

**The Relationship between the Management of Book Income and Taxable Income:
An Empirical Analysis of Private versus Public Firms**

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Abstract: Our research breaks new ground by investigating financial and tax reporting manipulations in private versus public firms. Using our access to non-public information, including the documented tax returns and income tax assessments of Israeli firms that engaged in tax avoidance activity, we find evidence suggesting that taxable income management is not related to book income management. While our sample firms understated earnings for tax purposes, they did *not* overstate book earnings. Furthermore, whether a firm is public or private has no effect on book earnings management or on tax planning. Interestingly, we find that Big4 auditors do not have a significant impact on the quality of reported earnings. Given that Big4 auditors are more identified with public firms, our finding of no auditor effect may provide at least a partial explanation as to why private and public firms do not differ in accounting and tax reporting manipulations. Israel represents a unique setting due to its 'intermediate' level of book-tax conformity—higher than that in the US but lower than that in European countries such as the UK. As such, the evidence that tax avoiding firms avoid book income management when the tax rules are not fully aligned with the accounting rules implies that managers do not necessarily take advantage of the ability to manage both book income and taxable income at the same time, even if areas of nonconformity between accounting and tax rules allow them to do so. Another important practical implication of our findings is that the call in the US for a substantial transition from book-tax nonconformity into full alignment to reduce managers' opportunistic (reporting) behavior may be radical, as a diminution in the divergence between the tax and the accounting rules may suffice.

Keywords: *earnings management; accruals; tax planning; tax shelters; tax avoidance; book-tax differences; financial reporting manipulations; tax reporting manipulations.*

The Relationship between the Management of Book Income and Taxable Income: An Empirical Analysis of Private versus Public Firms

I. Introduction

In the past decade, revelations of high-profile accounting frauds and aggressive tax planning involving large US firms such as Enron, followed by the criminal indictment of Arthur Andersen (a Big 5 accounting firm at that time), led to a drop in investors' confidence in firms' financial reporting (e.g., Jain et al. 2003; Rezaee 2004; Jain and Rezaee, 2006). While the Securities and Exchange Commission (SEC) has focused its attention on preventing accounting frauds, the Treasury Department has focused on detecting and prosecuting pervasive tax shelter activity (tax evasion) (e.g., Frank et al. 2009).

Our research investigates financial manipulations in financial statements, for tax purposes and the relationship between the two. Particularly, we break new ground by comparing these manipulations in private firms and public firms. Throughout the analyses, we examine whether and how auditor choice (Big4 vs. Non-Big4¹) affects the manipulations in private firms, in public firms, and in private firms compared with public firms. Private firms are a critically important aspect of the economy. There is, however, a dearth of knowledge about private firms, in general, and financial fraud in these firms in particular, mainly due to the lack of access to sufficient information required to study these firms (i.e., data about private firms is not available in the public domain).

¹ We use "Big4 auditor" throughout the paper to refer to the largest international accounting firms that existed during our sample period of 1994 to 2007. Prior to 1998, there were Big 6 accounting firms, which became the Big 5 in 1998 when Price Waterhouse merged with Coopers & Lybrand to form PricewaterhouseCoopers. In 2002, after revelations of massive accounting frauds conducted by firms audited by the Arthur Andersen accounting firm (e.g., Enron and Global Crossing), the Big 5 became the Big4 when Arthur Andersen ceased to exist as an entity.

The study takes advantage of a unique data set that includes non-public information on private as well as public companies that the tax authorities have determined have manipulated taxable income downward through tax planning that may or may not be considered fraudulent tax evasion.² The non-public information includes the private firms' financial statements, private and public firms' tax returns as well as the documented income tax assessments conducted by the tax authorities for each firm. As this data is not available to the public or for research purposes, studies thus far have compensated for the lack of essential information by focusing on public firms and using the tax expenses and/or the differed taxes presented in their financial statements to estimate or project tax planning. Hence, these studies used proxies rather than the real figures for tax planning, a compromise that may have a substantial effect on the results and the inferences drawn. Plesko (2007) finds evidence consistent with the possibility that the use of financial statement data to proxy for actual tax-related information may bias the results.³ McGill and Outslay (2004) detail the limitations of using only financial statements in detecting tax shelter activity.

Our access to this rare data provides us with an opportunity to conduct a variety of univariate and multivariate analyses of the differences in the management of book earnings reported to shareholders versus taxable earnings reported to the tax authorities, in private firms versus public firms. The tests are designed to account for differences between private and public firms, as well as for accrual drivers and factors affecting tax planning. Measures of book earnings management are based on prior literature and

² Lisowsky (2010) explains that tax minimization can be conceptualized as a continuum, from avoidance to sheltering. Tax sheltering is the most severe form of tax aggressiveness as it involves transactions that are prohibited by the IRS.

³ According to Plesko (2007), "...many important corporate tax attributes cannot be inferred from publicly-available financial reporting information...".

include empirical measures (discretionary accruals measures based on the modified Jones (1991) model as well as performance-matched abnormal accruals based on Kothari et al. (2005)) and non-empirical measures (non-operating accruals based on Givoly and Hayn (2000) as well as total accruals). Measures of tax planning are based on actual data about (1) book-tax differences (*BTD*) calculated as the discrepancy between the pre-tax book income and the taxable income (before loss carryforwards) reported in the tax return, and (2) additional taxable income (*ATI*), which is the discrepancy between the final taxable income determined by the tax authorities and the taxable income (after loss carryforwards) reported by the firm in the tax return. While in the literature the *BTD* is considered to be a better measure of tax planning than alternative measures that are based solely on data drawn from financial statements, one needs to bear in mind that book-tax gaps may be due to factors other than tax avoidance (Desai 2003; Desai and Dharmapala 2006, 2009; Plesko 2007). In contrast, the *ATI* is a *direct* measure of the firm's tax avoidance as determined by the tax authorities in the firm's final tax assessment. We refer to the *BTD* and to the *ATI* as *ex-ante* and *ex-post* measures of tax planning, respectively.

