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# Financial statement comparability and corporate tax avoidance: evidence from China

Muhammad Ansar Majeed<sup>a</sup> and Chao Yan<sup>b</sup>

<sup>a</sup>International Business School, Zhejiang Gongshang University, Hangzhou, P.R. China; <sup>b</sup>School of Accounting, Zhongnan University of Economics and Law, Wuhan, P.R. China

## ABSTRACT

This paper examines whether financial statement comparability (hereafter referred to as comparability) is associated with corporate tax avoidance. We document the negative relationship between comparability and tax avoidance. Our findings indicate that comparability reduces information asymmetry, which makes the monitoring of managerial activities more effective. In addition, comparable information may increase the risk of detection of aggressive tax strategies, which leads to reputational, regulatory and political risks. We further examine how analyst coverage and product market competition influence the relationship between comparability and corporate tax avoidance. The results show that analyst coverage substitutes for the effect of comparability on tax avoidance. However, we do not obtain any conclusive evidence that product market competition plays a complementary role to comparability in reducing tax avoidance. Our results are robust to the various measures of comparability and tax avoidance and alternative methodological techniques.

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Comparability; tax avoidance; information asymmetry; China

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## 1. Introduction

The immense importance of taxes due to their role in economic development and public welfare has made tax research imperative (Streimikiene, Raheem Ahmed, Vveinhardt, Ghauri, & Zahid, 2018). The academic and public interest in tax avoidance has increased in recent years. Public pressure (Dyreg, Hoopes, & Wilde, 2016) coupled with strong media attention<sup>1</sup> has also placed corporate tax avoidance under the spotlight<sup>2</sup>. Recently, policy makers around the world have intensified their efforts to curb tax avoidance<sup>3,4</sup>. Corporate tax avoidance has repercussions for business (Lazăr & Istrate, 2018) and society. Tax avoidance affects corporate reputations (Graham, Hanlon, Shevlin, & Shroff, 2014), future profitability (Katz, Khan, & Schmidt, 2013), firm values (Chang, Hsiao, & Tsai, 2013; Chang et al., 2013), stock

**CONTACT** Chao Yan  [chaoyan@zuel.edu.cn](mailto:chaoyan@zuel.edu.cn)

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prices (Hanlon & Slemrod, 2009) and the costs of capital (Lim, 2011; Cook, Moser, & Omer, 2017). From a societal viewpoint, corporate tax avoidance may obstruct the financing of projects that are essential for society (Slemrod, 2004). Therefore, tax avoidance may result in potentially irreversible losses to society. The importance of taxes has increased the values of factors that contribute to tax avoidance.

Prior calls for research into the determinants of tax avoidance (Hanlon & Heitzman, 2010; Shacklford & Shevlin, 2001) have yielded a growing body of research that documents various factors that influence corporate tax avoidance. For example, preceding research documents that customer concentration (Huang, Lobo, Wang, & Xie, 2016), the composition of the board of directors (Lanis & Richardson, 2011), corporate governance (Armstrong, Blouin, Jagolinzer, & Larcker, 2015), political connections (Kim & Zhang, 2016), debt maturity (Platikanova, 2017), competitive pressure (Kubick, Lynch, Mayberry, & Omer, 2015), analyst coverage (Allen, Francis, Wu, & Zhao, 2016), financial reporting (Frank, Lynch, & Rego, 2009), a military background (Law & Mills, 2016) and other factors affect the level of tax avoidance in firms. Prior studies (Chen, Hong, Kim, & Ryou, 2017; Frank et al., 2009; Gallemore & Labro, 2015; Hope, Ma, & Thomas, 2013) have linked the financial reporting of firms with corporate tax avoidance. However, the impact of financial statement comparability, which is a vital feature of financial reports, on corporate tax avoidance has been largely ignored. In this study, we attempt to close this gap in the literature and examine the effect of comparability on tax avoidance.

Comparability is a key and unique aspect of financial reporting. Investors make investment decisions after evaluating all of the available (investment) options. However, the evaluation of the economic performance of firms becomes easier when financial statements are comparable. Financial Accounting Standards Boards (2010) defines comparability as 'the quality of information that enables users to identify (the) similarities and differences between two sets of economic phenomena'. Comparability is a qualitative aspect of financial reporting, which means that 'like things looking alike and different things looking different' (Barth, 2013). Higher comparability results in lower information acquisition and processing costs and increases the quality and quantity of available information regarding the firm (Choi, Choi, Myers, & Ziebart, 2017; De Franco, Kothari, & Verdi, 2011; Kim, Li, Lu, & Yu, 2016; Kim, Kraft, & Ryan, 2013; Shane, Smith, & Zhang, 2014). Therefore, higher comparability is associated with higher financial reporting transparency and lower information asymmetry.

Lower information asymmetry and information uncertainty arising from higher comparability reduces the efforts that are needed to monitor the managerial activities (the stewardship role of accounting information). The stewardship role of accounting in the monitoring of managerial activities is well-documented in the preceding research (e.g., Ball 2006; Beyer, Cohen, Lys, & Walther, 2010; Pinnuck 2012; Brüggemann, Hitz, & Sellhorn, 2013). As the monitoring of managerial activities becomes easier, the costs of opportunistic behaviour exceed the benefits and reduce agency conflict. Zimmerman (2015) suggests that the stewardship role of accounting facilitates resolving the conflict of interests between creditors, owners and managers through better monitoring. Prior studies have suggested that tax avoidance is lower

when managerial opportunism and agency costs are lower (Desai & Dharmapala, 2009; Chyz & White, 2014). We argue that higher comparability, by reducing information asymmetry, improves the monitoring of managerial activities which, in turn, lowers tax avoidance. Furthermore, higher transparency and lower information acquisition and processing costs expose the firm to other stakeholders (such as regulators, analysts, and interest groups). Since information acquisition is easier, it increases the chances of detecting tax avoidance. The revelation of tax avoidance increases the potential regulatory, reputational, political and litigation risks that are associated with aggressive tax strategies (Chen et al., 2010; Badertscher, Katz, & Rego, 2013; Graham et al., 2014; Gallemore et al., 2014). A higher reputational<sup>5</sup>, regulatory, litigation and/or political risk<sup>6,7</sup> increases the costs of tax avoidance compared to the benefits and consequently discourages such activities. Therefore, we expect a negative relationship between comparability and tax avoidance.

Bases on these premises, we examine the effect of comparability on corporate tax avoidance. We further examine how analyst coverage and product market competition influence the relationship between comparability and corporate tax avoidance. Preceding studies suggest that analyst coverage (Allen et al., 2016) and product market competition (Cai & Liu, 2009; Kubick et al., 2015) influence the tax avoidance behaviours of firms. Our study seeks to answer following questions. How is comparability related to tax avoidance? What is the effect of competition on the relationship between comparability and tax avoidance? How does analyst coverage affect the relationship between comparability and tax avoidance?

Our paper contributes to the literature in several ways. First, our study contributes to the literature on comparability, particularly on how financial reporting influences corporate (tax) activities. We hypothesise and document and that comparability negatively influences corporate tax avoidance. Our findings show that higher comparability reduces information asymmetry, which makes the monitoring of managerial activities more effective. In addition, more comparable information may increase the reputational, regulatory or political risks associated with such activities. Unlike the majority of the preceding literature on the effect of comparability on investor decisions, our study examines the effect of reduced information asymmetry on managerial/corporate decisions. Second, this paper answers the call to research the determinants of corporate tax avoidance (Shackelford & Shevlin, 2001; Hanlon & Heitzman, 2010). Although, prior literature has documented the relationship between financial reporting and tax avoidance (Chen et al., 2017; Frank et al., 2009; Hope et al., 2013), these studies have largely ignored the qualitative aspect of financial reporting (i.e., comparability). Therefore, our study fills this gap and hypothesises and documents the relationship between comparability and tax avoidance. Third, we document how analyst coverage and product market competition affect the relationship between comparability and competition. This approach may help to elucidate how competitive pressure and higher number information intermediaries (analysts) influence the relationship between comparability and tax avoidance.

The rest of the paper is structured as follows. [Section 2](#) discusses the institutional background, considers the related theories and develops the hypotheses. [Section 3](#)

details the research methodology. [Section 4](#) reports the regression results, while [section 5](#) provides the robustness check. [Section 6](#) presents the paper's conclusions.

## **2. Institutional background and hypothesis development**

### **2.1. Institutional background**

After the establishment of the People's Republic of China in 1949 by the Communist Party, the central planning system was adopted, which continued until 1978 when economic reforms were introduced. During the period of central economic planning, most Chinese firms were state-owned enterprises (SOEs). These SOEs were required to transfer all surpluses to the controlling government agencies. Since there were no corporate profits, there was no corporate tax planning. A number of corporate tax reforms were announced after the adoption of the famous open door policy by Deng Xiaoping. The first corporate tax law was enacted in 1980 for foreign investments, while corporate tax laws for SOEs were introduced in 1984 (Cai & Liu, 2009). The SOEs were divided into two categories based on their size. Large SOEs had an income tax rate of 55%, while small SOEs were subjected to a tax that ranged from 10% to 55%. These regulations were called the Provisional Regulations on Income Tax for SOEs and the Provisional Regulations on Income Tax for Collectively Owned Firms, respectively. Similarly, the Provisional Regulations on Income Tax for Private Firms were introduced in which a tax rate of 55% was set for private firms.

The taxation system was revamped in 1994 in continuation of economic reforms with the introduction of the Corporate Income Tax Codes. According to these rules, all of the firms, irrespective of their ownership, were to pay taxes at a rate of 33%. However, certain tax incentives and tax discounts were provided by local and central governments in order to boost growth in some regions/industries. For instance, firms in the western parts of China were subject to a tax rate of 15% for a certain period (Wong, Lo, & Firth, 2015). Moreover, to promote investments in certain industries (promoted by the government), newly established/listed firms were given a tax holiday for their first two years and a 50% tax reduction in their subsequent three years. More reforms were introduced in 2007 (effective as of January 1, 2008) by the authorities and a unified tax system was introduced for local and foreign firms. A single tax rates of 25% was set for all the firms in order to smooth and simplify the tax collection process.

### **2.2. Hypothesis development**

#### **2.2.1. Comparability and tax avoidance**

Comparability has been considered as a tool to reduce information asymmetry. Preceding research suggests that comparable information enhances both the quantity and quality of information by decreasing the information acquisition and processing costs (De Franco et al., 2011; Brochet, Jagolinzer, & Riedl, 2013). Higher comparability reduces the time and efforts that are required for the processing of relevant information by investors and hence the incentives to collect private information decreases. Furthermore, higher comparability not only reduces information asymmetry but also

lowers information uncertainty (S. Kim et al., 2013). Prior studies document numerous benefits of comparability. DeFond, Hu, Hung, and Li (2011) suggest that higher comparability results in higher analyst following and more precise analysts' forecasts. Kim et al. (2013) discover a negative relationship between comparability and credit risk, which can be attributed to lower information risk.

