

# **The Roles of Trust and Control in Regulating Tax Reporting Behavior**

ESTER CHEN, *Ben-Gurion University and the Peres Academic Center*

ILANIT GAVIOUS, *Ben-Gurion University*

## **Abstract**

Recent literature documents that lower levels of book-tax conformity (BTC) are associated with less book reporting aggressiveness but greater tax reporting aggressiveness. In this study, we investigate whether applying a controlling regulatory approach aimed at restraining the incentives of firms to avoid paying taxes can complement the trusting approach of retaining a low level of BTC. Specifically, we test whether increasing the level of tax enforcement can potentially offset the primary cost of reducing BTC—increased tax reporting aggressiveness. The Israeli case provides an ideal opportunity for a thorough examination of this issue, given that after the adoption of IFRS, Israel underwent a transition from a moderate level of BTC to an extreme nonconformity position. Furthermore, in concomitance with the change in BTC, the level of tax enforcement in Israel increased. We find that after the decrease in BTC and the concomitant increase in tax enforcement, tax avoidance declined significantly. In addition, the evidence shows that book and tax reporting aggressiveness were not related in the pre-IFRS period, during which time there was a moderate level of BTC, or in the post-IFRS period when BTC was significantly lower. Our results suggest that one of the primary alleged costs of reducing BTC—more aggressive tax reporting—may be avoided. Moreover, the results suggest that the two types of manipulations need to be addressed separately. Rather than one strict regulatory approach (such as book-tax alignment) to deal with two different types of reporting manipulations, a combination of trust and control is shown to be effective.

**Keywords:** *book-tax conformity; book-tax differences; earnings management; tax avoidance; tax planning; regulation*

## **JEL Descriptors:**

M41 – Accounting, M48 – Government Policy and Regulation

## **Direct Correspondence to:**

Ilanit Gavious, Guilford Glazer Faculty of Business and Management, Department of Business Administration, Ben-Gurion University, PO Box 653, Beer-Sheva 84105, Israel.

Tel.: +972-8-6477538; Fax: +972-8-6477691. E-mail address: [madaril@bgu.ac.il](mailto:madaril@bgu.ac.il)

\* We have benefited from the comments of Dan Givoly, Dan Amiram, Shmuel Hauser, Haim K. Levy, Eti Einhorn, Ramy Yosef, Yaron Levy, Guy Beit-Or, Diane Romm and workshop participants at Ben-Gurion University, Ono Academic College and the Peres Academic Center. All errors remain our responsibility.

## 1. Introduction

Research on the relationship between the quality of tax reporting and the level of conformity between the tax and the accounting rules shows that tax reporting is more aggressive when the level of book-tax conformity (henceforth, BTC) is lower (e.g., Atwood *et al.*, 2012; Chan *et al.*, 2010). Under a low level of BTC, the tax rules diverge significantly from the accounting rules, allowing managers to plan complicated tax avoidance activities with little effect on book earnings. In contrast to the findings on tax reporting, the recent literature examining the relationship between the quality of *book* reporting and the level of BTC indicates that lower levels of BTC are associated with higher, not lower, quality book earnings (e.g., Atwood *et al.*, 2010; Blaylock *et al.*, 2012; Chen *et al.*, 2013a; Kvaal and Nobes, 2012). Atwood *et al.* (2010) suggest that the flexibility that a low level of BTC provides managers in conveying information can actually reduce book reporting aggressiveness, thus outweighing the potential costs incurred if some managers did choose to use their discretion to report opportunistically. Merging psychological and accounting theories, Chen *et al.* (2013a) suggest that a low level of BTC allows managers to experience higher levels of control and ownership over their work, and increases their perceived sense of choice and autonomy. According to Chen *et al.*, such an environment is associated with greater satisfaction at work, feelings of trust and, consequently, a higher quality of book reporting, rather than an exploitation of the lenient policy.

Importantly, the relationship between BTC and tax reporting quality and that between BTC and book reporting quality seem to be in opposite directions. While a regulatory approach that allows reporting flexibility and a sense of autonomy may be efficient when it comes to managers' reporting to their shareholders, according to the empirical evidence it is inefficient when it comes to their reporting to the tax authorities. Our research explores whether applying a controlling regulatory approach aimed at restraining the incentives of firms to avoid paying taxes can

complement the trusting approach of retaining a low level of BTC. Specifically, we examine whether increasing the level of tax enforcement can potentially offset the primary cost of reducing BTC—increased tax reporting aggressiveness. A unique and rare setting of a decline in the level of BTC and a concomitant increase in the level of tax enforcement in a single country allows us to test our research question.

In 2008, Israeli public companies formally adopted IFRS, though most companies had been reporting according to IFRS since 2007. However, the Israeli Tax Authority (ITA) did not accept the use of IFRS for tax purposes.<sup>1</sup> Hence, publicly traded companies adopted IFRS for accounting purposes, but for tax purposes continued to report according to the Israeli Generally Accepted Accounting Principles (known as Israeli GAAP)<sup>2</sup>. The immediate impact has been a significant decline from a moderate degree of BTC to an extreme nonconformity position. In concomitance with the change in BTC, the level of tax enforcement in Israel increased when ITA added an “anti-planning” norm to the Income Tax Ordinance,<sup>3</sup> aiming to improve the scrutiny over aggressive tax planning. The differences between these two periods—the pre-IFRS versus the post-IFRS adoption in Israel—provide a rare opportunity to compare managers' behavior under different levels of BTC, as well as different levels of tax enforcement, within a single country.<sup>4</sup> By focusing on a single country, we maintain institutional factors (e.g., legal origin, the level of law enforcement, and accounting disclosure and recognition policies)<sup>5</sup> in each period constant across all firms and avoid the possibility that BTC and other institutional characteristics of the country are determined

---

<sup>1</sup> ITA guidance No. 07/2010.

<sup>2</sup> Israeli GAAP was mainly influenced by locally developed rules and practices, and by the accounting principles generally accepted in the US (US GAAP).

<sup>3</sup> Section 145a2 of the Income Tax Ordinance, added as part of Amendment 147 to the Income Tax Ordinance.

<sup>4</sup> Atwood *et al.* (2010) call for research on the impact of changes in BTC *within* a particular country as opposed to differences in BTC *between* countries. According to Atwood *et al.*, the ideal research design cannot be employed in the US because it has not undergone a change in BTC.

<sup>5</sup> See the discussion about institutional characteristics, which may be correlated with earnings management and with BTC, in Blaylock *et al.* (2012).

endogenously with book and taxable earnings management.<sup>6</sup>

We perform our tests on a sample of 508 Israeli public companies listed on the Tel Aviv Stock Exchange that have been fully compliant with IFRS since 2007. The sample period extends from 2003 to 2010: the four years prior to the adoption of IFRS (2003-2006) and the four years following the adoption of IFRS (2007-2010). To proxy for tax reporting aggressiveness, we employ two tax avoidance measures. The first measure is the widely used total Book-Tax Differences (*BTD*; see, e.g., Frank *et al.*, 2009; Chan *et al.*, 2010). The second is the discretionary permanent differences (*DTAX*) measure recently developed by Frank *et al.* (2009), who demonstrate that the measure often detects tax shelter activity better than other measures. In our tests we also use a measure of book earnings management, Performance-Matched Discretionary Accruals (henceforth, *PMDA*) based on Kothari *et al.* (2005). In additional robustness tests, we repeat our analyses using alternative measures of book earnings management and tax avoidance. By employing different accepted measures from the literature (e.g., Atwood *et al.*, 2012; Blaylock, 2012; De Franco *et al.*, 2011), we mitigate the risk of a measure-drawn conclusion.

Our main results are as follows. We find that the various tax avoidance measures decreased significantly, rather than increased, after the decline in BTC and the concomitant increase in tax enforcement. The results suggest that to deal with the temptation of firms to reduce the tax burden when the level of BTC is low, a controlling regulatory approach is required. In other words, maintaining a trusting approach (i.e., a low level of BTC) to improve the quality of book reporting requires a controlling approach (i.e., strong tax enforcement) to improve the quality of tax reporting. Indeed, our conclusion is supported by the recent social psychology and organizational behavior

---

<sup>6</sup> Such endogeneity may potentially bias the results of the analyses (see Blaylock *et al.*, 2012). Blaylock *et al.* (2012) indicate that focusing on a single country may also have limitations. There is little variation in the required BTC within a country, and this variation is needed to test for the effects of BTC on earnings management. Our setting does not suffer from such a limitation given that the level of BTC in Israel has changed significantly during our sample period.

literature linking behavioral theories to regulatory policies. These recent studies have challenged the view of trust and control as mutually exclusive, the existence of one being at the expense of the other. Rather, it seems that the two may be applied simultaneously, and may even reinforce each other, by encouraging moral commitment and a sense of civic responsibility among regulatees (see, e.g., Mollering, 2005; Rupp and Williams, 2011; Weibel, 2007).

In an additional analysis we explore the relationships between book and tax reporting aggressiveness under the different levels of BTC. The evidence shows that book and tax reporting aggressiveness were not related in the pre-IFRS period, during which time there was a moderate level of BTC, or in the post-IFRS period when BTC was significantly lower. The non-existence of a relationship between the two types of manipulations provides additional support for our conclusion that the two types of manipulations—for book and for tax purposes—need to be addressed separately by regulators attempting to reduce corporate reporting aggressiveness.

The results of this study, supported by prior studies showing different effects of the level of BTC on book and tax reporting manipulations, as well as by behavioral and policy studies, suggest that a combination of a trusting regulatory approach in the form of a low level of BTC with a controlling regulatory approach in the form of high tax enforcement is more effective in deterring book and tax reporting malfeasance than one strict book-tax alignment policy.

