection Procedure

Panel A: CSR in voluntary CSR circumstance (2007-2017)	
Firms-years with TEJ data between 2007 and 2017	18,923
Less:	
Firm-years operating in the Financial industries	(563)
Firm-years with insufficient data to compute all tax avoidance variables	(4,992)
Firm-years with insufficient data to compute DA and spread	(1,442)
Firm-years with insufficient data to compute all control variables	(1,219)
Total Sample size	10,707
Less:	
Mandatory CSR observations	489
Total Sample size	10,218
Observations on voluntarily released CSR reports	810
Panel B: CSR in mandatory CSR circumstance (2014-2017)	
Firms-years with TEJ data between 2014 and 2017	7,594
Less:	
Firm-years operating in the Financial industries	(209)
Firm-years with insufficient data to compute all tax avoidance variables	(1,689)
Firm-years with insufficient data to compute DA and spread	(299)
Firm-years with insufficient data to compute all control variables	(723)
Total Sample size	4,674
Less:	
Voluntary CSR observations	500
Total Sample size	4,174
Observations on mandatorily released CSR reports	489

TABLE 1　Sample Selection Procedure (Continued)

Panel C: Year and industry distribution table with voluntary CSR disclosure and non-CSR disclosure [a] (2007-2017)

Industry	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Cement	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0) [b]	0(0)	2(3)	3(0)	3(0)
Food	1(19)	1(23)	1(24)	1(24)	0(21)	1(20)	2(21)	0(0)	0(0)	1(1)	0(1)
Plastic	0(19)	1(22)	1(23)	2(22)	0(18)	0(18)	4(18)	3(12)	4(11)	2(11)	3(10)
Textile	2(35)	2(36)	2(44)	2(46)	3(39)	2(41)	1(40)	2(36)	3(37)	3(35)	2(42)
Electric machinery	0(23)	1(39)	1(46)	0(53)	4(31)	3(30)	2(50)	4(46)	5(43)	6(54)	6(62)
Electrical and cable	0(12)	0(13)	0(14)	0(13)	0(13)	0(14)	1(15)	1(14)	0(15)	1(12)	0(12)
Paper and pulp	0(7)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	1(1)	0(0)	0(0)
Iron and steel	0(22)	1(30)	1(35)	1(37)	1(28)	4(26)	6(27)	3(26)	5(23)	5(22)	5(30)
Rubber	0(8)	0(10)	0(10)	0(9)	1(8)	0(9)	1(9)	2(8)	1(8)	0(6)	1(6)
Automobile	0(7)	0(8)	0(8)	0(10)	0(11)	0(11)	1(10)	2(9)	1(12)	4(12)	4(13)
Building material and construction	0(23)	0(46)	0(59)	0(59)	0(43)	0(31)	1(36)	2(34)	3(32)	5(37)	4(50)
Shipping and transport'tion	4(9)	1(15)	1(18)	0(18)	0(17)	0(17)	7(12)	2(11)	2(12)	0(12)	2(14)
Tourism	0(4)	0(11)	0(17)	0(17)	0(110)	0(11)	0(11)	0(8)	0(11)	1(13)	3(18)
Trading and consumers' goods	0(10)	0(17)	1(20)	0(20)	0(12)	0(12)	0(17)	1(13)	3(13)	2(12)	1(13)
Other	0(9)	3(54)	4(60)	3(67)	4(41)	4(39)	10(53)	9(52)	10(51)	17(54)	14(63)
Chemistry	1(20)	1(27)	1(29)	1(30)	1(25)	2(24)	2(30)	0(0)	0(0)	0(0)	0(0)
Biotechnology and medical care	0(10)	0(28)	0(34)	1(36)	1(38)	1(40)	7(38)	5(44)	11(48)	13(54)	21(68)
Gas and electricity	0(1)	0(9)	0(12)	0(12)	1(7)	0(8)	2(7)	1(7)	1(7)	1(7)	0(9)

TABLE 1 Sample Selection Procedure (Continued)

Industry	2017	2016	2015	2014	2013	2012	2011	2010	2009	2008	2007
Semiconductor	12(104)	10(85)	15(70)	11(73)	14(77)	5(67)	6(63)	5(92)	3(84)	5(61)	2(28)
Computer and peripheral equipment	9(71)	8(65)	12(66)	9(66)	17(65)	9(54)	4(59)	8(68)	7(66)	5(61)	3(32)
Optoelectronic	8(90)	6(82)	9(75)	6(78)	8(79)	2(65)	1(59)	2(73)	0(67)	1(58)	0(23)
Communications and internet	13(59)	8(58)	9(51)	8(47)	8(48)	4(32)	4(34)	4(50)	5(44)	4(41)	2(14)
Electronic parts and components	20(163)	20(157)	19(148)	19(144)	12(149)	6(108)	2(104)	2(146)	2(135)	2(124)	1(44)
Electronic products distribution	0(31)	2(29)	1(28)	0(30)	1(30)	0(23)	0(23)	1(32)	0(32)	0(28)	1(12)
Information service	4(26)	4(26)	3(24)	3(23)	3(22)	1(11)	0(11)	0(24)	0(24)	0(21)	0(4)
Other electronics	13(56)	11(55)	8(53)	4(60)	4(61)	1(47)	1(42)	1(56)	0(54)	0(46)	0(20)
Cultural and creative	1(22)	1(19)	0(18)	0(15)	0(15)	0(6)	0(5)	0(14)	0(12)	0(12)	0(0)
Agri-technologies	0(2)	0(2)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)
E-commerce	0(2)	0(5)	0(4)	0(2)	0(3)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)
Total	149(1037)	134(925)	128(864)	97(858)	114(943)	45(764)	34(763)	34(1028)	30(971)	28(840)	17(415)

a. Numbers in parentheses is sample size of non-CSR disclosure.
b. Both numbers are 0 indicating that no company in the industry is included in the sample in this year (this is because we use sample size after deleting the firms with missing data)

TABLE 2　Descriptive Statistics

Panel A: Voluntary observations (2007-2017, n=810)					
	mean	median	sd	min	max
BTD	-0.008	-0.010	0.062	-0.402	0.347
DTAX	0.001	0.000	3.692	-0.177	0.292
GETR	-0.131	-0.132	0.112	-0.997	0.000
CETR	-0.108	-0.078	0.158	-1.000	0.000
DA	0.010	0.008	0.074	-0.290	0.572
SPREAD	1.305	1.258	1.174	0.121	4.773
SIZE	16.411	16.149	1.516	13.578	20.913
LEV	0.361	0.354	0.162	0.004	0.892
ROA	0.067	0.066	0.077	-0.510	0.386
DEP	0.025	0.013	0.030	0.000	0.161
BAD	0.008	0.000	0.036	0.000	0.417
IFI	0.018	0.007	0.040	-0.148	0.220
GSI	0.002	0.000	0.014	-0.015	0.272
GSA	0.001	0.000	0.009	-0.103	0.124
PON	17.299	15.000	9.189	2.000	56.000
ELEC	0.584	1.000	0.493	0.000	1.000
PPE	0.215	0.163	0.186	0.000	0.922
INTANG	0.009	0.001	0.033	0.000	0.506
MVB	1.993	1.566	1.776	0.379	34.151
TOBINSQ	1.433	1.120	1.013	0.320	10.010
LIQUID	1.438	0.971	1.457	0.000	14.347
Panel B: Mandatory observations (2014-2017, n=489)					
	mean	median	sd	min	max
BTD	-0.003	-0.002	0.064	-0.252	0.552
DTAX	0.002	0.001	0.036	-0.234	0.193
GETR	-0.115	-0.128	0.092	-0.788	0.000
CETR	-0.111	-0.070	0.138	-1.000	0.000
DA	0.014	0.009	0.078	-0.469	0.575
SPREAD	1.436	1.777	0.788	0.160	4.786
SIZE	16.783	16.907	1.673	12.557	21.908
LEV	0.358	0.349	0.166	0.003	0.857
ROA	0.051	0.049	0.071	-0.288	0.370
DEP	0.023	0.012	0.028	0.000	0.144
BAD	0.004	0.000	0.027	0.000	0.461
IFI	0.018	0.010	0.047	-0.234	0.401
GSI	0.003	0.000	0.027	-0.023	0.489
GSA	0.000	0.000	0.003	-0.049	0.026