Lower information asymmetry induced by comparability also reduces the costs of capital (Imhof, Seavey, & Smith, 2017; Shane et al., 2014). Shane et al. (2014) argue that higher comparability lowers underpricing near/around seasoned equity offerings (SOE), and there is a lower likelihood of losses from post-issue underpricing. Furthermore, these researchers also report a positive relationship between comparability and a firm's long-run performance following an SOE when comparability is higher. Prior research also finds that comparability increases the availability of firm-specific information and boosts the flow of valuable, relevant information, which leads to highly informative stock prices (Choi et al., 2017). When information processing becomes easier (higher comparability), the costs to hold bad news outweigh the benefits, and it thus decreases the expected stock price crash risk (Kim et al., 2016) and increases firm value (Neel 2017). Chen, Collins, Kravet, and Mergenthaler (2018) document that comparability also facilitates capital allocation by enabling investors to make better acquisition decisions. Higher firm-specific information helps in understanding and pinpointing the underlying economically risky areas for further scrutiny. The availability of higher firm-specific information also helps in better acquisition decisions, particularly in an environment where information asymmetry is higher. Higher comparability renders the managerial use of capital easier, and it becomes easier for investors to infer the true economic performance of a firm (Habib, Hassan, & Al-hadi, 2017).

Taxes take a large sum of money from shareholders and transfer it to the state. Avoiding taxes can increase the wealth of the shareholders. However, such activities may bring costs along with benefits. These costs may take the form of reputational losses and/or regulatory, litigation, political and agency risks (Hanlon & Slemrod, 2009; Graham et al., 2014; Chang et al., 2013; Lim 2011; Cook et al., 2017; Slemrod 2004; Dyreng et al., 2016). Prior studies suggest that tax avoidance results in managerial rent extraction (Desai & Dharmapala, 2006; Desai & Dharmapala, 2009) and reduces firm value. The negative association between tax avoidance and firm value may be attributed to managerial opportunism and agency slack, and higher organisational complexity (Khurana & Moser, 2013) results from tax avoidance. Tax avoidance not only exacerbates the agency conflict between managers and shareholder, but it also facilitates the wealth expropriation by majority shareholders because it increases tunneling (Tang, 2016). The positive association between tax avoidance and agency costs has also been documented in Chinese settings (Chen, Li, & Ma, 2014). However, in the presence of appropriate governance mechanisms, the managerial opportunism decreases, which lowers the tax avoidance. Lanis and Richardson (2011) suggest that board independence improves the corporate governance mechanisms and reduces tax aggressiveness. Similarly, Jiménez-Angueira (2018) documents that tax avoidance in firms with previously weak governance systems decreases when external monitoring improves. These studies suggest that a governance mechanism that curbs managerial opportunism may result in lower tax avoidance.

Tax avoidance is a risky endeavour, since it increases legal, reputational and political risks (Hasan, Kim, Teng, & Wu, 2015). Rego and Wilson (2012) argue that shareholders recognise that tax avoidance's risky nature may endanger a firm's survival. Therefore, when there is a separation of management and ownership, managers may be willing to take the risks arising from tax avoidance. However, a higher level of managerial ownership reduces tax avoidance (Badertscher et al., 2013). The lower tax avoidance due to higher managerial ownership may be attributed to the lower risk tolerance of owner/managers. Doellman, Huseynov, Nasser, and Sardarli (2017a) argue that socially responsible investors withdraw their investments from firms that are involved in greater tax avoidance due to reputational risks. The higher risks associated with tax avoidance also results in a lower level of investments from mutual funds, which leads to undervaluation (Doellman, Huseynov, Nasser, & Sardarli, 2017b). Therefore, tax avoidance increases the risks for the firm and may have considerably higher costs than benefits.

Preceding studies also propose that opacity and complexity in the corporate financial information environment also affects tax decisions. The opaque financial reporting environment increases the organisation complexity (Robert Bushman, Chen, Engel, & Smith, 2004), which facilitates tax avoidance. Frank et al. (2009) report a negative association between upward earnings management (aggressive financial reporting) and aggressive tax reporting. Kerr (2012) documents that an opaque information environment increases tax avoidance. However, when relevant information can be accessed easily and the information acquisition costs are lower, it reduces tax avoidance, particularly in higher information asymmetry settings. Therefore, an opaque information environment may lead to higher tax avoidance.

We argue that lower information asymmetry and information uncertainty arising from higher comparability reduce the efforts that are needed to monitor the managerial activities (i.e., the stewardship role of accounting information). The stewardship role of accounting in the monitoring of managerial activities is also well documented in preceding research (e.g., Ball 2006; Beyer et al., 2010; Pinnuck 2012; Brüggemann et al., 2013). Zimmerman (2015) suggests that the stewardship role of accounting facilitates resolving the conflicts of interest between creditors, owners and managers through better monitoring. As the monitoring of managerial activities becomes easier, the costs of opportunistic behaviours exceed the benefits, reduce the agency conflict and lower the tax avoidance (monitoring view). Furthermore, higher comparability reduces the costs of capital (Kim et al., 2013), which leads to lower financing constraints and decreases the managerial incentives for tax avoidance. Second, when more comparable information is available, then the information asymmetry and the complexity of business transactions are reduced. Kerr (2012) argues that higher information asymmetry makes tax avoidance easier. Therefore, when comparability is higher, information asymmetry decreases and tax avoidance becomes riskier in the wake of political, reputational and legal implications (the risk view). Therefore, firms would avoid engaging in these risky activities when comparability is higher. This discussion suggests that higher comparability reduces tax avoidance through better monitoring and increasing the risks associated with such activities. Based on these premises, we present following hypothesis:

*H1: Financial statement comparability is negatively associated with corporate tax avoidance.*

### **2.2.2. Comparability, analyst coverage and tax avoidance**

Financial analysts play a vital role in the production and dissemination of information (Bushman, 1989), which leads to their increased awareness of firms (Bowen, Chen, & Cheng, 2008). Analysts are an important source of private information that leads to lower information asymmetry and hence better monitoring of management activities (Healy & Palepu, 2001). The monitoring role (monitoring view) of analysts has been documented in prior research (Sun & Liu, 2011). This line of inquiry suggests that higher analyst coverage curtails managerial opportunism (Chen, Harford, & Lin, 2015; Dyck, Morse, & Zingales, 2010; Irani & Oesch, 2013; Yu, 2008) and improves corporate governance. Zhang, Tong, Su, and Cui (2015) further suggest that higher analyst coverage also increases firms' involvement in such activities, which improves their respective corporate reputation (such as through corporate philanthropy). These studies suggest that analyst coverage decreases information asymmetry, deters managerial opportunism and increases the visibility of the firm.

The nexus of analyst forecasts and tax avoidance is also built on the premises of the monitoring view and reputational risk view. As previously discussed, higher analyst coverage improves the flow of information and facilitates the monitoring of managerial activities, which results in lower managerial involvement in such activities that lead to rent extraction such as tax avoidance (Chen & Lin, 2017). Furthermore, higher analyst coverage also increases the reputational risk (Allen et al., 2016). A firm's reputation is at stake if its involvement in tax avoidance-related activities becomes public knowledge (Hanlon & Slemrod, 2009). The analyst coverage increases the investor's awareness regarding the firm. The analysts, along with other aspects, also discuss corporate tax strategies (risks) in their reports. As analyst coverage increases, the awareness of the tax strategies (risks) also increases and can lead to hyper media attention, which results in reputational loss (Allen et al., 2016). Hence, higher analyst following can reduce tax avoidance.

The analyst coverage can potentially affect the relationship between comparability and tax avoidance. Analyst coverage increases the visibility of the firm and curbs managerial opportunism, which can lead to a lower level of tax avoidance. Comparability can influence tax avoidance in two ways. First, higher comparability increases the transparency of financial information and improves the monitoring of management, which leads to lower tax avoidance. Conversely, comparability also increases the amount of analyst following. This effect also improves the monitoring of managerial behaviours and increases the investors' recognition, which leads to higher tax risks (i.e., lower tax avoidance) for firms. Since both comparability and analyst coverage reduce tax avoidance, they may complement each other and can constrain tax avoidance even more. In other words, higher analyst coverage may strengthen (complement) the relationship between comparability and tax avoidance (De Franco et al., 2011). Since analysts also play an information (financial and non-financial) production role (Bushman, 1989), they can act as substitutes for the financial information environment (Lobo, Song, & Stanford, 2012). It is important to note that



comparability is only valuable for financial information. However, analysts pay attention to financial and nonfinancial information, which makes them more informed. Therefore, higher analyst coverage may decrease the usefulness of accounting information (and also comparability) for the investors and other stakeholders. Hence, analyst coverage may weaken the effect of comparability on tax avoidance. This discussion gives rise to the following alternative hypothesis:

*H2: Higher analyst coverage strengthens (weakens) the negative relationship between financial statement comparability and corporate tax avoidance. In other words, analyst coverage complements (substitutes for) comparability in reducing tax avoidance.*

### **2.2.3. Comparability, product market competition and tax avoidance**

The preceding studies suggest that product market competition (competition hereafter) influences managerial decisions such as investments, cash holdings, financing decisions, cash distributions and financial reporting practices (Akdoğan & MacKay, 2012; Alimov, 2014; He, 2012; Byoun & Xu, 2016; Majeed & Zhang, 2016). In the same way, competition can also influence the managerial decisions related to taxes. The competition may affect tax avoidance in two ways. First, competition affects managerial opportunism, which can influence tax avoidance activities. Earlier research has provided the theoretical grounds that competition is a strong force that can act as a governance mechanism and curtail managerial opportunism, thereby reducing agency conflicts (Alchian, 1950; Stigler, 1958; Hart, 1983; Scharfstein, 1988). Several recent studies have documented the disciplinary role of competition (Chen, Li, et al., 2014; Mnasri & Ellouze, 2015; Majeed, Yan, & Tauni, 2018). Therefore, competition, as an external disciplinary mechanism, would curtail the activities of the management, such as tax avoidance, which may reduce the value of the firm (Chen, Li, et al., 2014). Furthermore, higher competition can also increase the financial reporting quality and comparability (Majeed & Zhang, 2016; Majeed, Yan, et al., 2018), which makes it more difficult to conceal the activities related to tax avoidance and may trigger stricter regulatory actions. These arguments are in line with Kubick et al. (2015), who suggest that it is market power (lower competition) that increases tax avoidance. This discussion suggests a negative relationship between competition and tax avoidance. Furthermore, competition together with comparability may reduce tax avoidance even more. In other words, higher competition may strengthen (complement) the relationship between comparability and tax avoidance.