Our sample consists of 156 Israeli firms (101 private and 55 public) that engaged in tax avoidance activity at least one year during the time period of 1994 to 2007⁴. The Israeli case is particularly interesting in the context of tax reporting manipulations because during the sample period it did not represent an extreme case of either a high

⁴ Our sample period does not extend beyond 2007 since in 2008 the accounting environment in Israel has changes due to the adoption of IFRS. Prior to the adoption of IFRS, Israeli firms generally used the Israeli GAAP, which was mainly influenced by the accounting principles generally accepted in the USA (US GAAP). The Internal Revenue Service (IRS) in Israel did not accept the use of IFRS for tax purposes, giving formal approval to the use of two sets of accounting rules for reporting since 2008, one for book purposes (IFRS) and the other for tax purposes (Israeli GAAP). The immediate impact has been an increase in the book-tax gap. In future research we seek to take advantage of this unique setting of a change in conformity between book and tax reporting rules and assess managers' behavior under different levels of book-tax conformity in the same country.

degree of book-tax conformity (such as in the UK)⁵ or a low degree of book-tax conformity (such as in the US); rather, the Israeli case combined, or fell between the two approaches.⁶ In practice, accounting principles were employed to determine tax profits of Israeli firms if the tax laws did not offer a specific treatment for the specific case.⁷ In the US, there is an ongoing debate in the tax literature and among policymakers regarding the conformity between income measures for book and tax purposes and its impact on the quality of reported earnings (e.g., Guenther et al., 1997 and Hanlon et al., 2008). The general notion is that nonconformity between financial accounting and tax rules enables firms to manage book income *and* taxable income in the same reporting period, whereas under book-tax conformity firms make trade-offs between their financial and tax reporting decisions (e.g., Hanlon 2005; Plesko 2007; Badertscher et al. 2009; Frank et al. 2009). Over the past decade an increasing disparity has developed between the two systems, leading to calls in the US for mandatory book-tax conformity in order to reduce tax and accounting reporting aggressiveness (e.g., Desai, 2006; Frank et al., 2009; Atwood et al., 2010). Israel, representing an intermediate case of book-tax conformity, offers an opportunity to examine whether tax avoiding firms avoid book income management even when areas of nonconformity between accounting and tax rules allow them to manage both book income and taxable income at the same time (since the tax rules are not fully aligned with the accounting rules). In such a case, a call for a *substantial* transition from

⁵ European countries in general have historically had a much higher degree of book-tax conformity than the US (see e.g., Harris et al. 1994).

⁶ In practice, all else being equal, the *BTD* in Israel would fall between the *BTD* in the UK and that in the US.

⁷ 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.

nonconformity into full alignment may be radical, as a diminution in the divergence between the tax and the accounting rules may suffice.

Our study shows that in both private and public firms, taxable income management is not related to book income management. While our sample firms understated earnings for tax purposes, they did *not* overstate book earnings. Furthermore, we do not find a direct impact of the firm being private versus public (or vice versa) on book earnings management or on tax planning. While we find evidence that the *BTD* is significantly larger for private firms than for public firms, a multivariate analysis of the firms' *ATI* indicates that after controlling for the impact of factors such as size, growth, profitability and the identity of the auditor, the impact of private versus public on *ATI* is insignificant. Hence, our *ex-post* measure of tax planning indicates that tax reporting aggressiveness, in effect, is not *directly* affected by the firm being private versus public, implying that the differences in the *BTD* between private and public firms do not reflect tax avoidance activity.

The finding that private firms are no different from public firms in tax and book manipulations is interesting and somewhat surprising. While both private and public firms have motives for tax planning to reduce the tax burden, the motives for book earnings management are different since, compared to public firms, private firms have significantly less demand for financial statement information by users in general. For example, in contrast to public firms, private firms are not obligated to fulfill regulatory and exchange requirements (e.g., filing prospectuses and financial statements), and analysts and journalists are less likely to follow and/or write reports about these firms. Hence, on one hand, private firms are seemingly less motivated to manage book earnings;

however, on the other hand, the accounting systems of private firms are more likely to be primitive and internal controls as well as external monitoring to be weaker (see De Franco et al. 2008, 2011) implying that the quality of earnings could be lower. Due to opposing effects of factors related to the quality of reported book—as well as taxable—earnings described in the article, we do not make a prediction in the study with respect to the differences in book earnings management and tax planning of private and public firms.

Another intriguing finding of our study is with respect to the lack of auditor effect. In our analyses, we do not find evidence that the size or reputation of the accounting firm has an impact on our book earnings management and tax planning measures, except for *ATI*. At the outset, larger and more reputable accounting firms are able to provide their clients with more sophisticated, evasive techniques for earnings management—for book as well as for tax purposes. These techniques may make it more difficult for the authorities and other stakeholders to uncover the manipulations. Alternatively, these reputable auditors may choose to constrain aggressive and/or opportunistic financial reporting in order to reduce the risk of litigation and to protect their brand name reputation (e.g., Becker, DeFond, Jiambalvo and Subramanyam 1998; Khurana and Raman 2004). Our results imply that the Big4 auditors in our sample avoided book earnings management. Moreover, we do not find a direct impact of Big4 auditors on *BTD*. On the other hand, we find a significant positive relationship between the size of the audit firm and *ATI* implying either that Big4 auditors were involved in tax planning or that they were not but the tax assessor, when dealing with the tax reports of a Big4 auditee, is at the outset, more suspicious of tax sheltering activity and this suspicion

affects the assessment, resulting in higher *ATIs*. Given that in our sample, 85 percent of the public firm-years were audited by a Big4 auditor compared with 44 percent of the private firm-years, the finding of no auditor effect may provide at least a partial explanation as to why the differences in book earnings quality between private and public firms were not robust. This may also provide a possible explanation for the counter-intuitive finding that the *BTD* is lower for public firms.