Our research is of direct relevance to investors, accountants, tax authorities and regulators. All of these parties are interested in the detection of the motives that companies have for engaging in earnings manipulation, and in determining whether accounting aggressiveness implies that the firm also engages in aggressive tax reporting, or vice versa. In addition, the authorities (mainly the SEC and the IRS) need this information to evaluate whether additional efforts/costs should be invested in improving the quality of earnings reports and in preventing the loss of tax revenues, respectively. In particular, they need this information to evaluate whether reforms such as changing the level of

BTC, strengthening tax enforcement and/or adopting quality accounting standards (e.g., IFRS vs. US GAAP) are sufficient to override managers' incentives to engage in earnings manipulations in their financial and tax reports.

In the next section, we describe the changes that occurred in the level of BTC and in the level of tax enforcement in Israel. Section 3 reviews prior research and develops our hypotheses. Section 4 describes our data, and Section 5 presents our tests and results. Section 6 concludes.

## **2. Changes in the Levels of Book-Tax Conformity and Tax Enforcement in Israel**

### ***2.1. Change in Book-Tax Conformity***

Prior to the adoption of IFRS, Israel represented an interesting case in terms of its tax and accounting environments. While some countries tend to align tax profits with book profits and others seek to make tax profits diverge from book profits, Israel combined or fell in between the two approaches, resulting in a moderate level of BTC (Income Tax Ordinance Amendment No. 188, 2012). The starting point for the tax return of an Israeli firm was the book pre-tax income extracted from the firm's financial statements, followed by the adjustments required by the tax laws. Furthermore, the Supreme Court in Israel has determined that whenever the tax law is silent, the accounting rules have the upper hand for any issue in disagreement with the IRS.<sup>7</sup> In practice, accounting principles were used to determine the tax profits of Israeli firms if the tax laws did not offer a specific treatment for the specific case. As for the accounting environment in Israel in the pre-IFRS period, it also represented a combination of the local, the US and the international standards. Israeli GAAP was based largely on the accounting principles generally accepted in the US. Unless US GAAP had been used, International Accounting Standards were applicable.

---

<sup>7</sup> Supreme Court Appeal 494/87 [www.takdin.co.il](http://www.takdin.co.il). Specifically, in the event of a question arising from an audit, the Supreme Court ruled that the accounting system prevailed over any issue in disagreement with the ITA.

In 2008, Israeli public companies formally adopted IFRS, though most companies had been reporting according to IFRS since 2007.<sup>8</sup> From the very outset, the Israeli Tax Authority (ITA) did not accept the use of IFRS for tax purposes. Hence, publicly traded companies adopted IFRS for accounting purposes, but for tax purposes continued to report according to the Israeli GAAP<sup>9</sup>. As such, the ITA actually gave formal approval for the use of two sets of accounting rules for reporting, one for book purposes and the other for tax purposes (ITA guidance No. 07/2010).<sup>10</sup> The immediate impact has been an increase in the book-tax gap and a corresponding decline in BTC in Israel, from a moderate to an extreme nonconformity position.<sup>11</sup> Given that the ITA does not recognize IFRS for tax purposes, Israeli managers may be in a far better position to plan complicated tax avoidance activities with little effect on financial reporting following the adoption of IFRS.

## ***2.2. Change in Tax Enforcement***

In 2007, the ITA increased its scrutiny of Israeli firms by adding an “anti-planning” norm as part of Amendment 147 to the Income Tax Ordinance.<sup>12</sup> The added section imposes an obligation to report the practicing of aggressive tax planning. The explanatory note to the Bill clarifies the need for reporting requirements that would enable the tax assessor to deal with aggressive tax planning:

*“Unlike tax planning in the past, current tax planning is global, highly sophisticated, and makes use of legal and financial tools as well as of “tax havens,” taking advantage of tax*

---

<sup>8</sup> Whereas most countries adopting IFRS made regional modifications to accommodate the local business environment (that is, taking into consideration the different economic and political climates; see, e.g., Hali *et al.*, 2010), Israel adopted IFRS “as is.”

<sup>9</sup> For a review of the differences between IFRS and Israeli GAAP, see Markelevich *et al.* (2010).

<sup>10</sup> The guidance specifically stated that IFRS was not applicable for tax-reporting purposes, and the pre-tax book income was no longer acceptable as the initial starting point for calculating taxable income. It was issued in June 2010, but was available for early adoption as early as 2007 and was implemented by public firms for tax-reporting purposes after the transition to IFRS in 2007.

<sup>11</sup> In contrast to the Israeli case, the adoption of IFRS in the European Union (EU) was originally considered as a common consolidated tax base to be used by all members; however the EU eventually withdrew this plan (see Hanlon and Heitzman, 2010; Schön, 2005). According to Blaylock *et al.* (2012), some members of the EU opposed this proposal as they “...did not want to secede control of their tax base to a foreign entity such as the International Accounting Standards Board.”

<sup>12</sup> Section 145a2 of the Income Tax Ordinance, added as part of Amendment 147 to the Income Tax Ordinance.

*treaties. Some of the plans involve abuse of tax treaties or are based on an interpretation of the provisions of the law that distorts the intent of the legislators. Moreover, in some cases of tax planning, the taxpayer assumes that the probability that tax planning aimed at inappropriate tax avoidance or tax reduction would be discovered in the course of the audit of the assessment is low, that the taxpayer's assessment will become outdated, and at most, the taxpayer will be required to pay the tax that he would have had to pay in the first place. The provisions of this section are intended to assist in increasing enforcement and in the struggle against such tax planning by imposing a duty to report on transactions prescribed by the Authority.”*

The list of operations that the legislators defined as constituting tax planning and must be reported was published on December 3, 2006 as part of the regulations enacted under the Income Tax Ordinance<sup>13</sup>. Failure to report an operation included in the said list is a criminal offense, even if the planning itself is eventually found to be legitimate.

### **3. Prior Research and Hypothesis Development**

#### ***3.1. Book-Tax Conformity in Various Countries***

The degree of BTC indicates the flexibility that a firm has in reporting taxable income that is different from pre-tax book income (e.g., Atwood *et al.*, 2010). Recent studies attempting to rank the level of BTC of various countries (e.g., Atwood *et al.*, 2010; Blaylock *et al.*, 2012) show that countries with a relatively low (high) level of BTC include, *inter alia*, the US, Canada and Germany (the UK, France and Spain). Countries following IFRS have different levels of BTC. The evidence shows that while some European countries moved away from a conformed system, others moved toward a conformed system over time (Hanlon and Heitzman, 2010). In the US, there is an

---

<sup>13</sup> For example, the list of operations includes operations involving corporations that are offshore tax havens and operations that make abusive use of tax treaties. Income Tax Ordinance (Tax Planning Requiring Reporting), 2007.



ongoing debate in the tax literature and among policymakers regarding the conformity of income measures for book and tax purposes. The debate started taking off in the late 1990s and early 2000s when the gap between the pre-tax book income that firms reported to shareholders and the taxable income that firms reported to the IRS increased significantly (see, e.g., Hanlon *et al.*, 2005). This debate has led to calls for corporate tax reform around BTC (Desai, 2005; Joint Committee on Taxation (JCT), 2006; Whitaker, 2006). The calls for mandatory BTC draw strength from identifying the dual system of separating the reporting of book and taxable income as “the province of much creative decision-making” (Desai, 2006). Taking the proposal to increase the level of BTC under consideration, President Bush’s Tax Reform Panel declared that further study is warranted (see Hanlon *et al.*, 2008).

### ***3.2. Book-Tax Conformity and the Quality of Reported Earnings***

Proponents of conformity argue that the quality of accounting earnings will improve if BTC increases due to reduced compliance costs and a forced trade-off that will diminish the temptation of managers to manipulate the pre-tax book income (e.g., Desai, 2003, 2005, 2006; Rossotti, 2006; Whitaker, 2005). Opponents, on the other hand, contend that increased conformity might lead to deterioration in the quality of accounting earnings. Given that the information required by financial statement users and by the tax authorities differs significantly, book-tax alignment may result in a significant loss of financial information (e.g., Hanlon and Shevlin, 2005; Hanlon *et al.*, 2005, 2008; Plesko, 2006; Shackelford, 2006).<sup>14</sup> In addition, it is unlikely that book income would be used as the basis for calculating taxable income because politicians are unlikely to cede authority to accounting standard setters to determine taxable

---

<sup>14</sup> For example, forcing managers to report earnings based on the more rigid set of tax rules would reduce their ability to signal private information to investors. Hanlon *et al.* (2005) find that estimates of taxable income based on US financial statements are about 50% less informative to investors than book income. This finding corroborates the contention that investors would suffer a significant loss of information if tax rules were strictly applied to book income.

income (Hanlon and Shevlin, 2005).

Recent studies support the notion that higher (lower) BTC is associated with lower (higher) quality earnings or with less (more) truthful financial reporting. Atwood *et al.* (2010), who examined this issue across countries, provide evidence that increasing the required level of BTC is associated with lower earnings quality, where earnings quality is measured as earnings persistence and the association between current earnings and future cash flows. Also on an international level, Blaylock *et al.* (2012) found that higher BTC is associated with more, not less, earnings management. Consistently, Kvaal and Nobes (2012) maintain that a *low* level of BTC is associated with higher financial reporting quality because such a level of BTC occurs when managers provide the sort of financial reporting numbers (e.g., fair values for marketable securities, impairments of goodwill and recognized lease liabilities) that are more informative than the numbers used for tax purposes. Lang *et al.* (2012) suggest that firms in countries with lower BTC engage in less income smoothing. Finally, conducting a within-country analysis, Chen *et al.* (2013a) document a persistent and pervasive reduction in earnings management following a reduction in BTC that resulted from the adoption of IFRS in Israel.