However, on the other side, competitive pressure may also result in higher corporate tax avoidance (Cai & Liu, 2009). Prior studies have documented the 'dark side of competition', which encourages the 'all is fair' mind set among firms when competition is higher (Shleifer, 2004; Zahra, 1994). Furthermore, several recent studies argued that competition increases managerial opportunism (Rotemberg & Scharfstein, 1990; Martin 1993; Horn, Lang, & Lundgren, 1994). Recent studies also suggest that competition encourages unethical behaviour and managerial opportunism, which leads to the manipulation of financial reporting (Lee & Liu, 2014; Lin, Officer, & Zhan, 2015). Therefore, higher competition resulting in higher managerial opportunism may increase value destroying activities, such as tax avoidance. Therefore, a positive association between competition and tax avoidance as reported in prior research (Cai &

Liu, 2009; Gokalp, Lee, & Peng, 2017) is expected. Furthermore, higher competition leading to higher tax avoidance may weaken the relationship between comparability and tax avoidance. In view of these conflicting viewpoints, we present the following hypothesis:

*H3: Higher product market competition strengthens (weakens) the negative relationship between financial statement comparability and corporate tax avoidance. In other words, product market competition complements (substitutes for) comparability in reducing tax avoidance.*

### 3. Methodology

#### 3.1. Sample selection

Our sample includes all A-listed, nonfinancial firms for the period from 2005 to 2014 in China. We obtain the data from the China Stock Market and Accounting Research (CSMAR) database. Our sample period starts in 2005 because quarterly reporting in China started in 2002 and our comparability measure requires 16 quarters of prior data. Furthermore, the industries with less than 15 firm-year observations are dropped to calculate the comparability since we use the top4/top10 ranks in the comparability measure. The industry classification used in our study is second-level classification of the China Security Regulatory Commission (CSRC). All of the continuous variables are winsorised at 1% and 99% of their empirical distribution.

#### 3.2. Dependent variable

We employ multiple proxies for the measurement of corporate tax avoidance, which have been extensively used in the preceding literature (Chen et al., 2010; Blaylock 2016; Bauer 2016). Our first proxy is the effective tax rate (TA\_RATE), which is calculated as follows:

$$TA_{RATE} = \text{statutory tax rate} - \text{real tax rate}$$

where the real tax rate (effective tax rate) = income tax expenses/income before taxes. A lower real tax rate means a higher degree of tax avoidance. However, Chinese listed firms have considerable heterogeneity in their statutory tax rates which significantly affects firms' tax expenses. Therefore, it is important to control the effect of firms' statutory tax rates. Our second proxy for the measurement of tax avoidance is the book tax difference (TA\_BTD), which is calculated as follows:

$$TA_{BTD} = (\text{income before tax} - \text{taxable income})/\text{total assets}$$

where taxable income = (income tax expenses - deferred income tax expenses)/statutory tax rate. TA\_BTD reflects the difference between the accounting-based measure of book income and the firms' taxable income. A higher value of TA\_BTD means that firms' taxable income is relatively small compared to its accounting income. This represents that the firm might adopt aggressive tax planning strategies since the book

tax gap may also be because of accounting accruals. Therefore, we construct the component of the book-tax gap that is not influenced by accounting accruals as our third measure of tax avoidance. Our third measure of tax avoidance is the adjusted book-tax difference (TA\_DDBTD) as measured by Desai and Dharmapala (2006) using the following regression:

$$BTD_{i,t} = \alpha \times TACC_{i,t} + \mu_i + \varepsilon_{i,t} \quad (1)$$

where BTD is the book-tax difference and TACC represents the total accruals, both of which are scaled by total assets.  $\mu_i$  is the average value of the residual for firm  $i$  over the sample period, and  $\varepsilon_{i,t}$  is the deviation in year  $t$  of firm  $i$ 's average residual. The DDBTD is the sum of  $\mu_i$  and  $\varepsilon_{i,t}$  (i.e., the regression residual). Thus, higher values of TA\_RATE, TA\_BTD and TA\_DDBTD represent a higher level of corporate tax avoidance.

### 3.3. Independent variable

We follow the empirical approach of De Franco et al. (2011) for the estimation of the firm-year level of comparability. This measure of comparability is based on the output of the accounting system. If the accounting methods used by two firms are similar (identical), then for the same economic event, the output (the accounting numbers; e.g., earnings) of the system should be similar for them. De Franco et al. (2011) employ earnings and stock returns as proxies for the accounting output and economic event, respectively. To gauge the accounting function of firm  $i$ , in each year, we estimate the following regression using the quarterly data of the 16 previous quarters:

$$\text{Earnings}_{it} = \alpha_i + \beta_i \text{Return}_{it} + \varepsilon_{it} \quad (2)$$

where  $\text{Earnings}_{it}$  denotes the income before extraordinary items scaled by total assets.  $\text{Return}_{it}$  represents the stock returns during the quarter. We measure the accounting function for firm  $i$  and the accounting function of another firm  $j$  with the estimated coefficients of  $\hat{\beta}_i$  and  $\hat{\beta}_j$ , respectively. As the closeness of the functions between the two firms increase, the comparability between the two firms also increases. To calculate the closeness of the two accounting functions, we estimate firm  $i$ 's and firm  $j$ 's accounting responses (predicted earnings) to the same economic event. In other words, we estimate the returns of firms  $i$  and  $j$  using the above estimated coefficients of  $\hat{\beta}_i$  and  $\hat{\beta}_j$ , respectively.

$$E(\text{Earnings})_{iit} = \hat{\alpha}_i + \hat{\beta}_i \text{Return}_{it} \quad (3)$$

$$E(\text{Earnings})_{ijt} = \hat{\alpha}_j + \hat{\beta}_j \text{Return}_{it} \quad (4)$$

where  $E(\text{Earnings})_{iit}$  symbolises the predicted earnings of firm  $i$  and  $E(\text{Earnings})_{ijt}$  symbolises the predicted earnings of firm  $j$ , with the stock return of firm  $i$  in period  $t$  as the same economic event. When firms employ comparable accounting systems, the

difference between two predicted earnings is smaller. Accordingly, we use the following equation to estimate the comparability.

$$\text{ComAcc}_{ijt} = \left(-\frac{1}{16}\right) \times \sum_{t-15}^t |E(\text{Earnings}_{iit}) - E(\text{Earnings}_{ijt})| \quad (4)$$

The comparability between firm  $i$ 's and firm  $j$ 's accounting systems is defined as the negative value of the average absolute difference between the predicted earnings. Therefore, the proxy for the comparability  $\text{ComAcc}_{ijt}$  has nonpositive values. Higher values indicate higher comparability. We estimate the comparability for each two firms within the same industry and fiscal year. To get the firm-year level of the comparability measures, we rank all the values of  $\text{ComAcc}_{ijt}$  for each firm  $i$  from the highest to lowest within an industry. Our measures for the firm-year level of comparability  $\text{ComAcc}_{4it}$  or  $\text{ComAcc}_{10it}$  are the mean value of the four or ten largest comparability scores ( $\text{ComAcc}_{ijt}$ ) of firm  $i$  in period  $t$  in an industry, respectively.

### 3.4. Control variables

To control for other effects, we use several control variables in the regression model, which may affect corporate tax avoidance. In addition to size, leverage, market-to-book value and return on assets, we also control for fixed assets intensity, the level of intangible assets, inventory intensity and ownership duality following prior research (Bradshaw, Liao, & Ma, 2016; Chyz, Ching Leung, Zhen Li, & Meng Rui, 2013; Higgins, Omer, & Phillips, 2015; Richardson, Wang, & Zhang, 2016). Preceding studies suggest that larger firms are more complex in nature and the costs of tax avoidance are less (Rego, 2003). Earlier studies (Richardson et al., 2016) advocate that leverage and fixed assets intensity are positively associated with tax avoidance. We use market to book value and return on assets to control for growth and profitability. We also control for inventory intensity because prior research proposes that inventory intensive firms avoid less taxes than capital intensive firms (Stickney & McGee, 1982; Richardson et al., 2016). We control for CEO duality since Bradshaw et al. (2016) suggest that the CEO/chairman of the board duality created agency problem is less independent and hence increases tax avoidance. We employ the panel data model and use the firm fixed effect model to empirically test our hypotheses.

### 3.5. Regression model

We use the panel data model to estimate the following equation to test the effect of comparability on tax avoidance.

$$\text{TA}_{it} = \beta_0 + \beta_1 \text{CompAcc}_{it} + \beta_2 \text{Size}_{it} + \beta_3 \text{Lev}_{it} + \beta_4 \text{ROA}_{it} + \beta_5 \text{MB}_{it} + \beta_6 \text{PPE}_{it} \\ + \beta_7 \text{Intang}_{it} + \beta_8 \text{Invent}_{it} + \beta_9 \text{Dual}_{it} + \text{Firm} + \text{Year} + \varepsilon_{it} \quad (5)$$

where  $\text{TA}_{it}$  represents tax avoidance as measured by the three proxies that were discussed in section 3.2, and  $\text{CompAcc}_{it}$  represents the proxies for comparability that

were discussed in [section 3.3](#).  $Size_{it}$  is the natural log of assets and  $Lev_{it}$  represents the leverage ratio.  $ROA_{it}$  is the return on assets calculated as the net profits after taxation divided by total assets.  $MB_{it}$  is the market to book ratio calculated as the ratio of the market value of equity to the book value of equity. 'PPE<sub>it</sub>' represents the fixed assets intensity and is measured as the plant, property and equipment divided by total assets, while  $Intang_{it}$  is the intensity of intangible assets calculated as the intangible assets divided by total assets.  $Invent_{it}$  is the inventory intensity and is measured as total inventories divided by total assets.  $Dual_{it}$  represents CEO duality and is a dummy variable that is equal to one if the CEO of the firm is also chairman of the board and zero otherwise. Firm and year fixed effects are employed to control the variations across firms and business cycles.

We use various constructs of this model to test our hypotheses regarding analyst coverage and product market competition on the relationship between comparability and tax avoidance. We introduce analyst coverage ( $AC_{it}$ ) and the interaction term of analyst coverage and comparability ( $Comp_{it} \times AC_{it}$ ) to test our second hypothesis, where  $AC_{it}$  is measured as the natural log of one plus the number of analysts that follow firm  $i$  each year. We introduce product market competition ( $PMC_{it}$ ) and the interaction term of product market competition and comparability ( $Comp_{it} \times PMC_{it}$ ) to test our third hypothesis, where  $PMC_{it}$  is measured as the Herfindahl-Hirschman Index (HHI) multiplied by negative one. The HHI has been widely used in recent studies (Majeed & Zhang, 2016; Majeed, Zhang, & Wang, 2017). The HHI is quadratic sum of the market share of firm  $i$  in an industry, where the market share is calculated as the net sales of the firm divided by the net total sales of the industry to which that firm belongs. Higher values of  $PMC_{it}$  denote higher competition within an industry and vice versa.

## 4. Results and discussion

### 4.1. Summary of statistics and correlations

[Table 1](#) reports the descriptive statistics for the dependent variables, independent variables and all the control variables. For corporate tax avoidance, we note that the three proxies are slightly different, but the mean (median) values move slightly up or down or not at all. In terms of the comparability, the mean (median) values of the two proxies are about -0.897 and -1.237, respectively (-0.369 and -0.591, respectively), which suggests that  $CompAcc4$  is slightly larger than  $CompAcc10$ .