Finally, the findings of our study indicate that managers do not necessarily take advantage of the ability to manage both book income and taxable income at the same time, even if areas of nonconformity between accounting and tax rules allow them to do so. While Frank et al. (2009) show that under book-tax nonconformity in the US there is a significant positive relationship between tax reporting aggressiveness and financial reporting aggressiveness, our results imply that with a lower degree of nonconformity—such as in Israel—managers' behavior changes considerably. It seems that managers consider the book-tax trade-offs not only when book-tax alignment compels them to decide which earnings measure to manage, but even when tax rules are not fully aligned with the accounting rules. This conclusion is consistent with the general expectation that a 'smart' manager will refrain from biasing taxable income downwards and book income upwards at the same year, as a large gap between book and taxable income is bound to draw the attention of the tax authority.

The research contributes to the existing literature in a number of dimensions. First, the rare data used in the analyses adds great value to the information documented in this empirical paper. To the best of our knowledge, no other academic study thus far has had access to such a data set. Second, this study is the first to extend the analysis to

private firms. As noted earlier, private firms are a critically important aspect of the economy representing a fairly similar portion of the business activity as do public firms in the modern capital markets. Our research will be of direct relevance to investors and other users of financial statements, auditors, financial analysts, tax authorities and regulators. All of these parties are interested in the detection of firms' motives for and engagement in earnings manipulation. For example, to make informed decisions, investors in public firms as well as investors in private firms are presumably interested in whether accounting aggressiveness implies that the firm also engages in aggressive tax reporting, and vice versa. In addition, the SEC and the IRS need this information to evaluate whether additional costs should be invested in improving the quality of earnings reports and preventing the loss of tax revenues, respectively. Moreover, investors, the SEC and the IRS are interested in whether, and to what extent, Big4 auditors have an impact on the degree of financial and/or tax reporting aggressiveness, particularly given that private (public) firms are less (more) likely to be audited by Big4 auditors. Regulators and accounting standard setters are interested in the extent to which nonconformity between accounting and tax rules affects managers' decisions with respect to managing earnings in both financial and tax reports concomitantly. Finally, the potential improvement in our knowledge about the differences between private firms and public firms is of importance in general, and with respect to issues of earnings quality and the relationship between financial and tax reporting aggressiveness in particular.

Our paper proceeds as follows. Section 2 reviews prior research and develops our hypotheses. Section 3 describes our sample. Section 4 discusses our research methods

and results for each of the three research questions, while Section 5 summarizes and concludes.

II. Prior Research and Hypotheses Development

In the first phase of the study we focus on book earnings management. We investigate the existence and extent of book earnings management in private versus public firms that were found by the tax authorities to have managed their taxable income downward. Private firms differ from public firms in a number of dimensions. One clear difference between private and public firms is in the liquidity of the firms' shares, given the (in)ability to trade shares of public (private) firms on an exchange. As private firms are not listed on an exchange, they are not obligated to fulfill the regulatory and exchange requirements of public companies. Furthermore, private firms undergo minimal monitoring by outsiders (e.g., analysts and journalists). Seemingly, as private firms' financial information is 'private', they have less incentive to manipulate this information. However, there are contrasting effects for this privacy which potentially reduce the quality of private firms' earnings. First, private firms are less likely to face sanctions or publicly disclosed investigations by exchanges or regulatory agencies (e.g., SEC) if they report incorrect or misleading information. Second, private firms' accounting systems are more likely to be primitive and internal controls to be weaker (see De Franco et al. 2008). Third, private firms are less likely than public firms to be audited by a Big4 auditor. The auditing literature has documented the role of large audit firms in enhancing the quality of book earnings (e.g., Francis et al. 1999; Khurana and Raman 2004). For example, Francis et al. (1999) show that firms audited by larger audit firms have smaller amounts

of estimated abnormal accruals.⁸ A main incentive for large audit firms to provide higher quality audits is to reduce the risk of litigation and to protect their brand name reputation (DeAngelo 1981; Becker et al. 1998; De Franco *et al.* 2011).⁹ The one study that thoroughly examined the question of the effect of Big4 auditors on *private* firms is that of De Franco et al. (2011). According to De Franco *et al.*, private firms are less likely to engage a Big4 auditor, so the quality of external monitoring will be lower for private firms. They document that choosing a Big4 auditor has a substantial effect on the sale proceeds of the controlling interests of private US firms. Nonetheless, they find only modest evidence that Big4 auditors constrain income-increasing accruals.

Fourth, in addition to being audited by less reputable auditors, private firms are also generally less leveraged than public firms. The literature indicates that financial leverage can also serve as a proxy for earnings quality as it captures creditors' demand for high-quality and conservative financial information. Creditors may monitor the firm and its accrual process, reducing information asymmetries and leading to firms reporting high-quality and conservative earnings (e.g., Fama 1985; Berlin and Loeys 1988; Khan and Watts 2007). Thus, if private firms have less leverage than public firms, the quality of external monitoring is once again expected to be lower for private firms. In contrast, private firms, who sell shares privately through private placements to avoid the costs of going public, may have to tolerate large external shareholders who monitor them too closely (e.g., Pagano and Roell, 1998).

⁸ Consistent with these findings, other studies have found that firms audited by larger audit firms have a lower cost of debt (Mansi, Maxwell, and Miller 2004; Pittman and Fortin 2004) and higher initial returns after equity issuances (Willenborg 1999).