In contrast to the negative relationship documented between the level of BTC and the quality of accounting earnings, studies suggest the opposite for taxable earnings. In a study of a departure from a tax-based accounting system in China towards the adoption of IFRS, Chan *et al.* (2010) find evidence that as BTC decreased, tax noncompliance increased. This finding suggests that legislative changes such as the adoption of IFRS, which reduce BTC, are likely to result in an increased ability or motivation to engage in aggressive tax reporting. Atwood *et al.* (2012) found that on average, when BTC is high and tax enforcement is perceived as being strong, there is generally less avoidance of paying taxes. Our setting is unique in that, while adoption of IFRS reduced the level of BTC in Israel, the level of tax enforcement increased in the very same year

(2007). Given that these two events are expected to have opposite effects on the motivation or ability of managers to manipulate taxable earnings, we do not make a prediction regarding the direction of the change in tax reporting aggressiveness following the decline in BTC. Hence, we form a two-tailed hypothesis as follows:

*H1: Ceteris paribus, tax reporting aggressiveness changes following a decrease (increase) in book-tax conformity (tax enforcement).*

### ***3.3. The Relationship between Book and Tax Reporting Aggressiveness under Different Levels of BTC***

The literature provides mixed evidence with respect to a firm's ability or motivation to engage in aggressive tax (book) reporting concomitantly with aggressive book (tax) reporting (e.g., Badertscher *et al.*, 2009; Frank *et al.*, 2009; Hanlon, 2005; Hanlon *et al.*, 2009; McGill and Outslay, 2004; Plesko, 2007). The general notion is that nonconformity between financial accounting and tax rules enables firms: (1) to manage book earnings *and* taxable earnings in the same reporting period (Frank *et al.*, 2009), (2) to manage taxable earnings (downward) without impacting book earnings (e.g., McGill and Outslay, 2004; Weisbach, 2002), and (3) to manage book earnings without affecting taxable earnings (e.g., Hanlon, 2005; Phillips *et al.*, 2003). Conversely, when there is a high degree of BTC, corporate taxes are calculated based on book earnings. Such a practice could, in effect, create incentives for managing earnings downwards to reduce tax payments (e.g., Ball *et al.*, 2003) or result in increased tax payments if the firm chooses to inflate earnings reported to its shareholders (e.g., Erickson *et al.*, 2004).

Shackelford and Shevlin (2001) review studies documenting that firms generally choose between reporting either lower taxable earnings to the tax authorities *or* higher earnings to shareholders, given the trade-offs they face in their decisions about financial and tax reporting.

Prior research also suggests that firms with large book-tax differences are subject to greater scrutiny from regulators (e.g., Badertscher *et al.*, 2009; Cloyd, 1995; Mills, 1998) and external auditors (e.g., Hanlon *et al.*, 2009). Thus, firms may choose to avoid being aggressive in both book and tax reporting even under book-tax *nonconformity*, particularly if the level of scrutiny increases.

In the case of a moderate level of BTC, Chen *et al.* (2013b) found that the manipulation of taxable earnings was not related to the manipulation of book earnings in Israeli firms that the tax authorities determined had understated their earnings to avoid taxes (prior to the adoption of IFRS). Based on the discussion above, we expect that a lack of association between book and tax reporting aggressiveness existed for all public firms Israel, not just for those caught by the authorities. Furthermore, the discussion above leads us to infer that a decrease in BTC, particularly if combined with increased scrutiny, does not necessarily lead to a greater motivation and/or ability to engage in the manipulation of both book and taxable earnings in the same reporting period. Hence, we predict that the relationship between book and tax reporting aggressiveness will not be stronger, or more positive, following a decrease in BTC if the level of scrutiny (e.g., tax enforcement) increases. Our second and third hypotheses are thus:

*H2: Ceteris paribus, book and tax reporting aggressiveness are not related under a high or a moderate level of book-tax conformity.*

*H3: Ceteris paribus, the relationship between book and tax reporting aggressiveness does not change following a decrease in book-tax conformity, if the level of scrutiny increases.*

#### **4. Data**

Our sample selection procedure begins with all 623 Israeli public companies listed on the Tel

Aviv Stock Exchange (TASE) during the sample period of 2003 to 2010: the four years prior to adoption of IFRS (2003-2006) and the four years following the adoption of IFRS (2007-2010).<sup>15</sup> Consistent with prior research, we eliminated regulated industries such as utilities and financial institutions, which have different reporting incentives, accounting requirements and regulatory scrutiny from other industries<sup>16</sup> (e.g., Burgstahler and Eames, 2003; Hanlon, 2005). Moreover, financial institutions in Israel were not required to adopt IFRS. This elimination results in a loss of 29 of the 623 companies. We also omitted 45 companies that had adopted IFRS in 2006, prior to the massive adoption of IFRS in 2007. Finally, a further 41 companies were excluded because they were dually listed on the TASE as well as on the US stock exchanges. Given that these companies were fully compliant with US GAAP, they were not required to adopt IFRS. In all, our sample includes a total of 508 companies that underwent a transition from Israeli GAAP to IFRS in 2007. The final number of firm-year observations with sufficient information required for our various analyses is 3,816 firm-years.

In our analyses, we deal with outliers by winsorizing extreme values (top and bottom 1%) of continuous variables. We winsorize rather than cut the extreme values to conserve data. The results of all of the analyses remain similar when extreme values are cut from the dataset. We obtained the financial information for our sample from the *Bloomberg Professional* database. We supplemented this data with information collected manually (e.g., current tax expenses, taxes for previous years, changes in deferred taxes and losses carryforwards) from the tax notes in the companies' financial statements. Table 1 provides the descriptive statistics for selected financial and non-financial information on our sample firms.

[INSERT TABLE 1 ABOUT HERE]

---

<sup>15</sup> As indicated above, adoption of IFRS in Israel became mandatory for public companies in 2008. However, most companies had already started reporting according to IFRS in the previous year (2007).

<sup>16</sup> The industrial affiliations of our sample firms include technology, communications, basic materials, consumer, real estate, and investment and holding companies. Industrial classification is as per *Bloomberg Professional*.

## 5. Tests and results

### 5.1. Measuring Book and Tax Reporting Aggressiveness

#### 5.1.1. Book Earnings Management Measure

To proxy for book reporting aggressiveness we estimate the widely used measure of book earnings management, performance-matched abnormal accruals (*PMDA*) as per Kothari *et al.* (2005). We start by estimating the cross-sectional version of the modified Jones (1991) model for each industry and year, using *Bloomberg* data:

$$(1) \quad TA_{i,t} = \alpha_i + \beta_{1i} * (\Delta REV_{i,t} - \Delta AR_{i,t}) + \beta_{2i} * GPPE_{i,t} + \varepsilon_i$$

where *TA* is total accruals, calculated as the difference between pre-tax earnings before extraordinary items and discontinued operations and pre-tax operating cash flows,  $\Delta REV$  is the change in revenues from the previous year,  $\Delta AR$  is the change in accounts receivable, and *GPPE* is gross fixed assets. Consistent with Frank *et al.* (2009), we compute the total accruals on a pre-tax basis to ensure that the proxies for earnings management and tax avoidance are not spuriously correlated. Specifically, we reverse the deduction of total tax expense from earnings before extraordinary items and add back income taxes paid to operating cash flows.<sup>17</sup> Each variable, including the intercept, is deflated by beginning-of-year total assets. The residual in this model ( $\varepsilon$ ) is the measure of unexpected – discretionary – accruals. The industry-year-specific coefficient estimates from equation (1) are then used to estimate expected accruals as a percentage of lagged

---

<sup>17</sup> Frank *et al.* (2009) compute total accruals based on data from the statement of cash flows. We repeat our calculation of the *PMDA* measure using data from the statement of cash flows as per Frank *et al.* The results obtained in our various analyses are qualitatively similar for both approaches for calculating *PMDA*.

total assets for each firm in our sample. Unexpected accruals are accruals (scaled by lagged total assets) less expected accruals.

In order to calculate performance-matched abnormal accruals (*PMDA*), following Kothari *et al.* (2005), we obtain the closest pre-tax return on assets (*PTROA*)-matching firm in the same industry and year for each of our firm-year observations. We then calculate unexpected accruals for the matched firms in the manner described above. The *PMDA* for the sample firms is the difference between the unexpected accruals of each sample firm and that of its respective *PTROA*-matched firm.

### **5.1.2. Tax Avoidance Measures**

To proxy for tax reporting aggressiveness, we employ two tax avoidance measures. Tax avoidance takes place across a wide spectrum of tax planning strategies. For our purposes in this study, the generic term, “tax avoidance,” relates to all aspects of the spectrum, making no distinction between legal and illegal activities. As such, consistent with prior studies, we define tax avoidance as the reduction of explicit taxes (e.g., Atwood *et al.*, 2012; Dyreng *et al.*, 2008; Hanlon and Heitzman, 2010). This definition reflects all transactions that influence the firm’s explicit tax liability and includes tax avoidance strategies that create temporary or permanent book-tax differences.<sup>18</sup> We acknowledge that some transactions or strategies may not be reflected in, nor create, book-tax differences.

For our first measure of tax avoidance, we use the total book-tax differences (*BTD*). *BTD* has been widely used in prior research as a measure of tax reporting aggressiveness (e.g., Chan *et al.*, 2010; Chen *et al.*, 2013b; Frank *et al.*, 2009; Lisowsky, 2010; Wilson, 2009). We calculate *BTD* as

---

<sup>18</sup> According to Atwood *et al.* (2012), this broad definition is preferable over focusing on specific actions taken to avoid taxes, as the latter are often not detected.

the discrepancy between the pre-tax book income and the taxable income, deflated by lagged total assets.<sup>19</sup> We follow Hanlon *et al.* (2005) and calculate taxable income (*TI*) as follows:

$$(2) TI_{i,t} = (CTE_{i,t} / SRate_t) - (NOL_{i,t} - NOL_{i,t+1})$$

where *CTE* is current income tax expense, *SRate* is the Israeli statutory tax rate for year *t* and *NOL* is net operating loss carryforwards.<sup>20</sup>

Given that companies with large *BTDs* are suspected of being involved in manipulating either book or tax income, or both, we employ an additional measure that is more directly related to tax manipulations and does not reflect book income manipulations. Specifically, for our second measure of tax avoidance, we use Frank *et al.*'s (2009) discretionary permanent differences (*DTAX*) measure.<sup>21</sup> Frank *et al.* (2009) advocate the use of a measure that is based on permanent book-tax differences, rather than total or temporary differences. Their discussion of the advantages of a permanent differences measure indicates, *inter alia*, that temporary book-tax differences reflect earnings management via pre-tax accruals (see, e.g. Hanlon, 2005; Phillips *et al.*, 2003) and thus can be spuriously correlated with measures of earnings management. In addition, Frank *et al.* echo anecdotal evidence showing that most tax shelter activities generate permanent, rather than temporary, book-tax differences (e.g., Graham and Tucker, 2006; Weisbach, 2002; Wilson, 2009).