[Table 2](#) reports the Pearson and Spearman correlation coefficients of the variables in our model. We note that the three tax avoidance proxies ( $TA\_RATE$ ,  $TA\_BTD$  and  $TA\_DDBTD$ ) are positively correlated with each other and the two comparability proxies ( $CompAcc4$  and  $CompAcc10$ ) are also highly positively correlated, which suggest that different measures of tax avoidance and comparability are consistent. Meanwhile, tax avoidance proxies are all significantly and negatively associated with comparability proxies. These results provide preliminary evidence that comparability may reduce tax avoidance. Most of the rest of the

**Table 1.** Descriptive Statistics.

Variables	N	mean	sd	p50	min	max	skewness	kurtosis
TA_RATE	16355	0.000	0.122	0.003	-0.497	0.324	-1.049	6.923
TA_BTD	16090	0.001	0.029	-0.001	-0.085	0.119	0.890	7.091
TA_DDBTD	16090	-0.000	0.028	-0.002	-0.080	0.103	0.663	6.090
CompAcc4	13325	-0.897	1.911	-0.369	-14.92	-0.070	-5.511	37.07
CompAcc10	13325	-1.237	2.214	-0.591	-16.95	-0.128	-5.096	32.93
Size	19610	21.65	1.293	21.51	18.81	26.40	0.689	3.914
Lev	19610	0.482	0.260	0.476	0.048	1.656	1.152	6.690
ROA	19610	0.035	0.071	0.036	-0.354	0.209	-2.014	12.59
MB	18765	3.581	3.556	2.634	-2.480	26.59	3.452	19.99
PPE	19610	0.253	0.181	0.217	0.002	0.760	0.748	2.914
Intang	19600	0.046	0.055	0.030	0	0.318	2.588	11.14
Invent	19596	0.165	0.153	0.128	0	0.745	1.789	6.489
Dual	18793	0.214	0.410	0	0	1	1.392	2.937

TA\_RATE is effective tax rate, TA\_BTD represents book tax difference, TA\_DDBTD represents adjusted book tax difference.  $ComAcc4_{it} / ComAcc10_{it}$  are the mean value of four/ten largest comparability scores ( $ComAcc_{ijt}$ ) of firm  $i$  in period  $t$  in an industry respectively. Size  $I$  natural log of total assets. Lev represents leverage ratio. ROA represents return on total assets. MB represents market-to-book ratio. PPE represents property, plant and equipment (fixed assets). Intang represents intangible assets. Invent represents inventory intensity. Dual represents CEO duality. All continuous variables have been winsorised at the 1 percent and 99 percent levels. Where.

correlation coefficients have small values, which indicate that multicollinearity is a nonissue.

#### 4.2. Regression results: comparability and corporate tax avoidance

Table 3 reports the results examining the association between comparability and tax avoidance. Our results suggest a negative and statistically significant relationship ( $p < 0.01$ ) between comparability and tax avoidance. The results remain consistent for all of the measures of tax avoidance and comparability. These results support our first hypothesis (H1) that comparability is negatively associated with tax avoidance. These findings suggest that comparability improves the monitoring of managerial activities, highlights the risks (e.g., political and reputational) that are associated with tax-related activities and reduces the tax avoidance behaviour.

Our control variables are in line with the preceding studies. Our results report a significantly positive association of ROA with tax avoidance in accordance with the prior studies (Higgins et al., 2015; Allen et al., 2016). We also note a negative relationship for leverage and MB with tax avoidance (Allen and Francis, 2016; Chyz et al., 2013). The results also show a negative association of inventory and a positive association of intangibles intensity (Richardson et al., 2016; Allen et al., 2016) with tax avoidance. All of our control variables are in accordance with the predictions in the prior literature.

#### 4.3. Comparability, analyst coverage and corporate tax avoidance

Table 4 reports the results for the effect of analyst coverage on the relationship between comparability and tax avoidance. First, our results for the relationship between analyst coverage and tax avoidance are positive but insignificant for TA\_RATE. However, the results are negative and highly significant for TA\_BTD and TA\_DDBTD. These findings imply that analyst coverage reduces the tax

**Table 2.** Pearson and Spearman Correlation Matrix.

Variables	TA_RATE	TA_BT	TA_DDBTD	CompAcc4	CompAcc10	Size	Lev	ROA	MB	PPE	Intang	Invent	Dual
TA_RATE	1	0.713***	0.686***	-0.065***	-0.064***	-0.035***	-0.134***	0.271***	0.067***	0.060***	-0.036***	-0.135***	0.018*
TA_BT	0.553***	1	0.966***	-0.089***	-0.090***	-0.052***	-0.115***	0.191***	0.044***	0.095***	-0.048***	-0.147***	-0.007
TA_DDBTD	0.545***	0.985***	1	-0.065***	-0.065***	-0.033***	-0.122***	0.170***	-0.007	0.140***	-0.006	-0.196***	-0.001
CompAcc4	-0.080***	-0.081***	-0.073***	1	0.962***	-0.075***	-0.162***	-0.143***	-0.191***	-0.026**	0.026**	-0.068***	0.029***
CompAcc10	-0.085***	-0.087***	-0.077***	0.993***	1	-0.072***	-0.152***	-0.144***	-0.194***	-0.041***	0.023**	-0.072***	0.031***
Size	-0.070***	-0.086***	-0.060***	0.130***	0.132***	1	0.425***	0.007	-0.389***	-0.027***	-0.088***	0.049***	-0.120***
Lev	-0.036***	0.023***	0.012	-0.315***	-0.318***	0.182***	1	-0.386***	-0.116***	-0.049***	-0.151***	0.275***	-0.105***
ROA	0.240***	0.284***	0.257***	0.312***	0.315***	0.095***	-0.434***	1	0.287***	-0.063***	0.026**	-0.124***	0.031***
MB	0.078***	0.084***	0.048***	-0.319***	-0.328***	-0.271***	-0.011	0.071***	1	-0.116***	0.065***	0.000	0.097***
PPE	0.058***	0.061***	0.097***	-0.059***	-0.064***	0.097***	0.129***	-0.150***	-0.099***	1	0.231***	-0.415***	-0.058***
Intang	0.002	-0.006	0.012	-0.072**	-0.075***	-0.066***	0.034***	-0.070***	0.053***	0.056***	1	-0.233***	0.039***
Invent	-0.127***	-0.130***	-0.163***	0.008	0.010	0.128***	0.212***	-0.033***	-0.021***	-0.369***	-0.204***	1	0.008
Dual	0.011	-0.011	-0.011	-0.002	0.001	-0.167***	-0.132***	0.041***	0.042***	-0.111***	-0.019***	-0.032**	1

\*, \*\*, \*\*\* Indicate that the correlation coefficients are statistically significant with p-values at the 10 percent, 5 percent, and 1 percent levels, respectively. Pearson's correlation coefficients are shown in the lower triangle while Spearman's rank correlations appear above the diagonal.

**Table 3.** Financial Statement Comparability and Corporate Tax Avoidance.

Variables	(1) TA_RATE	(2) TA_BTD	(3) TA_DDBTD	(4) TA_RATE	(5) TA_BTD	(6) TA_DDBTD
CompAcc4	-0.003** (-2.55)	-0.001*** (-2.89)	-0.001** (-2.41)			
CompAcc10				-0.003** (-2.51)	-0.001*** (-2.63)	-0.000** (-2.16)
Size	-0.009** (-2.41)	-0.004*** (-5.21)	-0.005*** (-6.34)	-0.009** (-2.43)	-0.004*** (-5.25)	-0.005*** (-6.38)
Lev	-0.007 (-0.44)	-0.003 (-0.87)	0.000 (0.01)	-0.007 (-0.44)	-0.003 (-0.85)	0.000 (0.03)
ROA	1.061*** (22.53)	0.269*** (27.56)	0.244*** (25.59)	1.059*** (22.45)	0.269*** (27.49)	0.244*** (25.53)
MB	0.000 (0.39)	-0.000** (-2.10)	-0.000* (-1.89)	0.000 (0.39)	-0.000** (-2.07)	-0.000* (-1.86)
PPE	0.014 (0.89)	0.001 (0.19)	0.004 (1.24)	0.013 (0.88)	0.001 (0.18)	0.004 (1.22)
Intang	0.088** (2.31)	0.014* (1.74)	0.017** (2.15)	0.088** (2.31)	0.014* (1.75)	0.017** (2.15)
Invent	-0.054*** (-2.97)	-0.004 (-0.99)	-0.010*** (-2.66)	-0.054*** (-2.97)	-0.004 (-1.00)	-0.010*** (-2.67)
Dual	-0.008* (-1.65)	-0.004*** (-4.22)	-0.004*** (-4.04)	-0.008* (-1.66)	-0.004*** (-4.22)	-0.004*** (-4.05)
Year	Yes	Yes	Yes	Yes	Yes	Yes
Firm Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes
Constant	0.147* (1.92)	0.076*** (4.76)	0.091*** (5.81)	0.148* (1.93)	0.077*** (4.79)	0.092*** (5.85)
Observations	10,522	10,403	10,403	10,522	10,403	10,403
R <sup>2</sup>	0.086	0.119	0.100	0.086	0.119	0.100
Firm Number	2,083	2,071	2,071	2,083	2,071	2,071

Robust standard errors clustered by firms are reported in parentheses. TA\_RATE is effective tax rate, TA\_BTD represents book tax difference, TA\_DDBTD represents adjusted book tax difference.  $ComAcc4_{it}/ComAcc10_{it}$  are the mean value of four/ten largest comparability scores ( $ComAcc_{ijt}$ ) of firm  $i$  in period  $t$  in an industry respectively. Size is natural log of total assets. Lev represents leverage ratio. ROA represents return on total assets. MB represents market-to-book ratio. PPE represents property, plant and equipment (fixed assets). Intang represents intangible assets. Invent represents inventory intensity. Dual represents CEO duality.

\*, \*\*, \*\*\* indicate that the estimated coefficients are statistically significant with two-tailed  $p$ -values at the 10 percent, 5 percent, and 1 percent levels respectively.

avoidance behaviours of the firms. The results are consistent with recent studies (Allen et al., 2016) that suggest that the monitoring by analysts decreases the tax avoidance behaviours of the firms.

Moreover, our results are all positive and highly significant for the interaction terms of comparability and analyst coverage,  $Comp4 \times AC$  and  $Comp10 \times AC$ . These interesting findings suggest that analyst coverage substitutes for the effect of comparability in reducing corporate tax avoidance. The following arguments can be presented for this phenomenon. Comparability deals with only the financial reporting aspect of the firms but analyst coverage takes into account all the informational aspects of the firm, including financial and nonfinancial aspects. When analyst coverage increases, the benefits of comparability may be lower because higher analyst coverage provides additional information to all stakeholders in an easy manner, which results in much lower information asymmetry. Allen et al. (2016) note that analyst coverage not only increases the flow of financial information but also increases the visibility of the firms by enhancing investor recognition. If a firm is involved in risky activities, such as tax avoidance, the potential reputational and political risks would be much higher because of the greater visibility. Therefore, a substitution effect for analyst coverage is possible.