⁹ Clarkson and Simunic (1994) argue that large audit firms will avoid companies with higher risk cash flows (i.e., lower quality earnings). Indeed, Khurana and Raman (2004) show that larger audit firms are associated with a lower *ex ante* cost of equity capital.

Given the opposing affects of different factors related to the quality of reported earnings, we do not make a prediction regarding the differences in book earnings management in private versus public firms. Particularly, our sample firms operated in an environment where the tax and the accounting systems were not fully aligned but nor diverged strongly. In such a setting, it is difficult to predict managers' tax and financial reporting choices. This study, *inter alia*, aims to shed light on this issue.

In the second phase of the study, we examine whether and how tax planning in private firms differs from that in public firms. Both private and public firms seek to reduce their tax burden. However, given the structural differences between these firms, their considerations about tax planning and the techniques employed to minimize the tax burden are expected to differ. First, as private firms do not publish their financial statements, they face less trade-off in their decisions about financial and tax reporting. That is, a private firm will be less constrained in managing book earnings downward to minimize taxes (e.g., Ball and Shivakumar 2005). In contrast, Mills and Newberry (2001) indicate that private firms will more likely conform book and tax rules, reducing the size of the *BTD* for a given tax position, whereas public firms have higher non-tax costs and thus report higher *BTDs*. Second, in comparison to private firms, public firms are larger with structures and transactions that are more complex and sophisticated (e.g., using legal structures outside the country). At the outset, the greater complexity and sophistication of public firms is expected to make it harder for the tax assessor to detect tax manipulations than the simpler manipulations conducted by private firms. Prior studies have shown that tax shelter utilization is positively related to the size and profitability of a company, as well as the presence of subsidiaries located in tax havens, foreign-source income,

litigation losses, the use of promoters (suppliers, marketers and financiers of tax shelters) and inconsistent book-tax treatment (Wilson 2009; Lisowsky 2010).¹⁰ All of these factors are more pronounced in public firms than in private firms. Furthermore, public firms are generally consulted by larger and more reputable accounting firms; however, the impact of auditors on tax reporting aggressiveness is not explicit. On the one hand, Big4 auditors are able to provide more sophisticated techniques for tax evasion and have more tools and resources to justify the tax reports of their auditees to tax and legal authorities. On the other hand, there is the consideration of more reputable auditors to reduce the risk of litigation and to protect their brand name reputation. What is more, auditors' considerations may be affected by the degree of book-tax conformity. Van Tendeloo and Vanstraelen (2008) indicate that differences in audit quality between Big4 and Non-Big4 auditors exist only in countries with a high degree of book-tax conformity, such as the case of the UK. According to Van Tendeloo and Vanstraelen, when the tax law is in conformity with accounting principles financial statements are scrutinized more by the tax authorities; in this setting Big4 auditors have an incentive to provide higher quality audits in order to reduce the possibility that an audit failure will be detected. However, for private UK firms, Van Tendeloo (2008) found that in firms audited by a Big4 auditor, the tax burden was lower, implying that Big4 auditors did assist their clients in reducing the tax burden more than did smaller audit firms.

The discussion above leads us to believe that, while we expect that both private and public firms have a motive to reduce the tax burden, the difference in tax planning between private and public firms is, in effect, unpredictable. Our hypothesis (in alternate

¹⁰Rego (2003) reports evidence suggesting that the scale of international operations leads to more tax avoidance opportunities, resulting in lower GAAP ETRs. Lisowsky (2010) further shows that tax shelter likelihood is negatively related to leverage. We find consistent results.

form) is thus,

H1: *Ceteris paribus, the book-tax difference (BTD) is positive in private firms as well as in public firms.*

The *BTD* is the discrepancy between the pre-tax book income and the taxable income (before loss carryforwards) reported in the tax return. A positive *BTD* implies an understatement of earnings for tax purposes. Prior studies have indicated that the *BTD* captures elements of tax avoidance. For example, Wilson (2009) finds that the *BTD* is greater for firms that were caught using tax shelters¹¹ than for a matched sample of firms that were not caught. Lisowsky (2010) finds a strong positive relation between tax shelter usage and total *BTD* (see also Wilson 2009), but no significant association between tax shelter usage and either discretionary permanent *BTD* or long-run cash effective tax rates—other proxies for tax avoidance used in prior research. Desai (2003) indicates the increasing *BTD* over the 1990s as evidence of aggressive tax reporting.

While studies have shown that *BTD* is associated with tax avoidance, book-tax gaps may be due to factors other than tax avoidance. First, in countries where the tax rules are not fully aligned with the accounting rules, *BTD* would be different than zero due to the fact that, while some aspects of reporting may be identical under both reporting systems (e.g., cash sales with no right of return), others are disparate (e.g., non-qualified stock options; see Plesko 2007).¹² Furthermore, *BTD* may also reflect book earnings management (i.e. overstatement of book income; see Desai and Dharmapala 2009). Desai

¹¹ Tax shelter firms in the studies of Wilson (2009), Graham and Tucker (2006) and others generally refers to firms that the government has accused of tax sheltering (i.e., firms involved in tax shelter cases against the US government) or firms that were served by the IRS with a Notice of Deficiency related to an alleged tax shelter (see also, Frank et al. 2009).

¹² Another example of legitimate book-tax gaps is the divergence between the book income and the taxable income that results from tax laws that are aimed at encouraging firms to increase their capital investments (Capital Investment Encouragement Law), for example, through accelerated depreciation.