TABLE 2   Descriptive Statistics (Continued)

	mean	median	sd	min	max
PON	23.946	22.000	11.519	3.000	56.000
ELEC	0.294	0.000	0.456	0.000	1.000
PPE	0.204	0.173	0.170	0.000	0.879
INTANG	0.012	0.000	0.058	0.000	0.896
MVB	1.500	1.147	1.304	0.302	9.602

Panel C: Non-disclosing observations (2007-2017, n=9,408)

	mean	median	sd	min	max
BTD	-0.002	0.001	0.099	-0.950	0.975
DTAX	0.117	0.006	2.178	-1.964	1.093
GETR	-0.115	-0.102	0.131	-0.999	0.000
CETR	-0.064	-0.029	0.141	-1.000	0.000
DA	0.015	0.013	0.169	-0.955	1.045
SPREAD	1.886	1.777	1.245	0.055	5.949
SIZE	15.069	14.981	1.187	9.830	21.418
LEV	0.355	0.343	0.173	0.003	0.991
ROA	0.032	0.040	0.113	-4.389	0.858
DEP	0.019	0.011	0.023	0.000	0.376
BAD	0.006	0.000	0.054	0.000	2.546
IFI	0.007	0.001	0.054	-0.482	1.215
GSI	0.002	0.000	0.023	-0.579	1.522
GSA	0.002	0.000	0.024	-0.365	1.198
PON	14.945	13.000	7.884	2.000	54.000
ELEC	0.555	1.000	0.497	0.000	1.000
PPE	0.194	0.144	0.179	0.000	2.878
INTANG	0.006	0.000	0.032	0.000	1.557
MVB	1.649	1.257	2.209	0.088	119.418
TOBINSQ	1.210	0.960	0.923	0.100	14.640
LIQUID	1.781	1.177	1.830	0.000	26.084

All variables are defined in Appendix B.

Table 3 presents the Pearson correlation results for all dependent and selected independent variables used in our model. Our first two tax avoidance measures, *BTD* and *TDAX*, correlate highly with a correlation coefficient of 0.44 ($p < 0.01$). The four tax avoidance measures negatively correlate with *CSR*, and accounting information quality variables also negatively correlate with our dependent variables. Both *BTD* and *TDAX* also correlate with most other control variables. Such correlations suggest that these control variables are associated with tax avoidance. The other two tax avoidance measures, *GETR* and *CETR* show the similar results. Finally, we note that the pairwise correlation among

our explanatory variables is not very high in magnitude, with the correlation between *DEP* and *PPE* of 0.62 being the highest. Although we find that *DEP* and *PPE* highly correlate with each other, we do not find that these correlations cause significant multicollinearity in our regressions.[5]

2. Univariate analysis

Table 4 is the univariate analysis between different groups. Panel A shows the results between voluntary and non-disclosing sample and Panel B shows the results between voluntary and mandatory sample. Compared with non-disclosing and mandatory sample, firms releasing CSR reports voluntarily have lower level of tax avoidance. This finding is robust for all tax avoidance proxies.

3. Multivariate regressions: CSR-disclosing and BTD

Table 5 reports the association between voluntarily CSR-disclosing and tax avoidance. We use the Heckman two-step approach to test our first hypothesis. Four proxies of tax avoidance, *BTD*, *TDAX*, *GETR*, and *CETR* are used in our models. The coefficient on the main independent variable *CSR* is negative and significant, regardless of what measure for tax avoidance is used. In addition, we further divide *BTD* and *TDAX* into positive differences (*BTD+*, *TDAX+*) and negative differences (*BTD-*, *TDAX-*). For the positive differences, the coefficients on CSR are still negative and significant, while the coefficients on CSR are negative but not significant if we use negative differences as the proxies. This finding is consistent with our expectation since tax avoidance usually exists in the situation that book income is higher than taxable income. Overall, our results suggest that, after controlling for other factors, tax avoidance is lower for firms with voluntarily releasing CSR reports compared to non-CSR-disclosing firms, consistent with our first hypothesis. Most results on the control variables are largely consistent with those reported in prior studies and with the prediction we made in advance. Based on the results from Table 5, a firm that voluntarily discloses its CSR report has a lower level of tax avoidance.

Additionally, it is noted that the coefficients on Inverse Mills Ratio are highly statistically significant across our tax avoidance models, suggesting that firms endogenously self-select into reporting status. Specifically, the unobservables in the selection model (i.e., the decision to release CSR report) are highly correlated with the unobservables in the outcome model (i.e., the tax avoidance behavior), implying that controlling for unobservable differences is important (Lennox et al., 2012; Bédard and Courteau, 2015).

---

[5] According to Greene (2008), multicollinearity is unlikely to be problematic in our regression, because all the variance inflation factors (VIFs) are less than 10. A VIF below the acceptable level of 10 is not considered high by accounting research (Lennox et al., 2012).

TABLE 3　Pearson Correlation Matrix

	BTD	DTAX	GETR	CETR	CSR	DA	SPREAD	SIZE	LEV	ROA	DEP	BAD	IFI	GSI	GSA	PON	ELEC	PPE	INTANG	MVB
BTD	1.00	0.04***	0.15***	0.02**	-0.03**	0.31***	0.23***	0.25***	-0.13***	0.87***	-0.07***	-0.04***	0.49***	0.18***	0.13***	0.05**	-0.05***	-0.01	-0.03**	0.02**
DTAX	0.44***	1.00	0.03**	0.04***	-0.02**	0.02**	0.03**	0.01	-0.02	0.04***	-0.03***	-0.01	0.02*	-0.00	0.01	-0.01	0.01	-0.02**	0.01	0.01
GETR	0.17***	0.06***	1.00	0.28***	-0.03***	0.02**	0.11***	-0.05***	0.06***	-0.23***	0.01	-0.02**	-0.08***	0.01	0.02**	0.06***	0.01	-0.01	0.02**	0.01
CETR	0.04**	0.05***	0.44***	1.00	-0.08***	0.02**	0.09***	-0.02**	0.04***	-0.08***	0.04***	-0.01	0.01	0.02*	0.01	-0.02**	-0.01	0.02**	0.01	-0.01
CSR	-0.04**	-0.03**	-0.02**	-0.03**	1.00	-0.02*	-0.02*	0.28***	0.01	0.08***	0.07***	0.01	0.06***	0.01	-0.02**	0.08***	0.02	0.03***	0.02**	0.04***
DA	0.29***	0.18***	0.01	0.02	-0.03**	1.00	0.03**	0.05***	0.03**	0.26***	-0.06***	-0.01	0.20***	0.11***	0.11***	0.03***	-0.01	-0.02**	-0.02*	0.30***
SPREAD	0.15***	0.04**	0.12***	0.10***	-0.06***	0.03**	1.00	-0.36***	0.11***	-0.21***	-0.04***	-0.01	-0.09***	0.02**	0.04***	-0.02**	0.07***	-0.06***	0.02*	0.09***
SIZE	0.22***	0.04**	-0.11***	-0.09***	0.48***	0.05***	-0.19***	1.00	0.17***	0.26***	0.12***	0.04***	0.22***	-0.02**	-0.05***	0.29***	-0.05***	0.05***	-0.02**	-0.06***
LEV	-0.10***	-0.09***	0.03**	0.01	0.01	0.03*	0.07***	0.17***	1.00	-0.18***	0.04***	0.12***	-0.08***	-0.05***	-0.02**	0.05***	-0.12***	0.10***	-0.05***	0.03***
ROA	0.79***	0.45***	-0.30***	-0.14***	0.07***	0.24***	-0.16***	0.29***	-0.14***	1.00	-0.05***	-0.03***	0.51***	0.11***	0.10***	-0.06***	-0.02*	0.01	-0.02	0.11***
DEP	-0.04***	0.01	-0.04***	-0.01	0.11***	-0.07***	0.03**	0.06***	0.05***	-0.01	1.00	-0.04***	-0.08***	-0.02**	-0.03***	-0.06***	0.03***	0.61***	0.03***	0.02*
BAD	-0.02	-0.04**	-0.02	-0.01	-0.01	-0.01	-0.02	0.06***	0.12***	-0.02	-0.04***	1.00	-0.01	-0.01	-0.01	-0.03***	0.05***	-0.05***	-0.01	-0.01
IFI	0.44***	0.14***	-0.12***	0.01	0.07***	0.21***	-0.05***	0.22***	-0.06***	0.55***	-0.06***	-0.01	1.00	-0.02	-0.04***	0.06***	-0.03***	-0.07***	-0.03***	0.07***
GSI	0.31***	0.15***	0.02	0.03**	-0.00	0.24***	0.02	-0.02	-0.05***	0.19***	-0.01	-0.01	-0.03*	1.00	-0.01	0.01	-0.01	-0.01	0.01	0.01
GSA	0.11***	0.09***	0.01	0.01	-0.04***	0.17***	0.03**	-0.08***	-0.02	0.07***	-0.03*	-0.00	-0.05***	-0.01	1.00	0.04***	-0.03***	-0.01	-0.02	0.01
PON	0.05***	-0.03*	0.05***	0.05***	0.31***	0.05***	-0.08***	0.34***	0.08***	-0.03***	-0.08***	-0.02	0.06***	0.01	0.03*	1.00	-0.23***	0.06***	-0.07***	-0.09***
ELEC	-0.06***	-0.01	0.02	0.04***	-0.20***	0.05***	0.16***	-0.09***	-0.08***	-0.04***	-0.01	0.05***	-0.01	-0.02	-0.02	-0.20***	1.00	-0.25***	0.01	-0.02**
PPE	0.02	0.00	-0.04***	-0.03**	0.05***	-0.01	-0.03*	-0.00	0.11***	0.04***	0.62***	-0.05***	-0.07***	0.00	-0.02	0.02	-0.23***	1.00	0.01	-0.01
INTANG	-0.02	0.02	0.03**	0.02	0.04**	-0.02	0.01	0.02	-0.02	-0.02	0.03*	-0.01	-0.05***	0.01	-0.02	-0.08***	-0.01	0.03*	1.00	0.09***
MVB	-0.11***	0.03**	-0.01	0.01	-0.04**	0.05***	0.08***	-0.14***	0.04***	0.11***	0.06***	-0.01	0.05***	0.01	-0.01	-0.13***	-0.05***	0.02	0.11***	1.00