**Table 4.** Comparability, Analyst Coverage and Corporate Tax Avoidance.

Variables	(1) TA_RATE	(2) TA_BTD	(3) TA_DDBTD	(4) TA_RATE	(5) TA_BTD	(6) TA_DDBTD
CompAcc4	-0.008*** (-2.65)	-0.003*** (-4.06)	-0.003*** (-3.94)			
CompAcc10				-0.007*** (-2.86)	-0.003*** (-4.43)	-0.003*** (-4.32)
AC	0.012*** (4.24)	-0.001** (-1.96)	-0.001* (-1.86)	0.012*** (4.44)	-0.001 (-1.46)	-0.001 (-1.35)
Comp4 × AC	0.004** (2.31)	0.001*** (2.92)	0.001*** (3.04)			
Comp10 × AC				0.003*** (2.69)	0.001*** (3.63)	0.001*** (3.77)
Size	-0.007 (-1.55)	-0.004*** (-3.36)	-0.005*** (-4.37)	-0.007 (-1.51)	-0.004*** (-3.31)	-0.005*** (-4.31)
Lev	0.005 (0.28)	0.001 (0.13)	0.003 (0.85)	0.005 (0.27)	0.001 (0.12)	0.003 (0.84)
ROA	0.766*** (15.81)	0.245*** (20.40)	0.223*** (18.90)	0.770*** (15.82)	0.247*** (20.42)	0.225*** (18.95)
MB	-0.001 (-1.34)	-0.001*** (-3.27)	-0.001*** (-2.81)	-0.001 (-1.32)	-0.001*** (-3.24)	-0.001*** (-2.78)
PPE	0.006 (0.34)	-0.001 (-0.14)	0.002 (0.55)	0.005 (0.33)	-0.001 (-0.17)	0.002 (0.52)
Intang	0.052 (1.26)	0.024** (2.31)	0.027*** (2.69)	0.052 (1.25)	0.023*** (2.29)	0.027*** (2.67)
Invent	-0.031 (-1.42)	0.001 (0.10)	-0.007 (-1.36)	-0.031 (-1.43)	0.000 (0.07)	-0.007 (-1.39)
Dual	-0.010* (-1.88)	-0.006*** (-4.52)	-0.006*** (-4.50)	-0.010* (-1.87)	-0.006*** (-4.53)	-0.006*** (-4.51)
Year	Yes	Yes	Yes	Yes	Yes	Yes
Firm Fixed	Yes	Yes	Yes	Yes	Yes	Yes
Constant	0.107 (1.17)	0.071*** (3.13)	0.091*** (4.11)	0.101 (1.11)	0.069*** (3.05)	0.089*** (4.02)
Observations	7,674	7,601	7,601	7,674	7,601	7,601
R <sup>2</sup>	0.085	0.109	0.081	0.085	0.109	0.082
Firm Number	1,867	1,852	1,852	1,867	1,852	1,852

Robust standard errors clustered by firms are reported in parentheses. TA\_RATE is effective tax rate, TA\_BTD represents book tax difference, TA\_DDBTD represents adjusted book tax difference. ComAcc4<sub>it</sub>/ComAcc10<sub>it</sub> are the mean value of four/ten largest comparability scores (ComAcct<sub>ijt</sub>) of firm *i* in period *t* in an industry respectively. Size *l* natural log of total assets. Lev represents leverage ratio. ROA represents return on total assets. MB represents market-to-book ratio. PPE represents property, plant and equipment (fixed assets). Intang represents intangible assets. Invent represents inventory intensity. Dual represents CEO duality.

\*, \*\*, \*\*\* indicate that the estimated coefficients are statistically significant with two-tailed *p*-values at the 10 percent, 5 percent, and 1 percent levels respectively.

#### 4.4. Comparability, product market competition and corporate tax avoidance

Table 5 reports the results for the effect of competition on the relationship between comparability and tax avoidance. Our results suggest an insignificant association between competition and tax avoidance. These results dispute the findings of Cai and Liu (2009) that competition promotes tax avoidance (unethical) behaviours in Chinese firms. Furthermore, our results also dispute the argument that competition reduces the managerial opportunism, improves the governance quality (Majeed & Zhang, 2016; Chen, Li, et al., 2014) and therefore results in lower tax avoidance.

Furthermore, our results for the interaction terms of comparability and competition, Comp4 × PMC and Comp10 × PMC, are also insignificant. Thus, the results suggest that competition does not affect the relationship between comparability and corporate tax avoidance.

**Table 5.** Comparability, Product Market Competition and Corporate Tax Avoidance.

Variables	(1) TA_RATE	(2) TA_BTD	(3) TA_DDBTD	(4) TA_RATE	(5) TA_BTD	(6) TA_DDBTD
CompAcc4	-0.004** (-2.45)	-0.001*** (-2.75)	-0.001** (-2.19)			
CompAcc10				-0.003** (-2.50)	-0.001** (-2.54)	-0.001** (-1.99)
PMC	0.078* (1.77)	0.002 (0.21)	0.005 (0.51)	0.075* (1.70)	0.002 (0.17)	0.004 (0.48)
Comp4 × PMC	-0.007 (-0.85)	-0.002 (-0.86)	-0.001 (-0.57)			
Comp10 × PMC				-0.007 (-0.96)	-0.001 (-0.84)	-0.001 (-0.56)
Size	-0.009** (-2.39)	-0.004*** (-5.21)	-0.005*** (-6.34)	-0.009** (-2.41)	-0.004*** (-5.25)	-0.005*** (-6.37)
Lev	-0.007 (-0.44)	-0.003 (-0.90)	-0.000 (-0.00)	-0.007 (-0.45)	-0.003 (-0.88)	0.000 (0.02)
ROA	1.061*** (22.54)	0.269*** (27.56)	0.244*** (25.59)	1.059*** (22.47)	0.269*** (27.48)	0.244*** (25.53)
MB	0.000 (0.33)	-0.000** (-2.12)	-0.000* (-1.92)	0.000 (0.33)	-0.000** (-2.09)	-0.000* (-1.88)
PPE	0.014 (0.88)	0.001 (0.17)	0.004 (1.23)	0.013 (0.87)	0.001 (0.16)	0.004 (1.21)
Intang	0.089** (2.34)	0.014* (1.76)	0.017** (2.16)	0.089** (2.34)	0.014* (1.76)	0.017** (2.16)
Invent	-0.054*** (-2.94)	-0.004 (-0.98)	-0.010*** (-2.65)	-0.053*** (-2.93)	-0.004 (-0.99)	-0.010*** (-2.66)
Dual	-0.009* (-1.70)	-0.004*** (-4.22)	-0.004*** (-4.06)	-0.009* (-1.70)	-0.004*** (-4.23)	-0.004*** (-4.06)
Year	Included	Included	Included	Included	Included	Included
Firm Fixed	Yes	Yes	Yes	Yes	Yes	Yes
Constant	0.153** (2.00)	0.077*** (4.77)	0.092*** (5.83)	0.154** (2.01)	0.077*** (4.80)	0.092*** (5.86)
Observations	10,522	10,403	10,403	10,522	10,403	10,403
R <sup>2</sup>	0.087	0.119	0.100	0.087	0.119	0.100
Firm Number	2,083	2,071	2,071	2,083	2,071	2,071

Robust standard errors clustered by firms are reported in parentheses. TA\_RATE is effective tax rate, TA\_BTD represents book tax difference, TA\_DDBTD represents adjusted book tax difference. ComAcc<sub>4,t</sub>/ComAcc<sub>10,t</sub> are the mean value of four/ten largest comparability scores (ComAcct<sub>ijt</sub>) of firm *i* in period *t* in an industry respectively. Size *l* natural log of total assets. Lev represents leverage ratio. ROA represents return on total assets. MB represents market-to-book ratio. PPE represents property, plant and equipment (fixed assets). Intang represents intangible assets. Invent represents inventory intensity. Dual represents CEO duality.

\*, \*\*, \*\*\*Indicate that the estimated coefficients are statistically significant with two-tailed p-values at the 10 percent, 5 percent, and 1 percent levels respectively.

#### 4.5. Additional test: Controlling for the effect other factors

To provide credence to the argument that comparability reduces the tax avoidance behaviour of the firm, we further control for certain other factors that may influence corporate tax avoidance, such as earnings quality, state ownership and ownership concentration. Financial reporting is not only an important tool for management to convey the performance of the firm but also helps in governance (Healy & Palepu, 2001). Prior studies also suggest that financial reporting quality reduces information asymmetry and thus can potentially reduce the managerial slack (Bauwhede, De Meyere, & Van Cauwenberge, 2015). Therefore, it is expected that financial reporting quality may also reduce tax avoidance. Frank et al. (2009) suggest that absolute discretionary accruals (a measure of earnings quality and aggressive financial reporting quality) are positively associated with tax avoidance.

**Table 6.** Financial Statement Comparability and Corporate Tax Avoidance.

Variables	(1) TA_RATE	(2) TA_BTD	(3) TA_DDBTD	(4) TA_RATE	(5) TA_BTD	(6) TA_DDBTD
CompAcc4	-0.002* (-1.80)	-0.001*** (-2.98)	-0.001** (-2.44)			
CompAcc10				-0.002 (-1.64)	-0.001** (-2.57)	-0.000** (-2.05)
Size	-0.012*** (-2.98)	-0.005*** (-5.91)	-0.006*** (-6.92)	-0.012*** (-3.01)	-0.005*** (-5.96)	-0.006*** (-6.96)
Lev	0.005 (0.33)	-0.003 (-0.74)	0.001 (0.18)	0.006 (0.35)	-0.002 (-0.70)	0.001 (0.23)
ROA	1.075*** (21.68)	0.262*** (25.28)	0.241*** (23.80)	1.074*** (21.63)	0.262*** (25.22)	0.241*** (23.75)
MB	0.000 (0.03)	-0.000*** (-2.76)	-0.000*** (-2.39)	0.000 (0.04)	-0.000*** (-2.71)	-0.000*** (-2.34)
PPE	0.014 (0.86)	-0.000 (-0.03)	0.003 (0.92)	0.014 (0.85)	-0.000 (-0.04)	0.003 (0.90)
Intang	0.088** (2.11)	0.014 (1.57)	0.017** (1.97)	0.088** (2.11)	0.014 (1.58)	0.017** (1.98)
Invent	-0.055*** (-2.95)	-0.003 (-0.73)	-0.009** (-2.20)	-0.056*** (-2.96)	-0.003 (-0.74)	-0.009** (-2.22)
Dual	-0.008 (-1.47)	-0.004*** (-3.81)	-0.004*** (-3.63)	-0.008 (-1.47)	-0.004*** (-3.82)	-0.004*** (-3.63)
ABS_DA	-0.026* (-1.94)	-0.002 (-0.87)	-0.009*** (-3.25)	-0.026* (-1.94)	-0.002 (-0.86)	-0.009*** (-3.24)
SOE	-0.012 (-1.34)	0.000 (0.22)	0.001 (0.36)	-0.012 (-1.34)	0.000 (0.21)	0.001 (0.35)
Top1	0.023 (1.08)	0.007 (1.56)	0.007 (1.62)	0.023 (1.09)	0.007 (1.58)	0.007 (1.64)
Year	Included	Included	Included	Included	Included	Included
Firm Fixed	Yes	Yes	Yes	Yes	Yes	Yes
Constant	0.203** (2.53)	0.093*** (5.50)	0.107*** (6.44)	0.205** (2.55)	0.094*** (5.54)	0.107*** (6.48)
Observations	9,601	9,529	9,529	9,601	9,529	9,529
R <sup>2</sup>	0.089	0.118	0.096	0.089	0.117	0.096
Firm Number	1,910	1,903	1,903	1,910	1,903	1,903

Robust standard errors clustered by firms are reported in parentheses. TA\_RATE is effective tax rate, TA\_BTD represents book tax difference, TA\_DDBTD represents adjusted book tax difference. ComAcc4<sub>it</sub>/ComAcc10<sub>it</sub> are the mean value of four/ten largest comparability scores (ComAct<sub>ijt</sub>) of firm *i* in period *t* in an industry respectively. Size *l* natural log of total assets. Lev represents leverage ratio. ROA represents return on total assets. MB represents market-to-book ratio. PPE represents property, plant and equipment (fixed assets). Intang represents intangible assets. Invent represents inventory intensity. Dual represents CEO duality.