(2003) finds that only half of *BTDs* are explained by their known, measurable determinants (international operations, stock options and depreciation accounting) and suggests that the unexplained portion is therefore consistent with tax sheltering activity. Thus, in addition to *BTD*, which we refer to as our *ex ante* measure for tax planning, we also use an *ex post* measure—the Additional Taxable Income (*ATI*) determined for the firms by the tax authorities. In comparison to the widely used *BTD*, *ATI* is a direct and substantially more accurate measure of tax planning, as it captures the final amount of tax avoidance as determined by the authorities following an assessment of the firm's tax reports. Thus far, *ATI* has not been used in studies of tax reporting manipulations due to the lack of availability of this information.

Prior research argues that firms with a large *BTD* will face greater scrutiny from regulators (e.g., Cloyd 1995; Mills 1998; Badertscher et al. 2009). Hence, if the *BTD* is larger, then a stricter audit by the tax authorities may lead to a higher *ATI*. As we do not make a prediction about the differences between private and public firms with regard to *BTD*, we refrain from making a prediction about the differences in *ATI* based on this conjecture.

In the third phase of the study, we explore the relationship between book earnings management and tax planning in private firms alone, in public firms alone, and in private firms versus public firms. The relationship between accounting principles and tax laws plays an important role in a firm's financial and tax reporting. On one hand, under a high degree of book-tax conformity, corporate taxes are calculated based on book earnings. Such a situation could, in effect, create incentives for managing earnings downwards to reduce tax payments (e.g., Ball et al. 2003). Shackelford and Shevlin (2001) review

empirical tax research in accounting¹³ documenting that, given the trade-offs firms face in their decisions about financial and tax reporting, they generally choose between reporting lower taxable income to the tax authorities *or* higher earnings to shareholders. For that matter, as stated above, the trade-off is less severe for private firms if they manage book earnings downward to minimize taxes (e.g., Ball and Shivakumar 2005). On the other hand, when there is an increasing book-tax gap, a firm is able to manage taxable income (downward) without impacting book earnings (e.g., Weisbach 2002; McGill and Outslay 2004). Other studies suggest that the discretion available in accounting principles allows book earnings management without affecting taxable income (e.g., Phillips et al. 2003; Hanlon 2005). Notably, if firms with a large *BTD* face greater scrutiny from regulators (e.g., Cloyd 1995; Mills 1998; Badertscher et al. 2009) and auditors (e.g., Hanlon and Krishnan 2006), they may choose to avoid being aggressive in both financial and tax reporting at the same time even under book-tax nonconformity (see also Frank et al. 2009). Notwithstanding, Frank et al. (2009) document a strong positive relationship between aggressive book earnings management (manipulating income upward) and aggressive tax reporting (manipulating taxable income downward) for US firms. Frank et al.'s results are consistent with Desai (2005), who provides systematic evidence that financial reporting and tax reporting have degraded in quality due to the dual reporting system.

We point out that our study differs from the recent study of Frank et al.' (2009) in a number of ways. First, Frank et al. use proxies for tax reporting aggressiveness, whereas we use the actual *BTDs* as well as the final *ATI* determined by the tax authority

¹³ An additional study that reviews tax research is that of Hanlon and Heitzman (2010) who, in addition to tax research in accounting, also review tax research in economics and finance "to the extent that it is related to or is affected by research in accounting".

for each firm-year. Second, our analyses use a sample of firms actually accused by the tax authorities of having understated earnings for tax evasion, while Frank et al.'s analysis is based on a sample of firms whose measures of tax reporting aggressiveness *predict* that they engaged in tax sheltering activity. Notably, Frank et al.'s proxies for tax reporting aggressiveness were constructed based on an analysis of a relatively small sample of 25 firms (78 firm-years) identified by Graham and Tucker (2006) as engaging in tax shelter transactions.¹⁴ Our sample of firms accused by the authorities of tax avoidance is larger, consisting of 313 firm-year observations. Third, we use Israeli firms, whereas Frank et al. used US firms. Naturally, these firms operate in a different environment, in markets that differ in size, regulations, business culture, etc. Moreover, the level of book-tax conformity during the sample period is higher in Israel compared with the US.

Overall, the literature provides mixed evidence about a company's ability or motivation to engage in aggressive tax (financial) reporting in concomitance with aggressive financial (tax) reporting. Notably, with an intermediate degree of book-tax conformity, it is even more difficult to form a prediction with respect to the relationships between financial and tax reporting manipulations.

III. Data

The study takes advantage of rare data obtained for a sample of 156 Israeli firms—55 public¹⁵ and 101 private—that the tax authorities determined had manipulated their taxable income downward through tax planning that may or may not be considered fraudulent tax evasion. Specifically, for all firms, the final taxable income as per the tax

¹⁴ Frank et al. (2009) choose their proxies for tax reporting aggressiveness based on an analysis that shows which measures best predict tax shelter activity.

¹⁵ The public firms are traded on the Tel Aviv Stock Exchange.

assessor was higher than the taxable income reported by the firms in their tax returns. We point out that each public (private) firm in our sample remained public (private) throughout the entire sample period (i.e., firms do not "switch" between the two subsamples). In all, we obtain a sample of 469 firm-years that manipulated taxable income downward at least one year during the time period of 1994 to 2007.¹⁶ We lose 156 firm-year observations when, consistent with prior studies, we scale our earnings management measures by lagged total assets, resulting in 313 (156 private and 157 public) firm-years with sufficient data necessary for our analyses. Furthermore, consistent with earnings management literature, our database does not include financial and utility firms that are "subject to more complex earnings-management incentives due to regulation or other factors" (Burgstahler and Eames 2003). To mitigate the effect of extreme values, we winsorize extreme observations for all variables (top and bottom 1%). We winsorize outliers instead of deleting them to conserve data. The results do not change qualitatively when outliers are deleted.