To estimate the *DTAX* measure, consistent with Frank *et al.* we estimate the following regression model by industry and year:

---

<sup>19</sup> The deflation by lagged total assets is consistent with prior studies (e.g., Frank *et al.*, 2009) and with the deflation of the other tax avoidance and earnings management measures in the study. An alternative deflation for the *BTD* measure is by sales (Chan *et al.*, 2010). We repeat our analyses with *BTD* deflated by sales revenues. The results remain qualitatively similar.

<sup>20</sup> In a tax review paper, Hanlon and Heitzman (2010) indicate that, "Subtracting the change in the *NOL* is intended to capture changes in taxable income that are not captured by the current tax expense because the firm is a tax-loss firm and current tax expense is thus reported as zero (or a negative if they have *NOL* carrybacks)" (p. 140). Our results are qualitatively similar when the change in *NOL* is not subtracted in the calculation of *TI*.

<sup>21</sup> Frank *et al.* tested the validity of their *DTAX* measure using a sample firms identified by Graham and Tucker (2006) as engaging in tax shelter activity and found it to be a significant predictor of tax shelter activity. Compared with other measures of tax avoidance, their *DTAX* measure is at least as good as total *BTD*, and statistically better than other measures from prior research (the widely used effective tax rates (*ETRs*) measure and the tax shelter measure computed by Desai and Dharmapala, 2006).



$$(3) \text{ PermDiff}_{it} = \alpha_0 + \alpha_1 \text{Intang}_{it} + \alpha_2 \text{UNCON}_{it} + \alpha_3 \text{MI}_{it} + \alpha_4 \text{CTE}_{it} + \alpha_5 \text{NOL}_{it} + \alpha_6 \text{LagPerm}_{it} + \varepsilon_{it}$$

$\text{PermDiff}_{it}$  are total book-tax differences less temporary book-tax differences for firm  $i$  in year  $t$ .

$\text{PermDiff}_{it} = \{BI_{it} - [(TCTE_{it}) / \text{SRate}_{it}]\} - (DTE_{it} / \text{SRate}_{it})$  where  $BI_{it}$  is pre-tax book income;

$TCTE_{it}$  is total (state and foreign) current tax expense;  $DTE_{it}$  is deferred tax expense;  $\text{SRate}$  is

statutory tax rate. The regression controls for nondiscretionary permanent differences unrelated to

tax planning by including goodwill and other intangibles ( $\text{Intang}_{it}$ ), income (loss) reported under

the equity method ( $\text{UNCON}_{it}$ ) and income (loss) attributable to minority interest ( $\text{MI}_{it}$ ). Frank *et al.*

further control for statutory adjustments and other variables that are unlikely to be related to tax

planning activities: current tax expense ( $\text{CTE}_{it}$ ), the change in net operating loss carryforwards

( $\text{NOL}_{it}$ ) and one-year lagged  $\text{PermDiff}$  ( $\text{LagPerm}_{it}$ ).<sup>22</sup> Each variable including the intercept is

scaled by beginning-of-year total assets.  $\varepsilon_{it}$  is the discretionary permanent difference ( $\text{DTAX}_{it}$ ) for

firm  $i$  in year  $t$ .<sup>23</sup>

## **5.2. Changes in Tax Reporting Aggressiveness Following a Decrease in Book-Tax Conformity and an Increase in Tax Enforcement**

Table 2 reports the descriptive statistics and univariate tests of our measures of tax reporting aggressiveness in the pre-IFRS versus the post-IFRS periods. The results show that tax avoidance significantly decreased in the post-IFRS period according to both  $\text{BTD}$  and  $\text{DTAX}$  (both the mean and median at the 1 and 5 percent levels). Note that, all else being equal, the ITA's refusal to accept IFRS should have resulted in an increase in book-tax differences (either temporary or permanent).

<sup>22</sup> See the comprehensive discussion in Frank *et al.* (2009) on the role of each variable in their  $\text{PermDiff}$  regression model.

<sup>23</sup> Following Frank *et al.* (2009), if minority interests, income from unconsolidated entities, or current state tax expenses are missing either in *Bloomberg's* database or in the financial statements, we set  $\text{MI}$ ,  $\text{UNCON}$ , or  $\text{CTE}$ , respectively, to zero. If goodwill and other intangibles are missing in *Bloomberg's* database, we set the value for  $\text{Intang}$  to zero.

The reduction in both *BTD* and *DTAX* thus implies a change in the reporting behavior of managers after the adoption of IFRS and the resulting decrease in *BTC*. It may be that the impact of the increased tax enforcement outweighed the impact of the reduced *BTC* on the motivation and ability to engage in more aggressive tax planning. We further note that the decline in tax avoidance cannot be attributed to the reduction in the statutory tax rates in Israel during the sample period,<sup>24</sup> as our measures already control for the level of the statutory tax rates in each year. In the multivariate analyses presented below, we control for the level of the statutory tax rates in the regressions of tax avoidance (among other controls for incentives to avoid paying taxes). We include *SRate* as a “second pass” control variable, in case the tax avoidance measures do not perfectly control for the effects of the statutory tax rates on tax reporting aggressiveness. We also do so to check the robustness of our inferences from the univariate analyses that the reduction in tax avoidance measures does not reflect the reduction in tax rates.

[INSERT TABLE 2 ABOUT HERE]

We supplement the univariate analysis with the following multivariate regression model to control for tax planning incentives:<sup>25</sup>

$$(4) \text{TaxAvoidMeasure} = \alpha_0 + \alpha_1 \text{IFRS} + \alpha_2 \text{SRate} + \alpha_3 \text{Size} + \alpha_4 \text{SalesGrowth} + \alpha_5 \text{PTROA} \\ + \alpha_6 \text{Leverage} + \alpha_7 \text{R\&D} + \alpha_8 \text{NumAnalyst} + \alpha_9 \text{NOL} + \alpha_{10} \text{ForInc} \\ + \alpha_{11} \text{PMDA} + \varepsilon$$

The regression is run once with *BTD* and once with *DTAX* as the dependent variable (*TaxAvoidMeasure*). *IFRS* is an indicator variable that equals one for the post-IFRS period, and

---

<sup>24</sup> During the sample period the statutory tax rate in Israel gradually decreased. Statutory tax rates equaled 36% for 2004 and prior tax years, 34% for 2005, 31% for 2006, 29% for 2007, 27% for 2008, 26% for 2009 and 25% for 2010. We control for this decrease throughout our analyses.

<sup>25</sup> We estimate Equation (4) with robust standard errors.

zero otherwise. *SRate* is the statutory corporate tax rate. *Size* is the log of total assets. *SalesGrowth* is the percentage change in annual sales. *PTROA* is pre-tax income divided by lagged total assets. *Leverage* is the ratio of total debt divided by total assets. *R&D* is research and development expenditures divided by lagged total assets. *NumAnalyst* is the number of analysts covering the firm divided by lagged total assets<sup>26</sup>. *NOL* is an indicator variable that equals 1 if net operating loss carryforwards is greater than zero, and 0 otherwise. *ForInc* is an indicator variable that equals 1 if foreign income is not equal to zero, and 0 otherwise. *PMDA* is performance-matched discretionary accruals, our proxy for book earnings management.

We include *PMDA* in equation (4) to account for a possible relationship between book and tax reporting aggressiveness. Size, profitability, growth and leverage are used as controls for incentives for tax planning (e.g., Atwood *et al.*, 2012; Frank *et al.*, 2009; Graham and Tucker, 2006). Additional controls for incentives to tax plan include the presence of net operating loss carryforwards and the existence of foreign operations (e.g., Atwood *et al.*, 2012; Frank *et al.*, 2009). We also add a measure of intangible intensity proxied by investment in *R&D* consistent with Atwood *et al.* (2012)<sup>27</sup> and a measure of analyst following consistent with Frank *et al.*, (2009).

As discussed above, we include the statutory corporate tax rate (*SRate*) in the tax avoidance regressions as a “second pass” control variable. Given that the *DTAX* measure is the residual in a regression that already controls for the level of the statutory tax rate (through the *CTE* variable in regression model (3)), the impact of the inclusion of *SRate* on *DTAX* in regression (4) is potentially eliminated. We also acknowledge that given that the construct of the *BTD* also includes *SRate* (i.e.,

---

<sup>26</sup> Information on the number of analysts covering the firm was extracted from the *Bloomberg Professional* database. Scaling by lagged total assets is consistent with Frank *et al.* (2009).

<sup>27</sup> See also, e.g., Chen *et al.* (2010), Dyreng *et al.* (2008), Hanlon *et al.* (2007), Lisowsky (2010), and McGuire *et al.* (2012).

*SRate* is included in the calculation of *BTD*), the association between *SRate* and *BTD* in regression model (4) may be at least partially mechanical (see also Atwood *et al.*, 2012).

In the regression we also control for industry fixed effects.  $\alpha_1$  represents the direct effect of the changes that occurred after the adoption of IFRS, including the decrease in BTC and the increase in tax enforcement, on tax avoidance, after controlling for various variables that create incentives or are otherwise related to tax planning.