Lower left triangle is Pearson correlation matrix in mandatory circumstance (2014-2017), upper right triangle is Pearson correlation matrix in voluntary circumstance (2007-2017). All variables are defined in Appendix B.

TABLE 4　Univariate Analysis between Different Groups

Panel A: t (z) test between voluntary and non-disclosing sample (2007-2017)

Variables	Voluntary (810) mean	Non-disclosing (9414) mean	Mean Difference	t-value	p-value	Voluntary (810) median	Non-disclosing (9414) median	Median Difference	z-value	p-value
BTD	0.003	0.014	-0.011	-3.33***	<0.001	0.006	0.010	-0.004	-3.08***	<0.001
BTD+	0.041	0.051	-0.010	-3.75***	<0.001	0.030	0.035	-0.005	-3.172	<0.001
BTD-	-0.042	-0.041	-0.001	-0.80	0.212	-0.036	-0.035	-0.001	-0.47	0.319
DTAX	0.001	0.117	-0.116	-2.34***	<0.001	0.002	0.006	-0.004	-3.80***	<0.001
DTAX+	0.122	0.251	-0.129	-3.13***	<0.001	0.022	0.027	-0.005	-3.96***	<0.001
DTAX-	-0.146	-0.073	-0.073	-0.70	0.758	-0.024	-0.022	-0.002	-0.71	0.239
GETR	-0.131	-0.114	-0.017	-3.45***	<0.001	-0.133	-0.102	-0.031	-6.37***	<0.001
CETR	-0.109	-0.064	-0.045	-8.61***	<0.001	-0.077	0.000	-0.077	-16.00***	<0.001
DA	0.008	0.019	-0.011	-2.05**	0.016	0.005	0.008	-0.003	-2.14**	0.020
SPREAD	1.268	1.359	-0.091	-2.01**	0.022	0.659	0.833	0.174	-2.92***	0.002

Panel B: t (z) test between voluntary and mandatory sample (2014-2017)

Variables	Voluntary (508) mean	Mandatory (489) mean	Mean Difference	t-value	p-value	Voluntary (508) median	Mandatory (489) median	Median Difference	z-value	p-value
BTD	0.003	0.007	-0.004	-2.29***	0.011	<0.001	<0.001	-0.001	-1.98**	0.024
BTD+	0.034	0.041	-0.007	-3.02***	<0.001	0.002	0.003	-0.001	-2.97***	<0.001
BTD-	-0.045	-0.043	-0.002	-0.91	0.181	-0.002	-0.002	-0.004	-0.88	0.189
DTAX	0.003	0.006	-0.003	-1.93*	0.027	<0.001	0.006	-0.006	-2.58***	0.009
DTAX+	0.024	0.030	-0.006	-2.75***	0.003	0.018	0.027	-0.009	-2.99***	<0.001
DTAX-	-0.025	-0.023	-0.002	-0.92	0.179	-0.017	-0.014	-0.003	-0.76	0.224
GETR	-0.132	-0.121	-0.011	-1.66**	0.049	-0.138	-0.128	-0.011	-3.09***	0.001
CETR	-0.124	-0.110	-0.014	-1.46*	0.072	-0.112	-0.078	-0.034	-3.25***	0.001
DA	0.010	0.015	0.005	-1.24	0.107	0.007	0.009	-0.002	-1.08	0.140
SPREAD	1.888	1.914	-0.026	-0.43	0.668	2.027	1.778	-0.249	-2.09**	0.018

All variables are defined in Appendix B. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% level, using two-tailed tests.

TABLE 5　Regression Results for Voluntarily Releasing CSR Report on Tax Avoidance (Using Treatment Effect Approach)

Variable	Predicted sign	First Stage CSR	Second Stage BTD	BTD^+	BTD^-	DTAX	$DTAX^+$	$DTAX^-$	GETR	CETR
CSR	-		-0.015***	-0.022***	-0.009	-0.206**	-0.238**	-0.035	-0.010**	-0.044***
			(-8.583)	(-4.620)	(-1.155)	(-2.283)	(-2.209)	(-0.256)	(-1.971)	(-8.10)
SIZE	?	0.393***	0.002***	-0.0002	0.002	0.022	0.121***	-0.065***	0.001	0.003**
		(22.31)	(3.499)	(-0.222)	(1.177)	(1.025)	(3.47)	(-2.608)	(0.634)	(2.179)
LEV	?	-0.389***	0.015***	0.033***	-0.008	-0.105	-0.562**	0.350**	0.014*	0.012
		(-2.867)	(5.171)	(3.678)	(-1.126)	(-0.726)	(-2.322)	(2.254)	(1.74)	(1.342)
ROA	?	1.191***	0.687***	0.959***	0.971***	0.960***	1.880***	-0.346	-0.365***	-0.217***
		(3.730)	(121.879)	(36.376)	(59.656)	(3.327)	(3.225)	(-1.047)	(-23.55)	(12.42)
DEP	?	0.264	-0.058**	0.206***	-0.035	-2.582**	-2.075	-4.362***	0.012	0.145*
		(0.244)	(-2.283)	(2.645)	(-0.518)	(-2.000)	(-0.984)	(-3.050)	(0.168)	(1.853)
BAD	-	-0.002	-0.031***	-0.148***	0.053*	-0.069	-0.331	0.034	-0.074***	-0.019
		(-0.006)	(-3.571)	(-2.843)	(1.474)	(-0.156)	(-0.43)	(0.074)	(-3.09)	(-0.704)
IFI	+	-1.493***	0.158***	0.288***	0.078***	-0.459	-1.952**	1.523***	0.194***	0.277***
		(-2.997)	(15.207)	(14.089)	(2.717)	(-0.864)	(-2.29)	(2.455)	(6.805)	(8.619)