We manually collected information from the firms' financial statements, their tax returns and the documented income tax assessments that we obtained from the firms' files at the tax authorities. Given that the focus of our study is on firms that were found by the authorities to have understated their taxable income, we acknowledge that the results may not be generalized to the broader population. We further point out that a data set for a study that is based on cases of firms identified as, or accused of, tax avoidance is, at the outset, relatively small (for example, the sample in Graham and Tucker, 2006 consisted of 43 public firms, *including* utilities and financial services firms; the sample of tax shelter firms in Frank et al., 2009 that was based on Graham and Tucker's data set

¹⁶ firms generally manipulated their taxable income downward for two to three consecutive years. The.

consisted of 25 public firms only). Hence, our sample size is fairly large, particularly given Israel's relatively small market. Finally, as stated, Israel represents an interesting case in terms of its tax and accounting environment. While some countries tend to align tax profits with book profits and others seek to make tax profits diverge from book profits, Israel combines or falls in between the two approaches. As for the accounting environment in Israel during the sample period, it also represents a combination of the US and the international standards; unless US GAAP has been employed,¹⁷ International Accounting Standards were applicable.

Table 1 contains descriptive statistics for our sample of private and public firms. The two samples differ in a number of ways. As expected, the private firms are much smaller than the public firms in all financial measures. For example, the median total assets of private (public) firms is 21 (375.9) million NIS, their median sales is 23.6 (234.2) million NIS and their median *EBITDA* is 1.8 (28.6) million NIS.¹⁸ In comparison to private firms, public firms have better growth prospects and have performed better. The median private (public) sales growth, measured as the percentage change in annual sales, is 8 (10) percent. Private firms' profitability as measured by *Profit Margin*, *ROA* and *ROE* is lower [9 (12), 8 (9) and 12 (16) percent, respectively]. Private firms also generally demonstrate innate characteristics associated with lower earnings quality and weaker external monitoring. For example, private firms are smaller, have lower financial leverage and are less likely to be audited by a Big4 auditor. The median private (public) firms' leverage is 10 (16) percent of total assets. In addition, 44 (85) percent of private (public) firms, respectively, are audited by a Big4 auditor. Median working capital (scaled by total

¹⁷ During the sample period, Israeli GAAP was mainly influenced by the accounting principles generally accepted in the USA.

¹⁸ During the sample period, FX rate was in the range of 3 to 3.8 new Israel shekels (NIS) per \$1 US.

assets) for private (public) firms is 0.10 (0.15), which suggests that private firms have less liquidity. The differences between the private firms and the public firms are significant at the 1% level.

Insert Table 1 about Here

IV. Research Methods and Results

In the three subsections that follow, we present our tests followed by a discussion of the results.

Book Earnings Management

Tests. We seek to establish the existence (or non-existence) of differences between private and public firms with regard to book earnings management. We employ two empirical and two non-empirical measures used in the literature to proxy for book earnings management. These measures include (1) Discretionary Accruals based on the modified Jones (1991) model; (2) Performance-Matched Abnormal Accruals based on Kothari et al. (2005); (3) Total Accruals; and (4) Non-Operating Accruals based on Givoly and Hayn (2000). Hereafter these measures are named for short *DA*, *PMA*, *TA* and *NOA*, respectively. The measures are calculated for the public and the private firms separately.

The discretionary accruals component of reported earnings is proxied by unexpected accounting accruals identified by the widely applied modified Jones (1991) model:

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

where TA is total accruals, ΔREV is the change in revenues from the previous year, ΔAR is the change in accounts receivable, and $GPPE$ is gross fixed assets. Each variable, including the intercept, is deflated by beginning-of-year total assets. The residual in this model (ε) is the measure of unexpected – discretionary – accruals (our DA). We estimate the regression by industry and fiscal year.¹⁹ As private firms are not obligated to prepare a statement of cash flows, and most of our private firms chose not to, rather than calculating total accruals as net income minus cash flows from operations, we employ an alternative calculation used in prior studies (e.g., Dechow et al. 1995; Raman and Shahrur 2008):

$$TA = \Delta CA_t - \Delta CL_t - \Delta Cash_t + \Delta STD_t - Dep_t \quad (2)$$

where ΔCA is the change in current assets, ΔCL is the change in current liabilities, $\Delta Cash$ is the change in cash and cash equivalents, ΔSTD is the change in debt included in current liabilities and Dep is depreciation.

We estimate our second measure of earnings management, PMA , by adding a proxy for performance – return on assets (ROA) – as an independent variable in the modified Jones model. This approach is in keeping with Kothari et al. (2005), and consistent with other prior studies (e.g., Raman and Shahrur 2008).²⁰ Kothari et al. (2005) explain that earnings management is related to firm performance and therefore the impact of performance on accruals should be accounted for when estimating abnormal

¹⁹ The sample firms were classified into four industries, based on the industry classification of the Israeli Securities Authority: Trading and Services, Real Estate, High-Technology Industries, and Low-Technology Industries.

²⁰ Additional independent variables used in previous studies to augment the modified Jones model include book-to market ratio and cash flows from operations (e.g., Larcker and Richardson 2004). Both of these variables are unavailable for our sample of private firms.