Table 3 Panel A presents the results of the *BTD* and the *DTAX* regressions. In both regressions, the coefficient of *IFRS* is highly significantly negative (-0.091 and -0.025, respectively,  $p < 0.000$ ), implying that the level of tax avoidance in the post-IFRS period is lower than the level that existed prior to the adoption of IFRS. This result is consistent with the findings from the univariate analysis. The results for the other control variables indicate that *BTD* and *DTAX* are significantly positively related to firm size (*Size*), profitability (*PTROA*), and growth (*SalesGrowth*), and significantly negatively related to the number of analysts following the firm (*NumAnalyst*). The relationship between tax avoidance and *R&D* is insignificantly negative, consistent with Atwood *et al.* (2012). Contrary to Frank *et al.* (2009), who found evidence for a positive relationship between *NOLs* and tax avoidance, we find an (in)significantly negative relationship between *NOLs* and *BTD* (*DTAX*). A possible explanation for the negative relationship with *NOL* is that the presence of *NOLs* may reduce the need or motivation for tax avoidance, as these losses are deducted from the annual pre-tax book income when calculating the taxable income. For a sample of Israeli firms selected by the tax authorities for a tax audit, Chen *et al.* (2013b) documented a negative relationship between the presence of *NOL* carryforwards and *BTD*, and a positive relationship between *NOL* carryforwards and the actual additional taxable income determined by the tax authorities for these tax-audited firms. Chen *et al.* suggest that whereas larger offset losses reduce the need or motivation for tax avoidance, firms may offset losses that

are not allowed to be offset as per the tax rules; hence the positive relationship with the additional taxable income determined by the tax authorities.

[INSERT TABLE 3 ABOUT HERE]

The relationship between *BTD* (*DTAX*) and the statutory tax rate, *SRate*, is, as expected, (in)significantly positive. As stated above, the impact of *SRate* is already controlled for in the construct of *DTAX*. As for the relationship with leverage, for both tax avoidance measures it is insignificant. Prior studies provide inconsistent evidence about the relationship between leverage and tax avoidance. While some studies provide evidence suggesting a negative relationship between the two (e.g., Chen *et al.*, 2013b; Graham and Tucker, 2006; Lisowsky, 2010; Wilson, 2009)<sup>28</sup>, others document that leverage is positively associated with tax avoidance (e.g., Atwood *et al.*, 2012; Dyreng *et al.*, 2008; Frank *et al.*, 2009). In addition, in our sample, foreign income (*ForInc*) does not have a significant impact on tax avoidance.<sup>29</sup>

Finally, the results indicate that tax reporting aggressiveness is not directly related to book reporting aggressiveness, as evidenced by an insignificantly negative coefficient on *PMDA* (-0.082 in the *BTD* regression and -0.016 in the *DTAX* regression). We explore the relationship between book and tax reporting aggressiveness further in the next section.

### ***5.3. The Relationship between Book and Tax Reporting Aggressiveness prior to and after a Decrease in Book-Tax Conformity and an Increase in Tax Enforcement***

As Frank *et al.* (2009) suggested, the direction of the causality between book and tax reporting aggressiveness is not obvious. As such, we also run regressions with book earnings management

---

<sup>28</sup> A possible explanation for the negative relationship between leverage and tax avoidance is that tax avoidance and debt have a substitution effect, as both vehicles result in lower taxable income.

<sup>29</sup> Frank *et al.* (2009) also do not find a significant relationship between the existence of foreign income and either earnings management or tax avoidance as measured by *DTAX*. On the other hand, they document a significantly negative relationship between the firm's having foreign income and *BTD*.

(*PMDA*) as the dependent variable and a tax avoidance measure (once with *BTD* and once with *DTAX*) as the independent variable:

$$(5) \text{ } PMDA = \alpha_0 + \alpha_1 \text{ TaxAvoidMeasure} + \alpha_2 \text{ IFRS} + \alpha_3 \text{ Size} + \alpha_4 \text{ SalesGrowth} \\ + \alpha_5 \text{ PTROA} + \alpha_6 \text{ Leverage} + \alpha_7 \text{ R\&D} + \alpha_8 \text{ NumAnalyst} \\ + \alpha_9 \text{ NOL} + \alpha_{10} \text{ ForInc} + \varepsilon.$$

Table 3 Panel B shows the results of Equation (5). In the left (right) column, *BTD* (*DTAX*) is included as an explanatory tax avoidance variable. In both regressions, the coefficient on the tax avoidance measure is insignificant (0.002 on *BTD* and -0.005 on *DTAX*) indicating, again, the lack of a direct relationship between book and tax reporting aggressiveness. Another important result from regression (5) is that the coefficient on our indicator variable *IFRS* is significantly negative (-0.013 and -0.012, respectively, p-0.000). This finding is consistent with Chen *et al.* (2013a) who showed that the pervasiveness of book earnings management in Israel decreased after IFRS was adopted and BTC was reduced.

As for the other control variables, we find that book earnings management is positively related to growth opportunities (*SalesGrowth*, *R&D*) and profitability (*PTROA*), and is negatively related to firm size (*Size*) and to analyst following (*NumAnalyst*). In addition, we find no evidence for a relationship between book earnings management and leverage. A possible explanation for the insignificant impact of leverage may be in the contradictory effects of leverage-created incentives for earnings management on one hand and the external monitoring of creditors, reducing the ability to manage earnings, on the other. Finally, the relationship between the existence of net operating loss carryforwards (*NOLs*) and book earnings management is positive (see also Frank *et al.*, 2009), but for our sample of Israeli firms, this positive relationship is insignificant.

We conduct three additional analyses of the relationship between book and tax reporting

aggressiveness. The tests are conducted separately for the pre-IFRS and the post-IFRS periods. In keeping with Frank *et al.* (2009), we first examine the correlations amongst the measures of book earnings management and tax avoidance. Second, we examine the median values of book earnings management (tax avoidance) by quintile of our tax avoidance (book earnings management) measures. Third, we examine the frequency of firms across each quintile combination of book earnings management and tax avoidance measures.

In Table 4 we show the correlations amongst the measures of book earnings management and tax avoidance. The Pearson correlations (below the diagonal) indicate that *PMDA* is positively correlated with both *BTD* and *DTAX* (0.059 and 0.043, respectively; p-values < 0.05), whereas the corresponding Spearman correlations (above the diagonal) are insignificant (-0.089 and 0.006, respectively).<sup>30</sup> For comparison, using similar measures for a sample of US firms, Frank *et al.* (2009) find higher correlations—and significantly positive ones (p-values < 0.01)—between the book earnings management and the tax avoidance measures, according to both Pearson and Spearman  $\rho$ s.<sup>31</sup> As for the correlation between *BTD* and *DTAX*, we find that both measures of tax avoidance are significantly positively correlated (Pearson  $\rho = 0.194$ ; Spearman  $\rho = 0.267$ ; p-values < 0.01). Moreover, these correlations between *BTD* and *DTAX* are similar to those found in Frank *et al.* (2009). We repeat the correlations analysis separately for the pre-IFRS and the post-IFRS periods. We are interested in whether the relationship between book and taxable earnings management has changed between the two sub-periods. Panel B of Table 4 shows the results for the pre-IFRS period, and Panel C shows the results for the post-IFRS period. In the pre-IFRS period, we find significant positive Pearson correlations between *PMDA* and the two tax

---

<sup>30</sup> The insignificant Spearman correlation between *PMDA* and *BTD* relaxes our concern that the measure of total *BTD* may be spuriously correlated with *PMDA* (given that *BTD* can include pre-tax accrual management; see also the discussion in Frank *et al.* 2009).

<sup>31</sup> Frank *et al.* (2009) find Pearson correlations between *PMDA* and *BTD* (*DTAX*) of 0.068 (0.101) and corresponding Spearman correlations of 0.103 (0.070).

avoidance measures, but insignificant Spearman correlations. In the post-IFRS period, we find a significant positive Pearson correlation only between *PMDA* and *BTD*. The Pearson correlation between *PMDA* and *DTAX* is insignificant, as are the Spearman correlations between *PMDA* and both tax avoidance measures. Thus, in both periods the evidence of a relationship between book and tax reporting aggressiveness is not robust, and is even weaker in the post-IFRS period.<sup>32</sup>

[INSERT TABLE 4 ABOUT HERE]

Table 5 shows the median values for our *PMDA* measure of book earnings management by quintile of each of our tax avoidance measures, *BTD* and *DTAX*, and the median values for each of our tax avoidance measures by quintile of *PMDA*. Panel A (B) of Table 5 shows the values in the pre (post)-IFRS period. In the pre- as well as in the post-IFRS periods, we do not find evidence of a consistent pattern in the behavior of tax avoidance measures by quintile of book earnings management, nor do we find a consistent pattern in the behavior of book earnings management by quintile of tax avoidance measures. Finally and consistently, examining the frequency of firms across each quintile combination of *PMDA&BTD* and *PMDA&DTAX*, we do not identify any pattern that could indicate a relationship between book and tax reporting aggressiveness in the pre- or post-IFRS periods (untabulated).

[INSERT TABLE 5 ABOUT HERE]

In all, the various univariate analyses, together with the multivariate analyses, imply that the two types of earnings manipulation—for book and for tax purposes—were not materially related prior to the adoption of IFRS and remained unrelated after IFRS adoption and the resulting decrease in BTC. This finding is consistent with our H2 and H3.

---

<sup>32</sup>As stated, for a sample of Israeli firms that the tax authorities determined had understated their earnings to avoid taxes prior to the adoption of IFRS, Chen *et al.* (2013b) present evidence showing that book and taxable earnings management were not materially related in either private or public firms.



#### ***5.4. Robustness Tests***

As the actual amounts of book earnings management and tax avoidance are not publicly available, studies (including ours) compensate for the lack of essential information by using financial statement information such as accounting accruals, tax expenses and/or differed taxes to estimate or project earnings management and tax avoidance. Hence, the research in this field usually uses proxies rather than the real figures for book earnings management and tax avoidance, a compromise that may have a substantial effect on the results and the inferred conclusions (see, e.g., McGill and Outslay, 2004; Plesko, 2007). Moreover, the very choice of a measurement for this proxy may affect the conclusions of a study; a study that is based on one measure may provide different results from a study that is based on another measure.<sup>33</sup> In our study, the two tax avoidance measures provide consistent results. Notwithstanding, we conduct various sensitivity tests to examine the robustness of our results with regard to different specifications (results not tabulated).