\*\*\*, \*\* indicate that the estimated coefficients are statistically significant with two-tailed p-values at the 10 percent, 5 percent, and 1 percent levels respectively.

Prior studies also suggest that a large number of firms in China are state owned enterprises (SOEs) (Wu, Gao, Chen, & Li, 2016). These SOEs face agency conflicts between majority and minority shareholders in addition to the agency conflict between management and shareholders (Ali, Chen, & Radhakrishnan, 2007). These SOEs, due to support from the state, are considered to have lower levels of risk by lenders (Chen, Chen, Lobo, et al., 2010; Faccio, 2006). The objectives of SOEs are also different from non-state-owned enterprises (NSEOs); therefore, the risks faced by these firms are also different (Majeed, Yan, et al., 2018). The SOEs are also given preferential treatment by the big four banks, which are major sources of financing in China and are also owned by the state. SOEs face fewer financial constraints compared to NSOEs. Therefore, SOEs have fewer incentives to avoid taxes. Bradshaw et al. (2016) provide empirical evidence to support this argument and report that

**Table 7.** Comparability, Analyst Coverage and Corporate Tax Avoidance.

Variables	(1) TA_RATE	(2) TA_BTD	(3) TA_DDBTD	(4) TA_RATE	(5) TA_BTD	(6) TA_DDBTD
CompAcc4	-0.010*** (-3.29)	-0.003*** (-4.17)	-0.003*** (-4.13)			
CompAcc10				-0.009*** (-3.41)	-0.003*** (-4.53)	-0.003*** (-4.52)
AC	0.014*** (4.85)	-0.001* (-1.71)	-0.001* (-1.67)	0.015*** (5.04)	-0.001 (-1.20)	-0.001 (-1.14)
Comp4 × AC	<b>0.005*** (2.88)</b>	<b>0.001*** (3.07)</b>	<b>0.001*** (3.20)</b>			
Comp10 × AC				<b>0.004*** (3.19)</b>	<b>0.001*** (3.82)</b>	<b>0.001*** (4.00)</b>
Size	-0.007 (-1.58)	-0.004*** (-3.23)	-0.005*** (-4.07)	-0.007 (-1.54)	-0.004*** (-3.16)	-0.004*** (-4.00)
Lev	0.008 (0.44)	0.000 (0.07)	0.003 (0.81)	0.008 (0.45)	0.000 (0.07)	0.003 (0.81)
ROA	0.779*** (15.33)	0.241*** (18.98)	0.222*** (17.82)	0.785*** (15.36)	0.243*** (19.04)	0.224*** (17.90)
MB	-0.001 (-0.75)	-0.001*** (-3.35)	-0.001*** (-2.80)	-0.001 (-0.73)	-0.001*** (-3.32)	-0.001*** (-2.77)
PPE	0.015 (0.89)	-0.000 (-0.02)	0.002 (0.59)	0.015 (0.89)	-0.000 (-0.05)	0.002 (0.57)
Intang	0.055 (1.23)	0.023** (2.07)	0.025** (2.34)	0.055 (1.23)	0.023** (2.06)	0.025** (2.32)
Invent	-0.028 (-1.26)	0.000 (0.04)	-0.007 (-1.21)	-0.029 (-1.28)	0.000 (0.00)	-0.007 (-1.25)
Dual	-0.007 (-1.29)	-0.006*** (-4.03)	-0.005*** (-4.02)	-0.007 (-1.28)	-0.006*** (-4.03)	-0.005*** (-4.02)
ABS_DA	-0.016 (-1.19)	0.001 (0.20)	-0.006* (-1.82)	-0.016 (-1.20)	0.001 (0.19)	-0.006* (-1.83)
SOE	-0.013 (-1.29)	-0.002 (-0.90)	-0.002 (-0.81)	-0.013 (-1.29)	-0.002 (-0.91)	-0.002 (-0.82)
Top1	0.016 (0.65)	0.008 (1.26)	0.007 (1.16)	0.015 (0.61)	0.008 (1.24)	0.007 (1.13)
Year	Included	Included	Included	Included	Included	Included
Firm Fixed	Yes	Yes	Yes	Yes	Yes	Yes
Constant	0.110 (1.17)	0.070*** (3.00)	0.088*** (3.83)	0.105 (1.11)	0.068*** (2.91)	0.086*** (3.73)
Observations	7,097	7,060	7,060	7,097	7,060	7,060
R <sup>2</sup>	0.095	0.111	0.081	0.095	0.111	0.081
Firm Number	1,739	1,730	1,730	1,739	1,730	1,730

Robust standard errors clustered by firms are reported in parentheses. TA\_RATE is effective tax rate, TA\_BTD represents book tax difference, TA\_DDBTD represents adjusted book tax difference. ComAcc4<sub>it</sub>/ComAcc10<sub>it</sub> are the mean value of four/ten largest comparability scores (ComAcct<sub>ijt</sub>) of firm *i* in period *t* in an industry respectively. Size is natural log of total assets. Lev represents leverage ratio. ROA represents return on total assets. MB represents market-to-book ratio. PPE represents property, plant and equipment (fixed assets). Intang represents intangible assets. Invent represents inventory intensity. Dual represents CEO duality.

\*\*\*, \*\*\*, \*\* indicate that the estimated coefficients are statistically significant with two-tailed p-values at the 10 percent, 5 percent, and 1 percent levels respectively.

state ownership is negatively associated with tax avoidance in China. The prior literature also suggests that ownership concentration increases the incentives of owners to effectively monitor the managerial behaviours and curtails the managerial opportunism (Ataay, 2018). In line with this argument, Richardson et al. (2016) proposes that ownership concentration influences the tax avoidance behaviour of the firms.

Considering the above discussion, we add three more control variables into our regression model. Earning quality is measured by the absolute discretionary accruals

**Table 8.** Comparability, Product Market Competition and Corporate Tax Avoidance.

Variables	(1) TA_RATE	(2) TA_BTD	(3) TA_DDBTD	(4) TA_RATE	(5) TA_BTD	(6) TA_DDBTD
CompAcc4	-0.003 (-1.48)	-0.000 (-1.06)	-0.000 (-0.56)			
CompAcc10				-0.003 (-1.57)	-0.000 (-0.94)	-0.000 (-0.48)
PMC	0.063 (1.03)	-0.012 (-0.94)	-0.007 (-0.55)	0.057 (0.91)	-0.012 (-0.89)	-0.007 (-0.51)
Comp4 × PMC	<b>-0.012</b> (-0.52)	<b>0.004</b> (0.90)	<b>0.005</b> (1.12)			
Comp10 × PMC				<b>-0.014</b> (-0.75)	<b>0.003</b> (0.80)	<b>0.004</b> (0.97)
Size	-0.012*** (-2.92)	-0.005*** (-5.97)	-0.006*** (-6.97)	-0.012*** (-2.94)	-0.005*** (-6.02)	-0.006*** (-7.02)
Lev	0.005 (0.33)	-0.003 (-0.74)	0.001 (0.19)	0.006 (0.34)	-0.002 (-0.70)	0.001 (0.23)
ROA	1.075*** (21.68)	0.262*** (25.25)	0.241*** (23.76)	1.075*** (21.63)	0.262*** (25.19)	0.241*** (23.71)
MB	-0.000 (-0.00)	-0.000*** (-2.70)	-0.000** (-2.32)	0.000 (0.01)	-0.000*** (-2.66)	-0.000** (-2.29)
PPE	0.014 (0.87)	-0.000 (-0.04)	0.003 (0.91)	0.014 (0.86)	-0.000 (-0.05)	0.003 (0.90)
Intang	0.088** (2.12)	0.014 (1.56)	0.017** (1.97)	0.088** (2.12)	0.014 (1.58)	0.017** (1.98)
Invent	-0.055*** (-2.93)	-0.003 (-0.75)	-0.009** (-2.23)	-0.055*** (-2.93)	-0.003 (-0.76)	-0.009** (-2.24)
Dual	-0.008 (-1.49)	-0.004*** (-3.78)	-0.004*** (-3.60)	-0.008 (-1.50)	-0.004*** (-3.79)	-0.004*** (-3.60)
ABS_DA	-0.026* (-1.95)	-0.002 (-0.86)	-0.009*** (-3.24)	-0.026* (-1.94)	-0.002 (-0.84)	-0.009*** (-3.22)
SOE	-0.012 (-1.34)	0.000 (0.21)	0.001 (0.35)	-0.012 (-1.34)	0.000 (0.20)	0.001 (0.34)
Top1	0.023 (1.08)	0.007 (1.57)	0.007 (1.63)	0.023 (1.09)	0.007 (1.58)	0.007 (1.64)
Year	Included	Included	Included	Included	Included	Included
Firm Fixed	Yes	Yes	Yes	Yes	Yes	Yes
Constant	0.203** (2.53)	0.093*** (5.51)	0.107*** (6.46)	0.204** (2.53)	0.094*** (5.55)	0.108*** (6.50)
Observations	9,601	9,529	9,529	9,601	9,529	9,529
R <sup>2</sup>	0.089	0.118	0.097	0.089	0.118	0.096
Firm Number	1,910	1,903	1,903	1,910	1,903	1,903

Robust standard errors clustered by firms are reported in parentheses. TA\_RATE is effective tax rate, TA\_BTD represents book tax difference, TA\_DDBTD represents adjusted book tax difference. ComAcc4<sub>it</sub>/ComAcc10<sub>it</sub> are the mean value of four/ten largest comparability scores (ComAcct<sub>ijt</sub>) of firm *i* in period *t* in an industry respectively. Size is natural log of total assets. Lev represents leverage ratio. ROA represents return on total assets. MB represents market-to-book ratio. PPE represents property, plant and equipment (fixed assets). Intang represents intangible assets. Invent represents inventory intensity. Dual represents CEO duality.

\*\*\*, \*\*\*, \*\* indicate that the estimated coefficients are statistically significant with two-tailed p-values at the 10 percent, 5 percent, and 1 percent levels respectively.

(ABS\_DA<sub>it</sub>) that are used in most studies. SOE<sub>it</sub> is a dummy variable that is equal to one if firms are SOEs and zero otherwise. Ownership concentration is measured as the proportion of shares owned by the largest shareholder (Top1<sub>it</sub>). Tables 6, 7 and 8 reports the new results, respectively. All results remain consistent with the results that were reported in the previous part. Comparability is negatively associated with corporate tax avoidance. Analyst coverage substitutes for the effect of comparability on tax avoidance while competition insignificant affects the relationship between comparability and tax avoidance.