(discretionary) accruals. The residual in this augmented Jones model is the measure of abnormal earnings management as per Kothari et al.²¹

Previous studies (e.g., Geiger et al. 2005; Kothari et al. 2005) also advocate the use of non-empirical measures in addition to the discretionary accruals to address empirical concerns regarding the Jones model. The non-empirical measures that we employ are *TA* (see also, e.g., Jones et al. 2008; De Franco et al. 2011) and *NOA* (e.g., Geiger et al. 2005; Givoly 2009). Based on Givoly and Hayn (2000), *NOA* are calculated as net income plus depreciation and amortization, minus cash flows from operations, minus operating accruals. Again, given that cash flows from operations are unavailable for the private firms in our sample, we use Eq. (2) to compute net income minus cash flows from operations. Operating accruals are defined as: Δ Accounts Receivables + Δ Inventories + Δ Prepaid Expenses - Δ Accounts Payable - Δ Taxes Payable. To control for size effects, we scale *TA* and *NOA* by beginning-of-year total assets, consistent with the scaling of the modified Jones model. *NOA* consist primarily of such items as losses and bad debt provisions, asset write-downs, gains/losses on the sale of assets, restructuring charges, accrual and capitalization of expenses, the effect of changes in estimates, and deferrals of revenue and their subsequent recognition (Givoly and Hayn 2000). Given that *NOA* include items that are under the discretion of management (in terms of timing and/or estimation of recorded amounts), they are used to indicate whether firms actively engage in earnings manipulation.

We first examine univariate differences between private firms and public firms in each of our four earnings management measures. We supplement the univariate analysis

²¹ According to Kothari et al. (2005), "Firms classified as having abnormally high or low levels of earnings management are those that manage more than would be expected given their level of performance".

with a multivariate analysis that controls for accrual drivers such as size, growth and profitability, given the differences between private and public firms shown in Table 1. Specifically, we pool private and public firms and regress each of the four accrual metrics on size, ROA (excluded when using the performance matched accrual measure), sales growth, leverage, and auditor's size and reputation:²²

$$(3) \text{ Accrual Measure} = \alpha_0 + \alpha_1 \text{ Public} + \alpha_2 \text{ Size} + \alpha_3 \text{ SalesGrowth} + \alpha_4 \text{ ROA} + \alpha_5 \text{ Leverage} + \alpha_6 \text{ Big4Auditor} + \varepsilon.$$

Public is an indicator variable that equals one if the firm is public and zero otherwise. *Size* is the log of total assets. *SalesGrowth* is the percentage of change in annual sales. *ROA* is *EBITDA* divided by total assets, and *Leverage* is the ratio of total liabilities less current liabilities to total assets. *Big4Auditor* equals one if the auditor is a Big4 audit firm and zero otherwise. α_1 represents the direct effect on accrual quality of the firm being public rather than private, after controlling for other accrual drivers.

Insert Table 2 about Here

Results. Panel A of Table 2 presents the univariate differences between our private and public firm samples in measures of book earnings management. Both empirical measures – *DA* and *PMA* – are not significantly different from zero for the private as well as the public firm samples.²³ A comparison between the two groups of firms shows no difference between the mean and the median of *DA* and *PMA*. On the other hand, both non-empirical measures – *TA* and *NOA* – present evidence of less-

²² Additional variables that create incentives for book earnings management include: growth opportunities (proxied by market-to-book ratio), pressure from sell-side analysts (proxied by the number of analysts covering the firm), changes in cash flows from operations and achieving certain earnings thresholds (e.g., that the firm's actual earnings are higher than the median analysts' forecasts) (see, Frank et al. 2009). We do not control for these earnings management incentive variables because they are not viable for private firms.

²³ Frank et al. (2009) explain that the empirical measures of earnings management generally hover near zero because they are residuals of cross-sectional regressions.

negative accruals for private firms than for public firms.²⁴ Specifically, the mean (median) *TA* for private and public firms are -1.3 (-1.9) and -4.6 (-2.2) percent of total assets, respectively. The mean (median) *NOA* for private and public firms are -0.7 (-1.3) and -2.5 (-2.7) percent of total assets, respectively. Notably, *TA* as well as *NOA* for the private firms is insignificant, but for the public firms, both the mean and the median are significantly negative. Nonetheless, the differences between private and public firms are statistically significant only for the median *NOA*.

The inconsistency between the results obtained for non-empirical measures versus empirical measures is supported by prior studies that raised concerns about the discretionary accrual measures, advocating the use of non-empirical measures in addition to the empirical measures (e.g., Geiger et al. 2005 and Kothari et al. 2005; Jones et al. 2008). Jones et al. (2008) conduct a comprehensive evaluation of "the ability of the popular discretionary accruals models to detect extreme cases of earnings management". They find that discretionary accrual measures have no incremental contribution beyond total accruals—"a low-cost alternative to discretionary accruals"—in detecting earnings

²⁴ De Franco et al. (2011) provide evidence of less negative accruals (both total and abnormal) for private versus public acquisition targets. Erickson and Wang (1999) also find that abnormal accruals are not significantly positive for public targets.

management.²⁵ Notably, like us, Jones et al. do not use a random sample, but focus instead on actual cases of fraudulent earnings reports.²⁶

Panel B of Table 2 presents the results from the multivariate analysis of the differences between the private and public firms in the four accrual measures (columns (1) to (4)). The coefficients on the controls for accrual drivers are significant, except for the Big4 auditor indicator, and with the expected sign, consistent with the directions documented in prior research.²⁷ For each one of the four regressions, the coefficient on *Big4Auditor* is negative as expected but, as stated, insignificant (see also, De Franco et al. 2011). In other words, after controlling for other accrual drivers, the impact of a Big4 auditor on accrual quality is insignificant. The results also suggest that, after controlling for other accrual drivers, there is no difference in abnormal, total and non-operating accruals across the private and public firms. The coefficients on the public dummy of -0.064, -0.023, -0.078 and -0.013 are not reliably different from zero. This finding that private and public firms do not differ in earnings management may be related to Big4 auditors—who generally audit public firms—not having a significant impact on earnings

²⁵ Jones et al. (2008) find that only accrual estimation errors, estimated from cross-sectional models of changes in working capital on past, present and future cash flows (Dechow and Dichev 2002), and the McNichols (2002) modification of Dechow and Dichev (2002) have incremental explanatory power over total accruals for both smaller and larger fraudulent events. Our sample is comparable to the smaller fraudulent events in Jones et al.'s study. Due to unavailability of information on operating cash flow in our private firm sample, we were unable to employ Dechow and Dichev's and McNichols' models of accrual estimation errors. We contend that our results are not due to the incompatibility of the Jones (1991) model with a sample of Israeli firms, as the conclusions of Jones et al. (2008) and others were based on a sample of US firms.