We begin with two sensitivity tests that Frank *et al.* (2009) performed on their *DTAX* measure. In the first test, lagged permanent differences (*LagPerm*), which are controlled for in the construct of *DTAX* (to control for the possibility that firms engage in similar tax planning from year to year (Equation (3))), are extracted from the computation of *DTAX*. Frank *et al.* explain that controlling for *LagPerm* "...removes some amount of tax aggressiveness from our measure" (p. 488). Their results from the removal of *LagPerm* indicate that their *DTAX* (which controls for *LagPerm*) is a conservative measure of tax aggressiveness. When we apply the sensitivity test of removing the control for lagged permanent differences in the computation of *DTAX*, our inferences remain unchanged. Specifically, we find a statistically significant reduction in the modified *DTAX* measure in the post-IFRS period. Furthermore, the relationship between the modified *DTAX* measure and

---

<sup>33</sup> See also Dechow *et al.* (2010) and Hanlon and Heitzman (2010).

book earnings management is insignificant.

In the second test, we add controls for the level and/or change in temporary book-tax differences to regression models (4) and (5) to account for tax avoidance activities that generate temporary (rather than permanent) differences (Frank *et al.*, 2009; Wilson, 2009). Our inferences remain unchanged.

For our third sensitivity test, we repeat our entire analyses using alternative measures of book earnings management and tax avoidance from the literature. By employing different accepted measures from the literature, we obviate the risk of a measure-drawn conclusion. Prior studies (e.g., Geiger *et al.*, 2005; Kothari *et al.*, 2005) advocate the use of a non-empirical measure of book earnings management in addition to the discretionary accruals measure to address empirical concerns regarding the Jones model. We use two alternative non-empirical measures: (1) total accruals on a pre-tax basis (*TA*) scaled by lagged assets (see also, e.g., De Franco *et al.*, 2011; Jones *et al.*, 2008) and (2) Blaylock *et al.*'s (2012) magnitude-of-accruals measure calculated as the absolute value of the firm's accruals divided by the absolute value of the firm's cash flow from operations. While less specific, these parsimonious measures avoid many of the criticisms associated with the use of abnormal accruals. As an alternative measure of tax avoidance, we use Atwood *et al.*'s (2012) measure (*TaxAvoid*):

$$(6) \quad TaxAvoid_{i,t} = \frac{[\sum_{t-2}^t (PTEBX * SRate)_{i,t} - \sum_{t-2}^t CTP_{i,t}]}{\sum_{t-2}^t PTEBX_{i,t}}$$

where *PTEBX* is pre-tax earnings before extraordinary items, *SRate* is the statutory corporate income tax rate and *CTP* is current taxes paid calculated as current tax expense minus the change in deferred taxes.<sup>34</sup> Each element in the equation is computed as a sum over a three-year period.<sup>35</sup>

Use of these alternative measures of book earnings management and tax avoidance does not alter our inference that following IFRS adoption, tax avoidance declined with the decrease in BTC and the increase in tax enforcement. In addition, the relationship between each book earnings management and Atwood *et al.*'s (2012) tax avoidance measure is insignificant both before and after IFRS adoption.

### **5.5. Discussion**

Our results provide evidence that one of the primary alleged costs of decreasing BTC—more aggressive tax reporting—may be avoided. In our setting, the scrutiny of the tax authority over tax planning increased in the same year as the decrease in BTC. Even with wider areas of book-tax nonconformity offering managers an opportunity to increase book earnings management as well as tax avoidance in the same reporting period, there was no evidence of such behavior in our companies. On the contrary, managers reduced their reporting aggressiveness for both financial and tax purposes.

The lack of robust evidence of a relationship between book and tax reporting aggressiveness, either before or after the change in BTC, is consistent with the contrasting findings in the literature

---

<sup>34</sup> Current tax expenses and the change in deferred taxes were collected manually from the firms' financial statements. When current tax expense is missing, we replace it with total tax expense less deferred taxes (when available). Following Atwood *et al.* (2012), we delete observations where current tax expense as well as total tax expense or deferred taxes are missing.

<sup>35</sup> Similar to our approach, in their study, Atwood *et al.* (2012) used a broad definition of tax avoidance, which is "the reduction in explicit taxes paid." Atwood *et al.* indicate that their measure is, in effect, in the spirit of measuring tax avoidance using cash ETRs (i.e., taxes actually paid divided by pretax income; see Dyreng *et al.*, 2008). The measure requires three years of positive pretax earnings before extraordinary items (*PTEBX*). Dyreng *et al.* (2008) show that long-term tax avoidance measures (five-year and ten-year) are less variable and more predictable than one-year measures. In accordance with Atwood *et al.*, we compute a three-year measure because this time period is adequate for reducing the effects of items that reverse in just one year, but is not as limiting to our sample size as a five-year window.

regarding the relationship between BTC and book reporting aggressiveness on one hand and that with tax reporting aggressiveness on the other. Based on the findings presented in this study, and supported by findings from the recent literature, we suggest that the two types of reporting manipulations should be addressed separately. We propose this notion as an alternative approach to the view that increasing the level of BTC is the one remedy for dealing with (or reducing) *both* book and tax reporting manipulations. Whereas book reporting aggressiveness seems to decline under lower—not higher—levels of BTC, tax reporting aggressiveness increases under lower levels of BTC. However, stronger tax enforcement seems to reduce tax reporting aggressiveness even with low levels of BTC. Thus, rather than taking a radical step such as a transition to book-tax alignment, increasing the level of scrutiny in a setting of a low level of BTC may be sufficient for regulators attempting to reduce corporate reporting malfeasance.

In summary, an important practical implication of our research is that increased tax enforcement may offset the primary cost of reducing BTC—increased tax reporting aggressiveness. Thus, a combination of two regulatory approaches—trust and control—seems to be complementary in achieving higher quality earnings in the books on one hand, and in the tax reports on the other. Our conclusion is supported by the recent literature linking behavioral theories to regulatory policies. These recent studies have challenged the view of trust and control as substitutes and suggested the two may be applied simultaneously. Moreover, according to these studies, trust and control in regulatory policies may even reinforce each other, by encouraging moral commitment and a sense of civic responsibility among regulatees (see, e.g., Das and Teng, 1998; Mollering, 2005; Rupp and Williams, 2011; Weibel, 2007).

## **6. Concluding Remarks**

This study provides insight into the debate on the impact of the level of BTC on the incentives

for and opportunities to manipulate book earning and/or taxable earnings, as well as on the trade-off between the two. Our investigation takes place in a unique setting where the level of BTC declined due to the adoption of IFRS and the unacceptability of the new accounting rules by the tax authorities, whereas the level of tax enforcement increased. As such, our research should be useful to tax and accounting policymakers in evaluating proposed tax and accounting reforms. In particular, it should help them determine whether such reforms will encourage or deter tax avoidance and book earnings management. Specifically, in the US, proposals for reforms include the substantial transition from book-tax nonconformity to full alignment between tax and accounting rules on one hand and the increase in tax enforcement laws on the other. We provide evidence that tax avoidance declined after the decrease in BTC and the concomitant increase in tax enforcement. We also find that book earnings management and tax avoidance were not related under the moderate level of BTC that existed in Israel during the pre-IFRS period as well as under a significantly lower level of BTC that existed after the adoption of IFRS. An important inference from our study is that, rather than full book-tax alignment, increased tax enforcement should be the focus of regulators in low-BTC countries attempting to reduce corporate reporting malfeasance. Moreover, rather than choosing one (strict) regulatory approach to deal with two different types of reporting manipulations, a combination of trust and control is shown to be more effective.

## References

- Atwood, T.J, Drake, M.S., Myers, J., and Myers, L.A. (2012), “Home country tax system characteristics and corporate tax avoidance: International evidence“, *The Accounting Review*, Vol. 87 No. 6, pp. 1831-1860.
- Atwood, T.J., Drake, M.S. and Myers, L.A. (2010), “Book-tax conformity, earnings persistence and the association between earnings and cash flows”, *Journal of Accounting and Economics*, Vol. 50 No. 1, pp. 111–125.
- Avi-Yonah, R., 2010. *Testimony before the House Ways and Means Committee* (July 22).
- Badertscher, B., Phillips, J., Pincus, M., and Rego, S. (2009), “Earnings management strategies: To conform or not to conform“, *The Accounting Review*, Vol. 84, pp. 63-98.
- Ball, R., Robin, A., and Wu, J. (2003), “Incentives versus standards: Properties of accounting income in four East Asian countries“, *Journal of Accounting and Economics*, Vol. 36, pp. 235-270.
- Blaylock, B., Shevlin, T., and Wilson, R. (2012), “Tax avoidance, large positive temporary book-tax differences and earnings persistence“, *The Accounting Review*, forthcoming.
- Burgstahler, D.C., and Eames, J.E. (2003), Earnings management to avoid losses and earnings decreases: Are analysts fooled?“ *Contemporary Accounting Research*, Vol. 20 No 2, pp. 253-294.
- Chan, K., Lin, K., and Mo, P. (2010), “Will a departure from tax-based accounting encourage tax noncompliance? Archival evidence from a transition economy“, *Journal of Accounting and Economics*, Vol. 50, pp. 58-73.
- Chen, E., Gavigous, I., and Haran, U. (2013a), *The Impact of the Degree of Book-Tax Conformity on Financial Reporting Aggressiveness: A Behavioral Perspective*. Working Paper, Ben Gurion University.
- Chen, E., Gavigous, I., and Yosef, R. (2013b), “The relationship between the management of book income and taxable income under a moderate level of book-tax conformity”, *Journal of Accounting, Auditing and Finance*, Vol. 28 No. 4, pp. 323-347.
- Chen, S., Chen, X., Cheng, Q., and Shevlin, T. (2010), “Are family firms more tax aggressive than non-family firms?“ *Journal of Financial Economics*, Vol. 95, pp. 41-61.
- Cloyd, B.C. (1995), “The effects of financial accounting conformity on recommendations of tax preparers“, *The Journal of American Taxation Association*, Vol. 17 No. 2, pp. 50-70.
- Das, T. K., and Teng, B.-S. (1998), “Between trust and control: Developing confidence in partner cooperation in alliances“, *The Academy of Management Review*, Vol. 23 No. 3, pp. 491–512. doi:10.2307/259291
- Dechow, P., Ge, W., and Schrand, C. (2010), “Understanding earnings quality: A review of the proxies, their determinants and their consequences“, *Journal of Accounting and Economics*, Vol. 50, pp. 344-401.
- De Franco, G., Gavigous, I., Jin, J., and Richardson, G.D. (2011), “Do private company targets that hire Big4 auditors receive higher proceeds?“ *Contemporary Accounting Research*, Vol. 28 No.