評估揭露企業社會責任公司之租稅規避：來自會計資訊品質的觀點　39

TABLE 5　Regression Results for Voluntarily Releasing CSR Report on Tax Avoidance (Using Treatment Effect Approach)

(Continued)

Variable	Predicted sign	First Stage CSR	Second Stage BTD	BTD+	BTD−	DTAX	DTAX+	DTAX−	GETR	CETR
GSI	+	-0.200	0.406***	0.383***	0.205**	-0.634	-0.598	-4.502**	0.272***	0.250***
		(-0.233)	(20.003)	(13.392)	(2.478)	(-0.611)	(-0.457)	(-2.057)	(4.876)	(3.978)
GSA	+	-2.611	0.213***	0.214***	-0.111	0.116	-0.388	0.738	0.302***	0.160***
		(-1.449)	(10.826)	(7.470)	(-1.138)	(0.115)	(-0.298)	(0.399)	(5.590)	(2.630)
PON	?	0.003	0.001***	0.001***	0.001**	-0.004	-0.010*	0.003	0.001***	-0.001***
		(0.988)	(9.675)	(6.004)	(2.403)	(-1.234)	(-1.912)	(0.708)	(5.037)	(-3.40)
ELEC	?	0.187***	-0.003***	<0.001	-0.012***	0.002	0.152*	-0.167***	0.005*	-0.001
		(4.030)	(-3.009)	(0.004)	(-3.864)	(0.031)	(1.880)	(-2.908)	(1.912)	(-0.182)
PPE	?	0.207	-0.004	-0.093***	0.0001	-0.072	0.021	-0.112	0.002	0.017
		(1.319)	(-1.030)	(-8.145)	(0.006)	(-0.409)	(0.07)	(-0.555)	(0.181)	(1.588)
INTANG	+	0.503	0.008	0.079**	-0.049**	1.045*	1.559*	0.757	0.097***	0.038
		(0.877)	(0.583)	(2.415)	(-1.650)	(1.442)	(1.313)	(0.955)	(2.485)	(0.863)
MVB	?	0.009	-0.003***	-0.001	-0.002***	0.006	0.011	-0.034**	0.002***	0.001
		(0.833)	(-12.85)	(-0.461)	(-2.831)	(0.526)	(0.682)	(-2.266)	(3.225)	(1.021)

TABLE 5　Regression Results for Voluntarily Releasing CSR Report on Tax Avoidance (Using Treatment Effect Approach)

(Continued)

Variable	Predicted sign	First Stage	Second Stage							
		CSR	BTD	BTD^+	BTD^-	DTAX	$DTAX^+$	$DTAX^-$	GETR	CETR
TOBINSQ_1		0.116***								
		(4.382)								
LIQUID_1		-0.106***								
		(-7.63)								
MILLS			0.002***	0.002***	0.001	0.026***	0.024**	0.004	-0.004***	-0.004***
			(12.773)	(4.742)	(0.993)	(2.882)	(2.460)	(0.259)	(-8.24)	(-8.26)
CONSTANT		-7.632***	-0.057***	-0.112***	0.005	-0.222	-1.527***	0.907**	-0.104***	-0.106***
		(-29.21)	(-9.296)	(-6.440)	(0.268)	(-0.707)	(-3.06)	(2.531)	(-5.48)	(-5.58)
Observations		10,218	10,218	5,860	4,358	10,218	5,514	4,704	10,218	10,218
R^2			0.277	0.216	0.204	0.189	0.133	0.115	0.172	0.148
Adjusted (Pseudo) R^2		0.1593	0.275	0.215	0.203	0.186	0.131	0.114	0.171	0.141
F			235.9***	104.04***	98.79***	81.56***	40.39***	31.19***	52.58***	39.09***

All variables are defined in Appendix B. The (t-statistics) are reported in second row of every variable. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% level, using two-tailed tests.

4. Accounting information quality tests

Our second hypothesis concerns the role of accounting information quality in the relationship between issuing CSR report voluntarily and tax avoidance. Similar to our baseline analysis, we vary the dependent variables across our different tax avoidance variables.

Our first measure for accounting information quality is discretionary accruals (the proxy for earnings quality). In order to figure out whether releasing CSR report can improve accounting information quality and then influence the level of tax avoidance, we use path analysis to examine our second hypothesis. Table 6 reports the results of the accounting information quality test where *BTD*, *TDAX*, *GETR*, and *CETR* are the dependent variables, respectively. Consistent with our predictions, we find a negative and significant coefficient of *CSR* on *DA* (-0.068, t-stat=-1.41), and *DA* has positive and significant influence on *BTD* (coefficient=0.057, t-stat=19.18). When we use another three proxies of tax avoidance, *TDAX*, *GETR*, and *CETR*, the results are very similar. These findings are consistent with our conjecture that releasing CSR report can improve accounting information, which in turn constrain tax avoidance.

Our second proxy for accounting information quality is information asymmetry. Here, we use bid-ask spread (*SPREAD*) as a proxy for information asymmetry. The same as above, we use path analysis to figure out whether releasing CSR report can improve accounting information quality and then influence the level of tax avoidance The results are reported in Table 7. Consistent with the findings, when we use *DA* as proxy of accounting information quality, the results in Table 7 still supports the transparent information reporting argument.

The empirical results in accounting information quality tests overall support our second hypothesis that accounting information quality plays a role of mediator in the relationship between tax avoidance practices and voluntarily disclosing CSR report. More precisely, by confirming that releasing CSR report can improve accounting information quality, which in turn mitigate the level of tax avoidance, we provide evidence that the main purpose of the firms that voluntarily disclose CSR reports is to convey the message that it cares about its reputation and take CSR activities seriously (transparent reporting hypothesis/constraint effect). In other words, the signal effect is not the popular incentive within the firms that releasing CSR report voluntarily.

TABLE 6 SEM Analysis for Accounting Information Quality (DA) - 2007-2017 Voluntary Sample

Effect	BTD		BTD⁺		BTD⁻		DTAX		DTAX⁺		DTAX⁻		GETR		CETR	
	Coef.	t	Coef.	t	Coef.	t	Coef.	t	Coef.	t	Coef.	t	Coef.	t	Coef.	t
Total Effect	-0.018***	-8.45	-0.009***	-5.44	-0.006	-1.39	-0.013**	-2.15	-0.186**	-1.73	-0.028	-0.85	-0.012**	-1.98	-0.048***	-8.51
Direct Effect	-0.014***	-8.24	-0.009***	-5.26	-0.005*	-1.73	-0.010**	-2.02	-0.180**	-1.67	-0.023	-0.16	-0.009**	-1.92	-0.045***	-8.10
Indirect Effect	-0.004*	-1.66	-0.001***	-2.81	-0.001	-1.33	-0.003*	-1.33	-0.006	-1.10	-0.005*	-1.58	-0.003**	-1.63	-0.003**	-1.54
$CSR \rightarrow DA$	-0.068*	-1.41	-0.012***	-2.90	-0.005	-0.82	-0.068*	-1.41	-0.006	-1.14	-0.009**	-1.97	-0.068*	-1.41	-0.068*	-1.41
$DA \rightarrow Tax$	0.057***	19.18	0.030***	11.37	0.040**	2.85	0.044***	4.36	1.061***	3.92	0.554*	1.66	0.041***	4.90	0.039***	3.48
Controls of DA Avoidance Variables	Included		Included		Included		Included		Included		Included		Included		Included	
Controls of Tax Avoidance Variables	Included		Included		Included		Included		Included		Included		Included		Included	
Comparative Fit Index	0.909		0.915		0.845		0.901		0.896		0.744		0.914		0.919	
Root Mean Square Error of Approximation	0.044		0.056		0.045		0.042		0.024		0.037		0.037		0.036	
Standardized Root Mean Squared Residual	0.008		0.012		0.015		0.010		0.009		0.012		0.011		0.010	

All variables are defined in Appendix B. The t-statistics are reported in parentheses. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% level, using two-tailed tests.