**Table 9.** Financial Statement Comparability and Tax Avoidance Using Alternative Measure of Comparability.

Variables	(1) TA_RATE	(2) TA_BTD	(3) TA_DDBTD	(4) TA_RATE	(5) TA_BTD	(6) TA_DDBTD
<b>Model 1 Model 1</b>						
CompAcc4_adj	<b>-0.005***</b> (-4.82)	<b>-0.001***</b> (-5.01)	<b>-0.001***</b> (-4.74)			
CompAcc10_adj				<b>-0.005***</b> (-4.65)	<b>-0.001***</b> (-4.97)	<b>-0.001***</b> (-4.72)
Region/Industry/Year are Included						
Observations	10,522	10,403	10,403	10,522	10,403	10,403
Adjusted R <sup>2</sup>	0.094	0.111	0.106	0.093	0.111	0.106
<b>Model 2 Model 2</b>						
CompAcc4_adj	<b>-0.009***</b> (-4.13)	<b>-0.002***</b> (-3.90)	<b>-0.002***</b> (-3.91)			
CompAcc10_adj				<b>-0.009***</b> (-4.52)	<b>-0.002***</b> (-4.32)	<b>-0.002***</b> (-4.33)
AC	0.003 (1.36)	<b>-0.004***</b> (-5.19)	<b>-0.004***</b> (-5.11)	0.005* (1.72)	<b>-0.004***</b> (-4.65)	<b>-0.004***</b> (-4.57)
Comp4 × AC	<b>0.004***</b> (2.63)	<b>0.001</b> (1.52)	<b>0.001</b> (1.58)			
Comp10 × AC				<b>0.004***</b> (3.17)	<b>0.001**</b> (2.04)	<b>0.001**</b> (2.09)
Region/Industry/Year are Included						
Observations	7,674	7,601	7,601	7,674	7,601	7,601
Adjusted R <sup>2</sup>	0.097	0.132	0.126	0.098	0.133	0.126
<b>Model 3 Model 3</b>						
CompAcc4_adj	<b>-0.007***</b> (-4.27)	<b>-0.002***</b> (-5.10)	<b>-0.002***</b> (-4.68)			
CompAcc10_adj				<b>-0.006***</b> (-4.12)	<b>-0.002***</b> (-5.02)	<b>-0.001***</b> (-4.62)
PMC	<b>-0.034*</b> (-1.90)	<b>-0.014***</b> (-2.95)	<b>-0.014***</b> (-3.04)	<b>-0.035*</b> (-1.88)	<b>-0.014***</b> (-2.93)	<b>-0.014***</b> (-3.01)
Comp4 × PMC	<b>-0.011*</b> (-1.86)	<b>-0.003***</b> (-2.97)	<b>-0.003***</b> (-2.64)			
Comp10 × PMC				<b>-0.010*</b> (-1.74)	<b>-0.003***</b> (-2.77)	<b>-0.003**</b> (-2.49)
Region/Industry/Year are Included						
Observations	10,522	10,403	10,403	10,522	10,403	10,403
Adjusted R <sup>2</sup>	0.094	0.112	0.107	0.094	0.112	0.107

Robust standard errors clustered by firms are reported in parentheses. TA\_RATE is effective tax rate, TA\_BTD represents book tax difference, TA\_DDBTD represents adjusted book tax difference. ComAcc4<sub>it</sub>/ComAcc10<sub>it</sub> are the mean value of four/ten largest comparability scores (ComAcc<sub>ijt</sub>) of firm *i* in period *t* in an industry respectively. Size I natural log of total assets. Lev represents leverage ratio. ROA represents return on total assets. MB represents market-to-book ratio. PPE represents property, plant and equipment (fixed assets). Intang represents intangible assets. Invent represents inventory intensity. Dual represents CEO duality.

\*, \*\*, \*\*\* indicate that the estimated coefficients are statistically significant with two-tailed p-values at 10 percent, 5 percent, and 1 percent levels respectively.

## 5. Robustness check

### 5.1. Alternative measures of comparability

As a robustness test, we first use alternative measures of comparability. We employ two more measures of comparability. First, we consider the asymmetric timeliness of earnings in our measure of comparability, as illustrated in Basu (1997). For that purpose, we introduce a dummy variable for negative stock returns and an interaction term of the dummy variable and stock returns in Equation (2). While using alternative measures of comparability, we introduce time, industry and regional fixed effects

**Table 10.** Financial Statement Comparability and Tax Avoidance Using Alternative Measure of Comparability'.

Variables	(1) TA_RATE	(2) TA_BTD	(3) TA_DDBTD	(4) TA_RATE	(5) TA_BTD	(6) TA_DDBTD
<b>Model 1 Model 1</b>						
CompAcc4_ple	-0.005*** (-5.30)	-0.001*** (-4.84)	-0.001*** (-4.59)			
CompAcc10_ple				-0.005*** (-5.15)	-0.001*** (-4.77)	-0.001*** (-4.55)
Region/Industry/Year are Included						
Observations	10,522	10,403	10,403	10,522	10,403	10,403
Adjusted R <sup>2</sup>	0.094	0.110	0.105	0.094	0.110	0.106
<b>Model 2 Model 2</b>						
CompAcc4_ple	-0.009*** (-4.17)	-0.002*** (-3.86)	-0.002*** (-3.89)			
CompAcc10_ple				-0.008*** (-4.47)	-0.002*** (-4.26)	-0.002*** (-4.29)
AC	0.002 (1.00)	-0.004*** (-5.58)	-0.004*** (-5.53)	0.003 (1.33)	-0.004*** (-5.04)	-0.004*** (-4.98)
Comp4 × AC	0.003** (2.53)	0.000 (1.12)	0.000 (1.16)			
Comp10 × AC				0.003*** (3.04)	0.001* (1.72)	0.001* (1.75)
Region/Industry/Year are Included						
Observations	7,674	7,601	7,601	7,674	7,601	7,601
Adjusted R <sup>2</sup>	0.098	0.132	0.126	0.098	0.133	0.126
<b>Model 3 Model 3</b>						
CompAcc4_ple	-0.007*** (-4.73)	-0.002*** (-4.65)	-0.001*** (-4.23)			
CompAcc10_ple				-0.006*** (-4.59)	-0.001*** (-4.57)	-0.001*** (-4.17)
PMC	-0.031* (-1.79)	-0.012*** (-2.67)	-0.012*** (-2.76)	-0.032* (-1.79)	-0.012*** (-2.65)	-0.013*** (-2.73)
Comp4 × PMC	-0.011* (-1.78)	-0.003* (-1.88)	-0.002 (-1.54)			
Comp10 × PMC				-0.009* (-1.73)	-0.002* (-1.87)	-0.002 (-1.54)
Region/Industry/Year are Included						
Observations	10,522	10,403	10,403	10,522	10,403	10,403
Adjusted R <sup>2</sup>	0.095	0.112	0.107	0.094	0.111	0.107

Robust standard errors clustered by firms are reported in parentheses. TA\_RATE is effective tax rate, TA\_BTD represents book tax difference, TA\_DDBTD represents adjusted book tax difference. ComAcc4<sub>it</sub>/ComAcc10<sub>it</sub> are the mean value of four/ten largest comparability scores (ComAcct<sub>ijt</sub>) of firm *i* in period *t* in an industry respectively. Size I natural log of total assets. Lev represents leverage ratio. ROA represents return on total assets. MB represents market-to-book ratio. PPE represents property, plant and equipment (fixed assets). Intang represents intangible assets. Invent represents inventory intensity. Dual represents CEO duality.

\*\*\*, \*\*, \* indicate that the estimated coefficients are statistically significant with two-tailed p-values at the 10 percent, 5 percent, and 1 percent levels respectively.

in order to capture the variations across industries, regions and business cycles. The results are reported in Table 9, and the conclusions still hold.

Prior research documents that stock prices incorporate firm-specific news before they are reported in accounting earnings, which means that 'prices lead earnings' (Collins, Kothari, Shanken, & Sloan, 1994). Following De Franco et al. (2011), we also use lagged stock returns in Equation (2) while estimating the comparability measure so that accounting earnings are tied to lagged stock returns. Table 10 reports the results for this alternative measure of comparability and the conclusions still

**Table 11.** Financial Statement Comparability and Tax Avoidance Using Lagged Comparability Values.

Variables	(1) TA_RATE	(2) TA_BTD	(3) TA_DDBTD	(4) TA_RATE	(5) TA_BTD	(6) TA_DDBTD
CompAcc4_lag	-0.009*** (-7.70)	-0.002*** (-5.96)	-0.002*** (-5.62)			
CompAcc10_lag				-0.008*** (-7.71)	-0.002*** (-6.04)	-0.001*** (-5.68)
Size	0.001 (0.75)	-0.001 (-1.60)	-0.001* (-1.65)	0.001 (0.67)	-0.001* (-1.65)	-0.001* (-1.70)
Lev	-0.027* (-1.95)	-0.002 (-0.65)	-0.001 (-0.39)	-0.027*** (-1.96)	-0.002 (-0.68)	-0.001 (-0.42)
ROA	0.666*** (12.40)	0.168*** (9.70)	0.153*** (9.29)	0.661*** (12.24)	0.167*** (9.63)	0.152*** (9.23)
MB	0.000 (0.29)	-0.001*** (-3.04)	-0.001*** (-3.03)	0.000 (0.24)	-0.001*** (-3.10)	-0.001*** (-3.09)
PPE	-0.009 (-0.69)	-0.002 (-0.48)	0.005 (1.43)	-0.009 (-0.70)	-0.002 (-0.49)	0.005 (1.41)
Intang	-0.106*** (-3.08)	-0.025*** (-3.20)	-0.019** (-2.53)	-0.106*** (-3.07)	-0.025*** (-3.20)	-0.019** (-2.53)
Invent	-0.100*** (-5.90)	-0.026*** (-6.25)	-0.028*** (-7.04)	-0.101*** (-5.92)	-0.026*** (-6.26)	-0.028*** (-7.06)
Dual	0.004 (0.85)	-0.001 (-0.75)	-0.001 (-0.68)	0.004 (0.82)	-0.001 (-0.77)	-0.001 (-0.70)
Region	Included	Included	Included	Included	Included	Included
Industry	Included	Included	Included	Included	Included	Included
Year	Included	Included	Included	Included	Included	Included
Constant	-0.062 (-1.40)	0.010 (0.86)	0.000 (0.04)	-0.060 (-1.36)	0.011 (0.89)	0.001 (0.07)
Observations	8,930	8,843	8,843	8,930	8,843	8,843
Adjusted R <sup>2</sup>	0.106	0.123	0.121	0.105	0.123	0.121

Robust standard errors clustered by firms are reported in parentheses. TA\_RATE is effective tax rate, TA\_BTD represents book tax difference, TA\_DDBTD represents adjusted book tax difference.  $ComAcc4_{it}/ComAcc10_{it}$  are the mean value of four/ten largest comparability scores ( $ComAcc_{ijt}$ ) of firm  $i$  in period  $t$  in an industry respectively. Size is natural log of total assets. Lev represents leverage ratio. ROA represents return on total assets. MB represents market-to-book ratio. PPE represents property, plant and equipment (fixed assets). Intang represents intangible assets. Invent represents inventory intensity. Dual represents CEO duality.

\*\*\*, \*\*, \* indicate that the estimated coefficients are statistically significant with two-tailed p-values at 10 percent, 5 percent, and 1 percent levels respectively.

remain consistent with the exception of the effect of competition on the relationship between comparability and tax avoidance. Our results (untabulated) remain consistent when we estimate our model using firm and year fixed effects.