1, pp. 215-262.

Department of the Treasury (DOT). (2011), *General Explanations of the Administrations Fiscal Year 2012 Revenue Proposals* (February).

Desai, M.A. (2003), “The divergence between book and tax income”, in J. M. Poterba (ed.) *Tax Policy and the Economy*, Vol. 17, MIT Press: Cambridge, MA, pp. 169-206.

Desai, M.A. (2005), “The degradation of reported corporate profits”, *Journal of Economic Perspectives*, Vol. 19, pp. 171-192.

Desai, M.A. (2006), *Reform alternatives for the corporate tax*. Testimony before the U.S. House of Representatives Committee on Ways and Means, Subcommittee on Select Revenue Measures, Corporate Tax Reform public hearing, Washington, DC (May 9).

Desai, M.A., and Dharmapala, D. (2006), “Corporate tax avoidance and high powered incentives”, *Journal of Financial Economics*, Vol. 79, pp. 145-179.

Dyreg, S., Hanlon, M., and Maydew, E. (2008), “Long-run corporate tax avoidance“, *The Accounting Review*, Vol. 83, pp. 61-82.

Erickson, M., Hanlon, M., and Maydew, E. (2004), “How much will firms pay for earnings that do not exist? Evidence of taxes paid on allegedly fraudulent earnings”, *The Accounting Review*, Vol. 79 No. 2, pp. 387-408.

Frank, M.M., Lynch, L.J., and Rego, S.O. (2009), “Tax reporting aggressiveness and its relation to aggressive financial reporting”, *The Accounting Review*, Vol. 84 No. 2, pp. 467–496.

Geiger, M.A., North, D.S., and O'Connell, B.T. (2005), “The auditor-to-client revolving door and earnings management“, *Journal of Accounting, Auditing and Finance*, Vol. 20, pp. 1-26.

Graham, J., and Tucker, A. (2006), “Tax shelters and corporate debt policy“, *Journal of Financial Economics*, Vol. 81, pp. 563-594.

Hali, L., Leuz, C., and Wysocki, P. (2010), “Global accounting convergence and the potential adoption of IFRS by the U.S.: An analysis of economic and policy factors”, *Accounting Horizon*, Vol. 24 No. 3, pp. 567-588.

Hanlon, M. (2005), “The persistence and pricing of earnings, accruals, and cash flows when firms have large book-tax differences“, *The Accounting Review*, Vol. 80 No. 1, pp. 137-166.

Hanlon, M., and Heitzman, S. (2010), “A Review of tax research“, *Journal of Accounting and Economics*, Vol. 50, pp. 127-178.

Hanlon, M., Krishnan, G., and Mills, L. (2009), *Do auditors use the information reflected in book-tax differences?* Working paper, MIT.

Hanlon, M., Laplante, S., and Shevlin, T. (2005), “Evidence for the possible information loss of conforming book income and taxable income“, *Journal of Law and Economics*, Vol. 48, pp. 407-442.

Hanlon, M., Maydew, E., and Shevlin, T. (2008), “An unintended consequence of book-tax conformity: A loss of earnings informativeness“, *Journal of Accounting and Economics*, Vol. 46, pp. 294–311.

- Hanlon, M., Mills, L., and Slemrod, J. (2007), “An empirical examination of corporate noncompliance“, In *Taxing Corporate Income in the 21st Century*. A. J. Auerbach, J. R. Hines, Jr., and J. Slemrod eds., Chapter 5, pp. 171-210.
- Hanlon, M., and Shevlin, T. (2005), “Book-tax conformity for corporate income: an introduction to the issues“, *The National Bureau of Economic Research, Tax Policy and the Economy*, Vol. 19, pp. 101-134.
- Hines, J. (2011), *Testimony before the House Ways and Means Committee* (July 22).
- Hulfbauer, G.C. (2011), *Testimony before the House Ways and Means Committee* (July 22).
- Income Tax Ordinance Amendment No. 188*. Israel Income Tax Authority 2012. <http://oknesset.org/committee/meeting/5428/>
- ITA guidance No. 07/2010. <http://ozar.mof.gov.il/taxes/docs/hor0710.pdf>.
- Joint Committee on Taxation (JTC) (2006), *Present law and background relating to corporate tax reform: Issues of conforming book and tax income and capital cost recovery* (May 8), [www.jtc.gov/](http://www.jtc.gov/), Publication JCX-16-06.
- Jones, J. (1991), “Earnings management during import relief investigations“, *Journal of Accounting Research*, Vol. 29, pp. 193-228.
- Jones, K., Krishnan, G., and Melendrez, K. (2008), “Do models of discretionary accruals detect actual cases of fraudulent and restated earnings? An empirical analysis“, *Contemporary Accounting Research*, Vol. 25 No. 2, pp. 499-531.
- Keener, B. (2011), Press Release: “Business Leaders Join Sen. Levin to Support New Stop Tax Haven Abuse Act Targeting \$100 billion in Lost Revenues Each Year From Offshore Tax Dodges” (July 12). <http://businessagainsttaxhavens.org>.
- Kothari, S.P., Leone, A.J., and Wasley, C.E. (2005), “Performance matched discretionary accrual measures“, *Journal of Accounting and Economics*, Vol. 39, pp. 163-197.
- Kvaal, E., and Nobes, C. 2012. *On the definition and measurement of book-tax conformity*, Working Paper, University of London.
- Lang, M., Lins, K.V., and Maffett, M. (2012), “Transparency, liquidity, and valuation: International evidence“, *Journal of Accounting Research*, Vol. 50 No. 3, pp. 729-774.
- Lisowsky, P. (2010), “Seeking shelter: empirically modeling tax shelters using financial statement information“, *The Accounting Review*, Vol. 85 No. 5, pp. 1693-1720.
- Manzon, G.B., and Plesko, G.A. (2002), “The relation between financial and tax reporting measures of income“, *Tax Law Review*, Vol. 55, pp. 175-214.
- Markevich, A., Shaw, L., and Weihs, H. (2010), *An Analysis of the Impact of Conversion from National Accounting Standards to International Financial Reporting Standards: The Case of Israel*. Working paper, Suffolk University.
- McGill, G., and Outslay, E. (2004), “Lost in translation: Detecting tax shelter activity in financial statements“, *National Tax Journal*, Vol. 57 No. 3, pp. 739-756.
- McGuire, S.T., Omer, T.C., and Wang, D. (2012), “Tax avoidance: Does tax-specific industry expertise make a difference?” *The Accounting Review*, Vol. 87 No. 3, pp. 975-1003.



- Mills, L.F. (1998), “Book-tax differences and Internal Revenue Service adjustments“, *Journal of Accounting Research*, Vol. 36, pp. 343 - 356.
- Mollering, G. (2005), “The trust/control duality: An integrative perspective on positive expectations of others“, *International Sociology* Vol. 20 No. 3, pp. 283–305. doi:10.1177/0268580905055478
- Phillips, J., Pincus, M., and Rego, S. (2003), “Earnings management: new evidence based on deferred tax expense“, *The Accounting Review*, Vol. 78, pp. 491-521.
- Plesko, G.A. (2000), Evidence and theory on corporate tax shelters, in *Proceedings of the Ninety-Second Annual Conference*, (Washington D.C.: National Tax Association – Tax Institute of America), 367-371.
- Plesko, G. (2006), *Testimony before the Committee on Finance*, U.S. Senate (June 13).
- Plesko, G. (2007), *Estimates of the Magnitude of Financial and Tax Reporting Conflicts*, University of Connecticut School of Business.
- Plesko, G.A., and Shumofsky, N. (2004), “Reconciling corporations' book and taxable income, 1995 – 2001”, *SOI Bulletin*, Winter 2004-2005 (Washington DC: US Government Printing Office), pp. 103-108.
- Rossotti, C. (2006), *Testimony before the Senate Committee on Finance*, September 20, 2006.
- Rupp, D., and Williams, C. (2011), “The efficacy of regulation as a function of psychological fit: Reexamining the hard law/soft law continuum“, *Theoretical Inquiries in Law*, Vol. 12 No. 2, pp. 581–602.
- Schon, W. (2005), “The odd couple: A common future for financial and tax accounting”, *Tax Law Review*, Vol. 58 No. 2, pp. 111-148.
- Shackelford, A.D., and Shevlin, T. (2001), *Empirical Tax Research in Accounting*, Working paper, University of North Carolina and NBER.
- Shackelford, D. (2006), *Testimony before the Subcommittee on Select Revenue Measures of the House Committee on Ways and Means* (May 9).
- Sullivan, M. (1999), “Shelter fallout? Corporate taxes down, profits up“, *Tax Notes*, Vol. 84 No. 5, (Aug 2), pp. 653-657.
- US Department of the Treasury. (1999), *The problem of corporate tax shelters: discussion, analysis and legislative proposals*. U.S. Government Press, Washington, D.C.
- Weibel, A. (2007), “Formal control and trustworthiness: Shall the twain never meet?” *Group and Organization Management*, Vol. 32 No. 4, pp. 500–517. doi:10.1177/1059601106293961
- Weisbach, D.A. (2002), “Ten truths about tax shelters“, *Tax Law Review*, Vol. 55, pp. 215 - 253.
- Whitaker, C. (2005), “How to build a bridge: Eliminating the book-tax gap“, *The Tax Lawyer*, Vol. 59 No. 4, pp. 981-1020.
- Whitaker, L. (2006), “Forecasting the resurgence of the U.S. economy in 2010: An expert

judgment approach”, *Socio-Economic Planning Sciences*, Vol. 44 No. 3, pp. 114-121.