TABLE 7 SEM Analysis for Accounting Information Quality (SPREAD) - 2007-2017 Voluntary Sample

Effect	BTD		BTD$^+$		BTD$^-$		DTAX		DTAX$^+$		DTAX$^-$		GETR		CETR	
	Coef.	t	Coef.	t	Coef.	t	Coef.	t	Coef.	t	Coef.	t	Coef.	t	Coef.	t
Total Effect	-0.013***	-8.41	-0.012***	-5.44	-0.011	-1.37	-0.161**	-1.86	-0.136*	-1.62	-0.118	-1.33	-0.014**	-2.15	-0.037***	-5.27
Direct Effect	-0.013***	-7.39	-0.012***	-4.39	-0.011	-0.93	-0.159**	-1.74	-0.135*	-1.54	-0.118	-1.28	-0.014***	-2.79	-0.036***	-6.62
Indirect Effect	-0.001**	-1.81	-0.001**	-1.70	-0.001	-0.93	-0.002*	-1.59	-0.001	-0.98	-0.001	-0.79	-0.001**	-1.91	-0.001*	-2.26
CSR → SPREAD	-0.060*	-1.40	-0.038	-1.32	-0.023*	-1.40	-0.060*	-1.40	-0.029	-0.57	-0.017	-0.43	-0.060*	-1.40	-0.060*	-1.40
SPREAD → Tax Avoidance Variables	0.004***	9.41	0.006***	7.16	0.002**	1.98	0.032*	1.52	0.032*	1.52	0.025*	1.44	0.006***	5.71	0.015***	11.70
Controls of DA	Included		Included		Included		Included		Included		Included		Included		Included	
Controls of Tax Avoidance Variables	Included		Included		Included		Included		Included		Included		Included		Included	
Comparative Fit Index	0.963		0.891		0.832		0.903		0.818		0.772		0.931		0.924	
Root Mean Square Error of Approximation	0.012		0.031		0.055		0.010		0.033		0.056		0.053		0.056	
Standardized Root Mean Squared Residual	0.014		0.017		0.019		0.016		0.018		0.021		0.012		0.013	

All variables are defined in Appendix B. The t-statistics are reported in parentheses. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% level, using two-tailed tests.

V. Additional analyses

1. Mandatory situation

As we mentioned above, some firms that meet the criteria setting by the authority are forced to release their CSR reports since 2014. Therefore, we also examine if firms non-voluntarily releasing CSR reports still can constraint tax avoidance and improve accounting information quality. Using the sample that includes firms issuing CSR reports mandatorily and firms non-disclosing reports, Table 8 shows the results for Hypotheses 1 and Table 9 and 10 present the outcomes for Hypotheses 2. Overall, the results still support transparent reporting hypothesis. That is, even a firm is forced to release CSR report, this behavior still can lower tax avoidance and improve accounting information quality (and then lower tax avoidance indirectly). These findings are robust under all proxies we use for tax avoidance. As we mentioned in section 4.2, we also test the coefficient between voluntary and mandatory sample and the results show that the constraint effect is stronger when a firm voluntarily disclosing its CSR report. In summary, no matter a firm releases its CSR report voluntarily or non-voluntarily, comparing with a firm having no CSR report, it has a lower level of tax avoidance. Although the constraint effect on tax avoidance for mandatory releasing firms is not as strong as for voluntary releasing firms, our findings imply that forcing firms to release CSR report still has some positive influence. Under the environment that not all listed frim must release CSR report, this finding may have some implication for the government when considering the policy of CSR disclosing.

2. Fixed-effect regression estimation

Although our regression models include firm attributes, they might still omit some unobservable time-invariant characteristics that correlate with both tax avoidance and CSR report. To address this concern, we use firm fixed-effect regressions to account for the time-constant firm unobservables. We continue to estimate our regression models, except that we substitute firm dummy variables for industry dummies. Untabulated results show that the estimates on the interaction term between CSR report and accounting information quality remain positive and statistically significant across all models. These findings suggest that our previous results are not plagued by potential omitted firm-level factors.

3. Lead-lag approach

As we mentioned before, it could be the case that firms with a more aggressive level of tax avoidance are more likely to disclose non-financial information voluntarily in order to mitigate concern from outsiders. This possibility denotes the reverse causality problem. To deal with this problem, we apply the lead-lag approach to further address the reverse causality concern so as to confirm that CSR disclosure has a causal effect on the level of tax avoidance. Our results still support our hypotheses.

TABLE 8　Regression Results for Mandatorily Releasing CSR Report on Tax Avoidance

Variable	Predicted sign	BTD	BTD^+	BTD^-	DTAX	$DTAX^+$	$DTAX^-$	GETR	CETR
CSR	-	-0.009***	-0.006**	-0.001	-0.004*	-0.006*	-0.001	-0.012**	-0.017**
		(-3.163)	(-1.986)	(-0.209)	(-1.385)	(-1.312)	(-0.031)	(-1.807)	(-1.863)
SIZE	?	-0.002**	-0.004***	-0.002	-0.006***	-0.007***	-0.001	0.004**	0.014***
		(-2.120)	(-4.652)	(-1.589)	(-6.306)	(-8.300)	(-0.663)	(2.144)	(5.170)
LEV	?	0.014***	0.020***	0.014**	0.003	-0.002	0.011	-0.001	-0.012
		(2.967)	(3.970)	(2.434)	(0.496)	(-0.387)	(1.578)	(-0.062)	(-0.760)
ROA	?	0.638***	0.441***	0.565***	0.357***	0.099***	0.284***	0.411***	0.339***
		(62.144)	(24.557)	(44.867)	(30.517)	(6.782)	(17.448)	(17.399)	(9.454)
DEP	?	-0.041	0.051	-0.172***	0.134**	0.216***	0.031	0.245**	-0.199
		(-0.862)	(0.991)	(-2.774)	(2.459)	(4.155)	(0.393)	(2.235)	(-1.192)
BAD	-	-0.009	-0.018	<0.001	-0.024**	-0.033*	-0.013	0.052**	0.017
		(-0.710)	(-1.004)	(0.011)	(-1.701)	(-1.441)	(-0.882)	(1.867)	(0.390)
IFI	+	0.075***	0.249***	-0.123***	-0.180***	-0.007	-0.184***	-0.176***	-0.430***
		(4.197)	(12.861)	(-5.176)	(-8.797)	(-0.337)	(-6.702)	(-4.246)	(-6.843)

TABLE 8 Regression Results for Mandatorily Releasing CSR Report on Tax Avoidance (Continued)

Variable	Predicted sign	BTD	BTD$^+$	BTD$^-$	DTAX	DTAX$^+$	DTAX$^-$	GETR	CETR
GSI	+	0.419***	0.503***	0.266***	0.064**	0.139***	0.294***	-0.294***	-0.371***
		(18.286)	(26.269)	(4.010)	(2.454)	(6.783)	(3.975)	(-5.579)	(-4.62)
GSA	+	0.206***	0.310***	0.007	0.087**	0.339***	-0.200***	-0.219***	-0.172*
		(5.778)	(10.277)	(0.108)	(2.136)	(9.254)	(-3.133)	(-2.668)	(-1.380)
PON	?	0.001***	<0.001***	0.001***	<0.001**	<0.001	<0.001	-0.001**	-0.001***
		(6.530)	(4.110)	(4.024)	(2.482)	(1.588)	(1.432)	(-2.127)	(-3.843)
ELEC	?	-0.004**	-0.002	-0.003	<0.001	-0.002	0.002	-0.005	-0.015***
		(-2.422)	(-0.949)	(-1.470)	(0.233)	(-1.214)	(0.845)	(-1.192)	(-2.617)
PPE	?	-0.001	-0.012*	0.022***	-0.022***	-0.031***	-0.009	-0.007	0.030
		(-0.212)	(-1.902)	(2.867)	(-3.237)	(-4.783)	(-0.941)	(-0.509)	(1.418)
INTANG	+	0.036**	0.079***	0.001	0.042**	0.056***	-0.035	-0.088***	-0.133**
		(2.013)	(3.721)	(0.034)	(2.042)	(3.201)	(-0.976)	(-2.131)	(-2.112)
MVB	?	-0.005***	-0.001**	-0.005***	0.001*	0.003***	<0.001	0.001	0.001
		(-12.728)	(-2.295)	(-12.388)	(1.660)	(5.305)	(0.644)	(0.358)	(0.366)