## 5.2. Using alternative methodological approaches

We use alternative approaches to take into account the endogeneity concerns while examining effect of comparability on corporate tax avoidance. Preceding studies (e.g., Aschhoff & Schmidt, 2008; Stiebale 2011; Clemens, Redelet, & Bhavnani, 2012) employ a lag of the test variables to deal with the endogeneity concerns. Following their approach, we take the first lag of the measures of comparability (i.e., CompAcc4\_lag and CompAcc10\_lag, respectively) and re-estimate the regressions. Our results that are reported in Table 11 are consistent with those that were previously reported. Our results remain consistent when we use the second lag of our test variable and re-estimate the results.



**Table 12.** Financial Statement Comparability and Tax Avoidance Using Structure Equation Regression.

Variables	(1) TA_RATE	(2) TA_BTD	(3) TA_DDBTD	(4) TA_RATE	(5) TA_BTD	(6) TA_DDBTD
CompAcc4	-0.039*** (-3.47)	-0.006** (-2.53)	-0.003 (-1.24)			
CompAcc10				-0.030*** (-3.05)	-0.005** (-2.37)	-0.002 (-1.01)
Size	0.002 (1.01)	-0.000 (-1.27)	-0.000 (-1.34)	0.001 (0.51)	-0.001* (-1.66)	-0.000 (-1.50)
Lev	-0.061*** (-3.54)	-0.007* (-1.69)	-0.001 (-0.36)	-0.057*** (-3.22)	-0.006 (-1.60)	-0.001 (-0.20)
ROA	0.464*** (7.68)	0.126*** (9.15)	0.127*** (9.59)	0.445*** (6.37)	0.121*** (7.52)	0.126*** (8.18)
MB	-0.004*** (-2.94)	-0.001*** (-3.97)	-0.001*** (-2.75)	-0.003*** (-2.61)	-0.001*** (-3.81)	-0.001** (-2.51)
PPE	0.005 (0.56)	-0.000 (-0.11)	0.006*** (2.83)	0.003 (0.33)	-0.001 (-0.38)	0.006*** (2.61)
Intang	-0.085*** (-3.06)	-0.024*** (-3.81)	-0.016*** (-2.61)	-0.089*** (-3.18)	-0.025*** (-3.94)	-0.017*** (-2.73)
Invent	-0.085*** (-7.00)	-0.025*** (-8.91)	-0.026*** (-9.90)	-0.088*** (-7.17)	-0.025*** (-9.01)	-0.027*** (-9.90)
Dual	0.009** (2.47)	-0.000 (-0.55)	-0.000 (-0.63)	0.009** (2.52)	-0.000 (-0.48)	-0.000 (-0.58)
Region	Included	Included	Included	Included	Included	Included
Industry	Included	Included	Included	Included	Included	Included
Year	Included	Included	Included	Included	Included	Included
Constant	-0.066* (-1.90)	-0.002 (-0.32)	-0.006 (-0.86)	-0.052 (-1.49)	0.000 (0.02)	-0.005 (-0.70)
Observations	8,280	8,233	8,233	8,280	8,233	8,233
Adjusted R <sup>2</sup>	0.005	0.078	0.101	0.026	0.081	0.103
TA_RATE	CompAcc4 -0.039 (-0.04)	CompAcc4	CompAcc4	CompAcc10 0.889 (0.75)	CompAcc10	CompAcc10
TA_BTD		1.534 (0.36)			5.927 (1.18)	
TA_DDBTD			-1.592 (-0.45)			1.305 (0.32)
ABS_DA	-0.339*** (-2.66)	-0.378*** (-2.87)	-0.378*** (-2.87)	-0.443*** (-2.89)	-0.483*** (-3.08)	-0.446*** (-2.88)
ROA	-3.354*** (-5.35)	-3.699*** (-5.53)	-3.699*** (-5.53)	-5.537*** (-7.47)	-5.997*** (-7.58)	-5.347*** (-8.29)
STD_Sales	-0.551*** (-6.15)	-0.504*** (-5.79)	-0.504*** (-5.79)	-0.563*** (-5.29)	-0.495*** (-4.79)	-0.491*** (-4.81)
Size	0.021 (1.41)	0.019 (1.23)	0.019 (1.23)	-0.003 (-0.15)	-0.003 (-0.16)	-0.008 (-0.46)
Lev	-1.200*** (-12.62)	-1.188*** (-13.10)	-1.188*** (-13.10)	-1.427*** (-12.74)	-1.427*** (-13.31)	-1.440*** (-13.71)
MB	-0.089*** (-15.56)	-0.108*** (-15.94)	-0.157*** (-18.47)	-0.087*** (-13.95)	-0.104*** (-13.98)	-0.154*** (-16.46)
Inst	0.491*** (4.48)	0.515*** (4.59)	0.515*** (4.59)	0.632*** (4.82)	0.651*** (4.87)	0.671*** (5.09)
Big4	-0.153*** (-2.92)	-0.151*** (-2.82)	-0.151*** (-2.82)	-0.172*** (-2.74)	-0.168*** (-2.64)	-0.141** (-2.25)
Region	Included	Included	Included	Included	Included	Included
Industry	Included	Included	Included	Included	Included	Included
Year	Included	Included	Included	Included	Included	Included
Constant	0.039 (0.12)	0.130 (0.40)	0.154 (0.47)	0.575 (1.48)	0.661* (1.70)	0.687* (1.79)
Observations	8,280	8,233	8,233	8,280	8,233	8,233
Adjusted R <sup>2</sup>	0.133	0.126	0.135	0.146	0.130	0.154

Robust standard errors clustered by firms are reported in parentheses. TA\_RATE is effective tax rate, TA\_BTD represents book tax difference, TA\_DDBTD represents adjusted book tax difference. ComAcc4<sub>it</sub>/ComAcc10<sub>it</sub> are the mean value of four/ten largest comparability scores (ComAcc<sub>ijt</sub>) of firm *i* in period *t* in an industry respectively. Size is natural log of total assets. Lev represents leverage ratio. ROA represents return on total assets. MB represents market-to-book ratio. PPE represents property, plant and equipment (fixed assets). Intang represents intangible assets. Invent represents inventory intensity. Dual represents CEO duality.

\*\*\*, \*\*, \* indicate that the estimated coefficients are statistically significant with two-tailed p-values at 10 percent, 5 percent, and 1 percent levels respectively.

To deal with reverse causality issues, we further employ a structural equation regression as an alternative approach as discussed in earlier studies (Gow, Larcker, & Reiss, 2016; Heckman & Pinto, 2015). We estimate the following simultaneous equations. Equation (6a) is the same as Equation (5), while Equation (6b) shows whether and how tax avoidance and other factors influence comparability. Referring to previous studies, in Equation (6b),  $STD\_Sales_{it}$  represents the performance volatility (which is calculated as the three year standard deviation of sales),  $Inst_{it}$  is the ownership proportion of institutional investors,  $Big4_{it}$  is a dummy variable that is equal to one if firms are audited by the big four accounting firms and zero otherwise, and other variables are the same as defined earlier. The results of the structural equations that are reported in Table 12 are consistent with our results that were reported earlier.

$$TA_{it} = \beta_0 + \beta_1 CompAcc_{it} + \beta_2 Size_{it} + \beta_3 Lev_{it} + \beta_4 ROA_{it} + \beta_5 MB_{it} + \beta_6 PPE_{it} + \beta_7 Intang_{it} + \beta_8 Invent_{it} + \beta_9 Dual_{it} + Region + Industry + Year + \varepsilon_{it} \quad (6a)$$

$$CompAcc_{it} = \alpha_0 + \alpha_1 TA_{it} + \alpha_2 ABSDA_{it} + \alpha_3 ROA_{it} + \alpha_4 STD_{Sales}_{it} + \alpha_5 Size_{it} + \alpha_6 Lev_{it} + \alpha_7 MB_{it} + \alpha_8 Inst_{it} + \alpha_9 Big4_{it} + Region + Industry + Year + \varepsilon_{it} \quad (6b)$$

## 6. Conclusions

Although taxes play an important role in corporate decisions, the effect of financial statement comparability on corporate tax avoidance has been overlooked in the accounting and tax literature. Our study attempts to fill this gap in the literature by investigating whether comparability is associated with the tax strategies of firms. Given that the comparability influences the corporate information environment, we expect this lower information asymmetry to improve the monitoring of managerial activities (the stewardship role of accounting), thus leading to lower tax avoidance. We posit that lower information asymmetry that is induced by higher comparability reduces managerial opportunism, thus leading to lower managerial involvement in value destroying activities (such as tax avoidance). Furthermore, higher transparency makes the tax strategies of the firms more visible and hence increases the regulatory, political and reputational risks faced by the firms.

Using numerous measures of financial statement comparability and corporate tax avoidance, we document that comparability decreases the tax avoidance in Chinese listed firms. Our results also suggest that analyst coverage substitutes for the effect of comparability in reducing corporate tax avoidance. However, we do not find any conclusive results regarding the effect of competition, corporate tax avoidance and the relationship between comparability and tax avoidance. Our results are robust to alternative measures of comparability. We also address the endogeneity concerns by using the lagged values of test variables and the structural equation regression model.

Essentially, our study offers distinctive insights into the relationship between comparability and corporate tax avoidance. By doing so, our study contributes to the growing literature on the determinants of tax avoidance. Our findings also add to the preceding literature on the effects of comparability. The findings of our study may also be valuable to tax authorities in identifying the mechanisms that deter corporate tax avoidance. Furthermore, our study lends academic credence to the call for more transparency in the corporate sector to fight corporate tax avoidance. However, our study has certain limitations as well. First, our sample is drawn from all A-listed Chinese companies. The Chinese institutional environment is unique in nature and the results of our study may not be generalised to other economies. Future research into comparability and corporate tax avoidance in different economic settings may augment our understanding of the relationship between comparability and tax strategies. Moreover, the effects of the ownership structure, changing regulatory regimes, firms' life cycles and business strategies, etc. may also change the effect of comparability on tax avoidance. Future research is warranted to address these questions.

## Notes

1. [https://www.washingtonpost.com/business/economy/is-this-tax-avoidance-no-think-of-it-as-tax-revenge/2018/05/04/8e37af00-4f01-11e8-84a0-458a1aa9ac0a\\_story.html?noredirect=on&utm\\_term=.49212506f479](https://www.washingtonpost.com/business/economy/is-this-tax-avoidance-no-think-of-it-as-tax-revenge/2018/05/04/8e37af00-4f01-11e8-84a0-458a1aa9ac0a_story.html?noredirect=on&utm_term=.49212506f479)
2. <https://www.thetimes.co.uk/article/backlash-against-tax-avoidance-clampdown-t3t8j85cx>
3. <http://www.reuters.com/article/us-imf-g20-taxation-idUSKCN0S400V20151010>
4. <http://www.oecd.org/tax/beps/beps-actions.htm>
5. <https://www.taxjustice.net/2018/05/14/unhappy-meal-tax-avoidance-still-on-the-menu-at-mcdonalds/>
6. <https://www.theguardian.com/business/2014/may/09/margaret-hodge-urges-boycott-amazon-uk-tax-starbucks>
7. <https://www.parliament.uk/business/committees/committees-a-z/commons-select/public-accounts-committee/news/tax-avoidance-google/>

## Disclosure statement

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