Wilson, R. (2009), “An examination of corporate tax shelter participants“, *The Accounting Review*, Vol. 84, pp. 969-999.

**TABLE 1: Descriptive statistics**

This table provides descriptive statistics for our sample of 508 Israeli public companies listed on the Tel Aviv Stock Exchange that have been fully compliant with IFRS since 2007. The sample includes 3,816 firm-year observations. Extreme values (top and bottom 1%) of continuous variables are winsorized.

\*\*\*, \*\*, and \* denote significance at the 1%, 5% and 10% (two-tailed) levels, respectively.

Variable	Mean	Median	Std. Dev.
<i>Size</i>	4.230***	4.178***	2.047
<i>Sales Growth</i>	0.255***	0.080***	1.212
<i>Leverage</i>	0.348***	0.343***	0.255
<i>R&amp;D intensity</i>	0.068***	0.000*	0.617
<i>PTROA</i>	-0.155***	0.040**	1.364
<i>NOL</i>	0.394***	0	0.488
<i>OwnershipCon</i>	0.643***	0.716***	0.246

**Variable Definitions:**

*Size* is the log of total assets. *SalesGrowth* is the percentage change in annual sales. *Leverage* is the ratio of total debt divided by total assets. *R&D intensity* is research and development expenditures divided by lagged total assets. *PTROA* is pre-tax income divided by lagged total assets. *NOL* is an indicator variable that equals 1 if net operating loss carryforwards is greater than zero, and 0 otherwise. *OwnershipCon* is the share ownership of managers, directors and 5% or greater beneficial owners.

**TABLE 2: Univariate analysis of the difference in tax reporting aggressiveness between the pre- and the post-IFRS periods**

This table presents a univariate analysis of the difference between the means and the medians of our tax avoidance measures in the pre- versus the post-IFRS periods. *BTD* is the discrepancy between the pre-tax book income and the taxable income deflated by lagged total assets. Taxable income is calculated as per Hanlon *et al.* (2005). *DTAX* is Frank *et al.*'s (2009) discretionary permanent differences measure, estimated by the residuals from model (3) where book-tax permanent differences are regressed on nondiscretionary items known to cause permanent differences as well as other controls unrelated to tax avoidance activities.

\*\*\*, \*\*, and \* denote significance at the 1%, 5% and 10% (two-tailed) levels, respectively.

	<i>BTD</i>	<i>DTAX</i>
<b>Pre-IFRS</b>		
Mean	0.082	0.027
Median	0.004	0.018
Std. Dev.	0.530	0.112
No. of Obs.	1,717	1,717
<b>Post-IFRS</b>		
Mean	-0.089	0.007
Median	0.000	0.015
Std. Dev.	0.535	0.095
No. of Obs.	2,099	2,099
<b>Difference</b>		
Mean	-0.171***	-0.020***
Median	-0.004***	-0.003**

**TABLE 3: Multivariate regression analyses of the impact of change in book-tax conformity on reporting aggressiveness**

This table presents the results from regressing the tax (book) reporting aggressiveness measures on several explanatory variables, including an indicator variable for the IFRS period, and on our book (tax) reporting aggressiveness measures. Panel A presents results of estimating specifications of:

$$TaxAvoidMeasure = \alpha_0 + \alpha_1 IFRS + \alpha_2 SRate + \alpha_3 Size + \alpha_4 SalesGrowth + \alpha_5 PTROA + \alpha_6 Leverage + \alpha_7 R\&D + \alpha_8 NumAnalyst + \alpha_9 NOL + \alpha_{10} ForInc + \alpha_{11} PMDA + \varepsilon$$

and Panel B presents results of estimating specifications of:

$$PMDA = \alpha_0 + \alpha_1 TaxAvoidMeasure + \alpha_2 IFRS + \alpha_3 Size + \alpha_4 SalesGrowth + \alpha_5 PTROA + \alpha_6 Leverage + \alpha_7 R\&D + \alpha_8 NumAnalyst + \alpha_9 NOL + \alpha_{10} ForInc + \varepsilon.$$

*TaxAvoidMeasure* is either *BTD* or *DTAX* as defined in Table 2. *IFRS* is an indicator variable that equals one for the post-IFRS period, and zero otherwise. *ForInc* is an indicator variable that equals 1 if foreign income is not equal to zero, and 0 otherwise. *Size*, *SalesGrowth*, *PTROA*, *Leverage*, *R&D*, *NumAnalyst* and *NOL* are as defined in Table 1. *PMDA* is performance-matched modified Jones model discretionary accruals. Performance matching is as per Kothari *et al.* (2005). \*\*\*, \*\*, and \* denote significance at the 1%, 5% and 10% (two-tailed) levels, respectively.

**Panel A: Regressions of measures of tax avoidance on *IFRS*, *PMDA* and other controls**

	Dependent Variable	
	<i>BTD</i>	<i>DTAX</i>
<i>Intercept</i>	0.044***	0.033***
<i>IFRS</i>	-0.091***	-0.025***
<i>SRate</i>	0.061**	0.042
<i>Size</i>	0.007**	0.003**
<i>SalesGrowth</i>	0.001***	0.001**
<i>PTROA</i>	0.331***	0.110***
<i>Leverage</i>	0.003	0.000
<i>R&amp;D</i>	-0.070	-0.057
<i>NumAnalyst</i>	-0.195***	-0.136***
<i>NOL</i>	-0.098***	-0.011
<i>ForInc</i>	-0.005	0.006
<i>PMDA</i>	-0.082	-0.016
Adj. R-squared	0.182	0.146
No. of Obs.	3,816	3,816

**TABLE 3: Continued****Panel B: Regressions of *PMDA* on *IFRS*, measures of tax avoidance and other controls**

	<b>Independent Variable Tax Avoidance=<i>BTD</i></b>	<b>Independent Variable Tax Avoidance=<i>DTAX</i></b>
<i>Intercept</i>	0.101***	0.091***
<i>TaxAvoidance</i>	0.002	-0.005
<i>IFRS</i>	-0.013***	-0.012***
<i>Size</i>	-0.039***	-0.024***
<i>SalesGrowth</i>	0.001***	0.001***
<i>PTROA</i>	0.104***	0.124***
<i>Leverage</i>	0.000	0.000
<i>R&amp;D</i>	0.519***	0.568***
<i>NumAnalyst</i>	-0.106**	-0.077**
<i>NOL</i>	0.004	0.006
<i>ForInc</i>	0.001	0.000
Adj. R-squared	0.154	0.157
No. of Obs.	3,816	3,816

**TABLE 4: Correlations between measures of book and tax reporting aggressiveness**

This table presents the Spearman (above the diagonal) and Pearson (below the diagonal) correlations between the book earnings management measure (*PMDA*) and the tax avoidance measures (*BTD* and *DTAX*). Panel A presents the correlations for the entire sample period (pre- as well as post-IFRS periods). Panel B shows the correlations for the pre-IFRS period, and Panel C shows the correlations for the post-IFRS period. *BTD* and *DTAX* are as defined in Table 2. *PMDA* is as defined in Table 3.

\*\*\*, \*\*, and \* denote significance at the 1%, 5% and 10% (two-tailed) levels, respectively.

**Panel A: Pre- & post-IFRS periods**

	<i>PMDA</i>	<i>BTD</i>	<i>DTAX</i>
<i>PMDA</i>		-0.089	0.006
<i>BTD</i>	0.059**		0.267***
<i>DTAX</i>	0.043**	0.194***	

**Panel B: Pre-IFRS period**

	<i>PMDA</i>	<i>BTD</i>	<i>DTAX</i>
<i>PMDA</i>		-0.088	-0.024
<i>BTD</i>	0.065**		0.624***
<i>DTAX</i>	0.073**	0.196***	

**Panel C: Post-IFRS period**

	<i>PMDA</i>	<i>BTD</i>	<i>DTAX</i>
<i>PMDA</i>		-0.079	0.095
<i>BTD</i>	0.151***		0.196**
<i>DTAX</i>	0.037	0.114***	

**TABLE 5: Distribution of median values of book (tax) reporting aggressiveness across quintiles of tax (book) reporting aggressiveness**

*BTD* and *DTAX* are as defined in Table 2. *PMDA* is as defined in Table 3.

**Panel A: Pre-IFRS period**

		<b>Q1</b>	<b>Q2</b>	<b>Q3</b>	<b>Q4</b>	<b>Q5</b>
<i>PMDA</i>	<i>BTD</i>	0.011	0.010	-0.005	0.004	0.005
<i>Quintiles</i>	<i>DTAX</i>	0.015	0.012	0.019	0.012	0.021
		<b>Q1</b>	<b>Q2</b>	<b>Q3</b>	<b>Q4</b>	<b>Q5</b>
<i>BTD</i>	<i>PMDA</i>	0.100	-0.136	0.119	-0.111	-0.046
<i>Quintiles</i>						
		<b>Q1</b>	<b>Q2</b>	<b>Q3</b>	<b>Q4</b>	<b>Q5</b>
<i>DTAX</i>	<i>PMDA</i>	-0.112	0.153	-0.122	0.003	0.200
<i>Quintiles</i>						

**Panel B: Post-IFRS period**

		<b>Q1</b>	<b>Q2</b>	<b>Q3</b>	<b>Q4</b>	<b>Q5</b>
<i>PMDA</i>	<i>BTD</i>	0.000	-0.002	0.000	0.001	0.000
<i>Quintiles</i>	<i>DTAX</i>	0.013	0.025	0.018	0.014	0.017
		<b>Q1</b>	<b>Q2</b>	<b>Q3</b>	<b>Q4</b>	<b>Q5</b>
<i>BTD</i>	<i>PMDA</i>	-0.045	-0.117	0.017	-0.110	0.009
<i>Quintiles</i>						
		<b>Q1</b>	<b>Q2</b>	<b>Q3</b>	<b>Q4</b>	<b>Q5</b>
<i>DTAX</i>	<i>PMDA</i>	-0.040	-0.002	0.011	-0.118	-0.006
<i>Quintiles</i>						