TABLE 8　Regression Results for Mandatorily Releasing CSR Report on Tax Avoidance (Continued)

Variable	Predicted sign	BTD	BTD^+	BTD^-	DTAX	$DTAX^+$	$DTAX^-$	GETR	CETR
CONSTANT	?	-0.015	0.043***	-0.038***	0.067***	0.125***	-0.036*	0.053**	-0.062
		(-1.351)	(3.846)	(-2.586)	(5.348)	(10.626)	(-1.926)	(2.099)	(-1.622)
Observations		4,174	2,204	1,970	4,174	2,245	1,929	4,174	4,174
R^2		0.216	0.184	0140	0.197	0.158	0.123	0.164	0.146
Adjusted R^2		0.215	0.182	0.138	0.195	0.155	0.121	0.161	0.143
F		110.5***	103.9***	96.9***	90.68***	64.50***	53.72***	34.18***	22.31***

All variables are defined in Appendix B. The (t-statistics) are reported in second row of every variable. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% level, using two-tailed tests.

TABLE 9　SEM Analysis for Accounting Information Quality (DA) - 2014-2017 Mandatory Sample

Dependent Variable	BTD		BTD⁺		BTD⁻		DTAX		DTAX⁺		DTAX⁻		GETR		CETR	
Effects	Coef.	t	Coef.	t	Coef.	t	Coef.	t	Coef.	t	Coef.	t	Coef.	t	Coef.	t
Total Effect	-0.010***	-3.59	-0.008**	-2.23	-0.002	-1.27	-0.009**	-2.67	-0.007**	-2.33	-0.003	-1.22	-0.011**	-1.70	-0.0275***	-2.84
Direct Effect	-0.009***	-3.42	-0.007**	-1.98	-0.002	-0.73	-0.008**	-2.40	-0.007**	-2.19	-0.003	-0.86	-0.011**	-1.75	-0.027***	-2.80
Indirect Effect[a]	-0.001**	-1.91	-0.001**	-2.09	-0.001	-1.21	-0.001**	-1.92	-0.001**	-1.88	-0.001	-1.36	-0.001*	-1.55	-0.001*	-1.38
$CSR \rightarrow DA$	-0.010**	-2.03	-0.014**	-2.21	-0.007	0.97	-0.010**	-2.03	-0.009**	-1.97	-0.004	-0.88	-0.010**	-2.03	-0.010**	-2.03
$DA \rightarrow$ Tax Avoidance Variables	0.054***	7.19	0.069***	6.28	0.027***	3.76	0.050***	5.86	0.048***	4.43	0.036*	1.99	0.032**	1.84	0.049**	1.88
Controls of DA	Included		Included		Included		Included		Included		Included		Included		Included	
Controls of Tax Avoidance Variables	Included		Included		Included		Included		Included		Included		Included		Included	
Comparative Fit Index	0.930		0.899		0.807		0.834		0.881		0.793		0.918		0.898	
Root Mean Square Error of Approximation	0.048		0.042		0.034		0.044		0.033		0.046		0.042		0.048	
Standardized Root Mean Squared Residual	0.014		0.015		0.018		0.017		0.018		0.016		0.011		0.013	

a.　Indirect effect is the coefficient of CSR on DA times the coefficient of DA on GETR(CETR).

b.　All variables are defined in Appendix B. The t-statistics are reported in parentheses. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% level, using two-tailed tests.

TABLE 10　SEM Analysis for Accounting Information Quality (SPREAD) - 2014-2017 Mandatory Sample

Dependent Variable	BTD		BTD+		BTD−		DTAX		DTAX+		DTAX−		GETR		CETR	
Effects	Coef.	t	Coef.	t	Coef.	t	Coef.	t	Coef.	t	Coef.	t	Coef.	t	Coef.	t
Total Effect	-0.009***	-3.21	-0.006**	-2.55	-0.003*	-1.39	-0.009***	-2.77	-0.006**	-2.45	-0.002	-1.14	-0.010**	-1.88	-0.026***	-2.69
Direct Effect	-0.008***	-2.67	-0.006**	-1.89	-0.003	-1.19	-0.008**	-2.48	-0.006**	-2.23	-0.002	-0.97	-0.009*	-1.56	-0.025***	-2.54
Indirect Effect[a]	-0.001**	-2.36	-0.001**	-2.15	-0.001	-0.94	-0.001**	-2.29	-0.001**	-2.02	-0.001	-0.74	-0.001**	-2.30	-0.001**	-2.17
CSR → SPREAD	-0.306***	-5.05	-0.283***	-4.10	-0.133	-1.24	-0.305***	-5.01	-0.266***	-3.92	-0.106	-0.95	-0.101**	-1.67	-0.101**	-1.67
SPREAD → Tax Avoidance Variables	0.002***	2.67	0.001**	2.33	<0.001**	2.11	0.002**	2.57	0.001**	2.39	0.001**	2.23	0.007***	4.36	0.008***	3.31
Controls of DA	Included		Included		Included		Included		Included		Included		Included		Included	
Controls of Tax Avoidance Variables	Included		Included		Included		Included		Included		Included		Included		Included	
Comparative Fit Index	0.939		0.904		0.834		0.889		0.864		0.796		0.887		0.863	
Root Mean Square Error of Approximation	0.017		0.041		0.047		0.056		0.062		0.071		0.051		0.049	
Standardized Root Mean Squared Residual	0.013		0.015		0.020		0.014		0.017		0.019		0.016		0.017	

a. Indirect effect is the coefficient of CSR on DA times the coefficient of DA on GETR(CETR).

b. All variables are defined in Appendix B. The t-statistics are reported in parentheses. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% level, using two-tailed tests.

TABLE 11 Regression Results for Voluntarily Releasing CSR Report on Tax Avoidance after Considering CSR Performance

	BTD performance high	BTD performance low	BTD+ performance high	BTD+ performance low	BTD− performance high	BTD− performance low	DTAX performance high	DTAX performance low
CSR	-0.036***	0.007	-0.040***	0.009	-0.003***	0.004	-0.023**	0.009
	(-4.746)	(1.174)	(-5.458)	(1.227)	(-0.271)	(0.294)	(-2.210)	(1.110)
Controls of Tax Avoidance Variables	Included	Included	Included	Included	Included	Included	Included	Included
Difference in coefficient χ²	12.64***		15.20***		0.85		6.38**	
Observations	508	448	378	335	130	113	508	448
R^2	0.583	0.401	0.658	0.549	0.183	0.189	0.145	0.102
Adjusted R^2	0.566	0.387	0.641	0.536	0.171	0.180	0.110	0.080
F	33.74***	28.10***	37.69***	40.81***	2.78***	2.73***	4.11***	4.75***

	DTAX+ performance high	DTAX+ performance low	DTAX− performance high	DTAX− performance low	GETR performance high	GETR performance low	CETR performance high	CETR performance low
CSR	-0.029**	0.006	-0.002	0.003	-0.042**	-0.032*	-0.147***	-0.064**
	(-2.285)	(0.672)	(-0.234)	(0.507)	(-2.280)	(-1.490)	(-5.880)	(-2.083)

TABLE 11　Regression Results for Voluntarily Releasing CSR Report on Tax Avoidance after Considering CSR Performance

(Continued)

	DTAX+ performance high	DTAX+ performance low	DTAX− performance high	DTAX− performance low	GETR performance high	GETR performance low	CETR performance high	CETR performance low
Controls of Tax Avoidance Variables	Included	Included	Included	Included	Included	Included	Included	Included
Difference in coefficient χ^2	7.29***		0.77		0.36		3.78**	
Observations	327	256	181	192	508	448	508	448
R^2	0.256	0.111	0.137	0.096	0.148	0.151	0.113	0.093
Adjusted R^2	0.203	0.076	0.119	0.078	0.124	0.124	0.087	0.063
F	4.83***	3.17***	2.44***	2.26***	6.14***	5.51***	4.47***	3.16***

All variables are defined in Appendix B. The (t-statistics) are reported in second row of every variable. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% level, using two-tailed tests.

4. The role of CSR performance

Some may concern that CSR performance could play an important role in the relationship between voluntarily releasing CSR report and tax avoidance since disclosing CSR report does not mean the better CSR performance. In this section, we use CSR score[6] to evaluate a firm's CSR performance and examine if CSR performance affects the influence of voluntarily releasing CSR report on tax avoidance. According to CSR score, we divide our sample into high and low CSR performance groups. Due to data availability limitations, the sample period is from 2011 to 2015 and the results are shown in Table 11. Overall, the impacts of voluntarily releasing CSR report on tax avoidance are stronger in the high CSR performance groups than in the lower ones (the tests for the difference between means of two populations are significant for two of our four proxies). Although the high CSR performance group seems to have better coefficients and significance than poor one, all proxies for tax avoidance have significant negative relationship with CSR report in both groups. This finding implies that voluntarily releasing CSR report still can decrease the level of tax avoidance even after controlling for the impact of CSR performance.

VI. Conclusions

The traditional business theory believes that the main purpose of a firm is to maximize the interests of shareholders - that is, a firm that creates higher profit is a good company for its investors. However, in recent years, people have begun to change their mind about this. The general public now believes that a firm should care not only about the interests of its shareholders, but also the interests of society. Therefore, it is not surprising that CSR report has received considerably more attention in the literature.

In the academic arena, researchers care about whether CSR reports can release or present some meaningful information. Although most of past studies find CSR activities or performance have negative impact on aggressive tax avoidance, a firm that choose to release CSR report may have different consideration. Based on prior efforts, this study offers some valuable insights to better understand how releasing CSR report influences tax avoidance behavior. We find that voluntarily releasing CSR report is negatively associated with tax avoidance. Path analysis shows that releasing CSR report improves accounting information quality, which in turn lowers the level of tax avoidance. These results remain

---

[6] We construct CSR scores for each firm based on six dimensions (communities, employee relations, environment, products, diversity, and human rights) similar to KLD ratings which is constructed by Kinder, Lydenberg, and Domini to evaluate a firm's CSR performance.

unchanged even in the setting of mandatory regulation. Corroborating this argument, additional analysis suggests that the CSR report effect in tax avoidance behavior is more pronounced for firms with better CSR performance.

These findings are noteworthy given the widespread concerns expressed by stakeholders and regulators about the benefits of CSR disclosure. Our results suggest that releasing CSR report indeed constrains the level of tax avoidance through enhanced accounting information quality regardless of whether such disclosure is voluntary, supporting the view about tightening the policy on CSR disclosure. Our analysis recommends that the governmental intervention is warranted to generate intended economic outcomes.

This paper discusses the relationship between releasing CSR report and tax avoidance and we find releasing CSR report can constraint tax avoidance behavior regardless of whether such disclosure is voluntary. One limitation of this study is that we use disclosing report as our measure but not all CSR reports have the same quality. To study the content of CSR report can help us more understand how CSR report influences tax avoidance. Researchers who have interested in this topic can further study in this part.

Appendix A: The processes of estimating taxable income

The main problem for studies on book-tax differences (*BTD*) is how to get the taxable income data. Because the taxable income data is the important secretary for the company, in most situations the only way for researchers to collect taxable income data is through an estimation it by using the information released in the footnotes of financial statements. It is unavoidable that the numbers collected from this kind of indirect method have measurement bias. Chen and Tsai (2006) find that the two most common ways to estimate taxable income or *BTD* do not meet the requirement of unbiasedness. Therefore, Chen (2009) provides a formula to calculate tax income. The empirical results find that the taxable income calculated by the formula have the least relative measurement error and can better meet the requirement of unbiasedness. Thus, we refer to his formula to estimate taxable income and then calculate *BTD*. Below are the steps for estimating taxable income.

Step 1: Estimate current income tax payable

Current Income Tax Payable = Income Tax Expense (Benefit) –(+) Deferred Income Tax Expense (Benefit) –(+) Undervaluation (Overvaluation) of Income Tax Expenses in Previous Years – Separation Income Tax – Tax for Retained Earnings[7] – Gap between Income Tax and Alternative Minimum Tax + Current Actual Tax Credit of Investment + Current Amount of Investment Tax Credit under Flow-Through Method (Current Amortization Amount of Investment Tax Credit under Deferred Method)

Step 2: Calculate taxable income from income tax payable

If the calculated current income tax payable is negative, then the taxable income will be assumed as 0.

---

[7] In Taiwan, retained earnings are charged a 10% tax.

Appendix B: Variable definitions and construction details

Variable	Definition/construction details
Dependent Variables:	
TAVO :	four measures of tax avoidance in year t: the first proxy is the spread value between pre-tax book income and taxable income (*BTD*); the second proxy is the value of discretionary permanent book-tax differences (*TDAX*); the third proxy is total income tax expense divided by pre-tax book income minus special items (*GETR*); the forth proxy is cash taxes paid divided by pre-tax book income before special items (*CETR*);
Independent Variables:	
CSR :	1 if a firm discloses a CSR report voluntarily in year t and 0 otherwise;
DA :	the value of discretionary accruals;
SPREAD :	the average daily closing bid-ask price over a fiscal year;
Control Variables:	
SIZE :	log value of the market value of equity in year t-1;
LEV :	long-term debt divided by lagged assets in year t;
ROA :	return on assets, defined as operating income divided by lagged assets in year t;
DEP :	depreciation expense scaled by lagged assets in year t;
BAD :	bad debt expense scaled by lagged assets in year t;
IFI :	investment gains/losses scaled by lagged assets in year t;
GSI :	gains/losses on disposal of investments scaled by lagged assets in year t;
GSA :	gains/losses on disposal of assets scaled by lagged assets in year t;
PON :	years that sample firm is classified as listed company;
ELEC :	dummy variable, 1 if sample firm is classified as electronics industry; 0 otherwise;
PPE :	plant, property, and equipment scaled by lagged assets in year t;
INTANG :	intangible assets scaled by lagged assets in year t;
MVB :	market-to-book ratio in year t-1, measured as the market value of equity scaled by book value of equity;
TOBINSQ :	Tobin's q ratio;
LIQUID :	liquidity ratio;

References

Ashbaugh, H., R. LaFond, and B. W. Mayhew. 2003. Do nonaudit services compromise auditor independence? Further evidence. *The Accounting Review* 78 (3): 611-639.

Bédard, J., and L. Courteau. 2015. Benefits and costs of auditor's assurance: Evidence from the review of quarterly financial statements. *Contemporary Accounting Research* 32 (1): 308-335.

Blaylock, B., T. Shevlin, and R. J. Wilson. 2012. Tax avoidance, large positive temporary book-tax differences, and earnings persistence. *The Accounting Review* 87 (1): 91-120.

Carey, P., L. Liu, and W. Qu. 2017. Voluntary corporate social responsibility reporting and financial statement auditing in China. *Journal of Contemporary Accounting & Economics* 13 (3): 244-262.

Cen, L., E. L. Maydew, L. Zhang, and L. Zuo. 2017. Customer-supplier relationships and corporate tax avoidance. *Journal of Financial Economics* 123: 377-394.

Chen, M. C. 2009. An estimation model of taxable income. *Journal of Management* 26 (6): 625-636.

Chen, M. C., and L. W. Tsai. 2006. Determinants of book-tax income differences and estimation of taxable income. *Journal of Management* 23 (6): 739-763.

Chen, S., X. Chen, Q. Cheng, and T. Shevlin. 2010. Are family firms more tax aggressive than non-family firms? *Journal of Financial Economics* 95 (1): 41-61.

Cho, S. Y., C. Lee, and R. J. Pfeiffer Jr. 2013. Corporate social responsibility performance and information asymmetry. *Journal of Accounting and Public Policy* 32: 71-83.

Chyz, J. A., F. B. Gaertner, A. Kausar, and L. Watson. 2019. Overconfidence and corporate tax policy. *Review of Accounting Studies* 24: 1114-1145.

Davis, A. K., D. A. Guenther, L. K. Krull, and B. M. Williams. 2016. Do socially responsible firms pay more taxes? *The Accounting Review* 91 (1): 47-68.

DeFond, M. L., and K. R. Subramanyam. 1998. Auditor changes and discretionary accruals. *Journal of Accounting and Economics* 25 (1): 35-67.

Desai, M. A., and D. Dharmapala. 2006. Corporate tax avoidance and high-powered incentives. *Journal of Financial Economics* 79: 145-179.

Dhaliwal, D. S., O. Z. Li, A. Tsang, and Y. G. Yang. 2011. Voluntary nonfinancial disclosure and the cost of equity capital: The initiation of corporate social responsibility reporting. *The Accounting Review* 86 (1): 59-100.

Dhaliwal, D. S., O. Z. Li, A. Tsang, and Y. G. Yang. 2014. Corporate social responsibility disclosure and the cost of equity capital: The roles of stakeholder orientation and financial transparency. *Journal of Accounting and Public Policy* 33: 328-355.

Dhaliwal, D. S., S. Radhakrishnan, A. Tsang, and Y. G. Yang. 2012. Nonfinancial disclosure and analyst forecast accuracy: International evidence on corporate social responsibility disclosure. *The Accounting Review* 87 (3): 723-759.

Diamond, D. W., and R. E. Verrecchia. 1991. Disclosure, Liquidity and the Cost of Capital. *Journal of Finance* 46 (4): 1325-1359.

Donaldson, T., and L. E. Preston. 1995. The stakeholder theory of the corporation: concepts, evidence, and implications. *The Academy of Management Review* 20 (1): 65-91.

Dyreng, S. D., M. Hanlon, and E. L. Maydew. 2008. Long-run corporate tax avoidance. *The Accounting Review* 83 (1): 61-82.

Frank, M. M., L. J. Lynch, and S. O. Rego. 2009. Tax reporting aggressiveness and its relation to aggressive financial reporting. *The Accounting Review* 84 (2): 467-496.

Graham, J. R., and A. L. Tucker. 2006. Tax shelters and corporate debt policy. *Journal of Financial Economics* 81 (3): 563-594.

Greene, W. H. 2008. *Econometric Analysis*. 6th Edition, New Jersey, NJ: Pearson Prentice Hall, Upper Saddle River.

Hanlon, M. 2005. The persistence and pricing of earnings, accruals and cash flows when firms have large book-tax differences. *The Accounting Review* 80 (1): 137-166.

Hanlon, M., and J. Slemrod. 2009. What does tax aggressiveness signal? Evidence from stock price reactions to news about tax shelter involvement. *Journal of Public Economics* 93 (1-2): 126-141.

Hanlon, M., and S. Heitzman. 2010. A review of tax research. *Journal of Accounting and Economics* 50 (2-3): 127-178.

Hanlon, M., G. V. Krishnan, and L. F. Mills. 2012. Audit fees and book-tax differences. *Journal of the American Taxation Association* 34 (1): 55-86.

Hasan, I., C. K. Hoi, Q. Wu, and H. Zhang. 2017. Does social capital matter in corporate decisions? Evidence from corporate tax avoidance. *Journal of Accounting Research* 55 (3): 629-668.

Hoi, C. K., Q. Wu, and H. Zhang. 2013. Is corporate social responsibility (CSR) associated with tax avoidance? Evidence from irresponsible CSR activities. *The Accounting Review* 88 (6): 2025-2059.

Huang, X. B., and L. Watson. 2015. Corporate social responsibility research in accounting. *Journal of Accounting Literature* 34 (1): 1-16.

Jones, T. M. 1995. Instrumental stakeholder theory: A synthesis of ethics and economics. *The Academy of Management Review* 20 (2): 404-437.

Kim, C., and L. Zhang. 2016. Corporate political connections and tax aggressiveness. *Contemporary Accounting Research* 33 (1): 78-114.

Kim, Y., M. S. Park, and B. Wier. 2012. Is earnings quality associated with corporate social responsibility? *The Accounting Review* 87 (3): 761-796.

Klein, A. 2002. Audit committee, board of director characteristics, and earnings management. *Journal of Accounting and Economics* 33 (3): 375-400.

Kothari, S. P., A. J. Leone, and C. E. Wasley. 2005. Performance matched discretionary accrual measures. *Journal of Accounting and Economics* 39 (1): 163-197.

Kubick, T. R., and A. N. S. Masli. 2016. Firm-level tournament incentives and corporate tax aggressiveness. *Journal of Accounting and Public Policy* 35: 66-83.

Lanis, R., and G. Richardson. 2012. Corporate social responsibility and tax aggressiveness: An empirical analysis. *Journal of Accounting and Public Policy* 31 (1): 86-108.

Lanis, R., and G. Richardson. 2015. Is corporate social responsibility performance associated with tax avoidance? *Journal of Business Ethics* 127: 439-457.

Larcker, D. F., and T. O. Rusticus. 2010. On the use of instrumental variables in accounting research. *Journal of Accounting and Economics* 49 (3): 186-205.

Law, K. K. F., and L. F. Mills. 2017. Military experience and corporate tax avoidance. *Review of Accounting Studies* 22: 141-184.

Lennox, C.S., J. R. Francis, and Z. Wang. 2012. Selection models in accounting research. *The Accounting Review* 87 (2): 589-616.

Leuz, C. and R. E. Verrecchia. 2000. The economic consequences of increased disclosure. *Journal of Accounting Research* 38 (Supplement): 91-124.

Manzon Jr., G. B., and G. A. Plesko. 2002. The relation between financial and tax reporting measures of income. *Tax Law Review* 55: 175-214.

McGuire, S. T., T. C. Omer, and D. Wang. 2012. Tax avoidance: Does tax-specific industry expertise make a difference? *The Accounting Review* 87 (3): 975-1003.

Mills, L. F. 1998. Book-tax differences and internal revenue service adjustments. *Journal of Accounting Research* 36 (2): 343-356.

Mills, L. F., and R. C. Sansing. 2000. Strategic tax and financial reporting decisions: Theory and evidence. *Contemporary Accounting Research* 17 (1): 85-106.

Petersen, M. A. 2009. Estimating standard errors in finance panel data sets: Comparing approaches. *Review of Financial Studies* 22 (1): 435-481.

Phillips, R., R. E. Freeman, and A. C. Wicks. 2003. What stakeholder theory is not. *Business Ethics Quarterly* 13 (4): 479-502.

Rego, S. 2003. Tax-avoidance activities of U.S. multinational corporations. *Contemporary Accounting Research* 20 (4): 805-833.

Sikka, P. 2010. Smoke and mirrors: Corporate social responsibility and tax avoidance. *Accounting Forum* 34 (3-4): 153-168.

Subramanyam, K. R. 1996. The pricing of discretionary accruals. *Journal of Accounting and Economics* 22 (1-3): 249-281.

Wang, J. C., and C. C. Lee. 2019. The effects of corporate social responsibility on tax avoidance. *Review of Securities and Futures Markets* 31 (1): 47-86.

Warfield, T. D., J. J. Wild, and K. L. Wild. 1995. Managerial ownership, accounting choices, and informativeness of earnings. *Journal of Accounting and Economics* 20 (1): 61-91.

Watson, L. 2015. Corporate social responsibility, tax avoidance, and earnings performance. *The Journal of the American Taxation Association* 37 (2): 1-21.

Weisbach, D. A. 2002. An economic analysis of anti-tax-avoidance doctrines. *American Law and Economics Review* 4 (1): 88-115.

Wilson, R. J. 2009. An examination of corporate tax shelter participants. *The Accounting Review* 84 (3): 969-999.

Wooldridge, J. M. 1995. Selection corrections for panel data models under conditional mean independence assumptions. *Journal of Econometrics* 68 (1): 115-132.