²⁶ Jones et al. (2008) focused on book earnings management and hence they used a sample of firms that were charged by the SEC with having committed fraud by overstating earnings.

²⁷ We do not form expectations with respect to the sign and significance of the coefficient on leverage. Leverage may have a bi-directional impact on a firm's ability or motivation to manage earnings. On one hand, a leveraged firm may be motivated to manage earnings upwards if it wishes to appear solvent for current as well as future or potential debtors, or to manage earnings downwards if it is in financial distress and seeks to relax debt constraints. On the other hand, creditors may be monitoring the firm and its accrual process. If the management expects that the creditors will want to transact with firms that have high-quality, conservative earnings, all else being equal, the motivation is to avoid earnings management.

management. Additional opposing effects of internal and external firm monitoring described in Section 2 may also explain why, eventually, private and public firms do not differ in the quality of their reported book earnings.

In all, we find no evidence of income-increasing management (i.e., earnings overstatement, which is the most common type of earnings fraud (e.g., Jones et al., 2008)) in either group of firms. A possible implication of the findings presented in this subsection is that earnings manipulation for tax purposes is not related to book earnings manipulation. The tax authorities had determined that all of our sample firms understated their earnings for tax purposes. At the same time, however, and using the same auditors²⁸, they seem to have reported their book earnings in accordance with accepted accounting principles, or even more conservatively (particularly the public firms). Given that the tax rules in Israel are not fully aligned with the accounting rules, managers were not compelled to entirely avoid managing book earnings upwards in order to reduce tax payments. We investigate this issue further in the following subsections.

Tax planning

Tests. We explore the differences between private and public firms with regard to *BTD* and *ATI* using univariate as well as multivariate tests. In the multivariate models we include independent variables that are expected to affect tax planning. Following previous studies (e.g., Graham and Tucker 2006; Plesco 2007; Frank et al. 2009), we control for the effect of profitability, size, the presence of loss carryforwards, leverage and book earnings management (the level as well as the sign of the accruals measure) in

²⁸ For all of our sample firms, the auditors of the financial statements were also the ones preparing the tax returns. During the sample period, there was a partial implementation of SOX in Israel. Implementation of the requirement that tax-consulting services be separated from auditing services (that is, the firm's auditor cannot provide tax consulting) was first implemented in 2008.

the regressions. We add *Big4Auditor* and *SalesGrowth* as additional explanatory variables, and control for industry and year fixed effects. For the *ATI* regression, we also add *BTD*. As prior research argues that firms with large *BTDs* face greater scrutiny from regulators, *ATI* may be positively correlated with *BTD*.

$$(4) \quad BTD = \alpha_0 + \alpha_1 Public + \alpha_2 Size + \alpha_3 SalesGrowth + \alpha_4 ROA + \alpha_5 Leverage + \alpha_6 TA + \alpha_7 TAsign + \alpha_8 LossCarryforwards + \alpha_9 Big4Auditor + \varepsilon.$$

$$(5) \quad ATI = \alpha_0 + \alpha_1 Public + \alpha_2 Size + \alpha_3 SalesGrowth + \alpha_4 ROA + \alpha_5 Leverage + \alpha_6 TA + \alpha_7 TAsign + \alpha_8 LossCarryforwards + \alpha_9 BTD + \alpha_{10} Big4Auditor + \varepsilon.$$

TAsign is an indicator variable that equals one if total accruals are positive and zero otherwise. Our results are robust to the use of other accrual measures as well.²⁹ All other variables are as defined in regression model (3). Each variable, including the intercept, is scaled by lagged total assets.

Insert Table 3 about Here

Results. Panel A of Table 3 presents the results from the univariate tests. *BTD* is, as expected, highly significantly positive for both private and public firms (mean (median) 11.7 (4.3) percent and 5.1 (4.3) percent of total assets, respectively). Furthermore, the mean *BTD* is significantly larger for private firms. We point out that the proportion of private firms with a positive *BTD* (72%) is similar to that in public firms (73%).

The results from the multivariate analysis of *BTD* are reported in Panel B of Table 3, column (1). All coefficients are significant except for the coefficients on *TA* and *Big4Auditor*. Specifically, the coefficients on *Size*, *SalesGrowth*, *ROA* and *Leverage* (0.013, 0.012, 0.682 and -0.209 respectively) indicate that *BTD* is positively related to the firm's size, growth and profitability, and negatively related to its financial leverage.

²⁹ We use *TA* in the model because, based on the results thus far as well as on prior research, we believe that total accruals serve as *at least* as good a measure for earnings management as other empirical measures.

Hanlon (2005), and Lev and Nissim (2004) provide evidence that *BTDs* are systematically related to earnings growth and earnings persistence. The negative relation with leverage is also supported by previous findings showing that tax shelter firms are less leveraged than their control sample (e.g., Graham and Tucker 2006; Frank et al. 2009; Wilson 2009; Lisowsky 2010). A possible explanation for the negative relation is that tax sheltering and debt have a substitution effect, as both vehicles result in lower taxable income. The coefficient on *LossCarryforwards* is negative (-0.065), indicating that larger offset losses 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. The coefficient on the sign (size) of *TA* is (in)significantly positive, implying that firms with positive accruals have larger *BTDs* compared with firms with negative accruals. We explore the relationship between the two types of earnings manipulations further in the next subsection. Finally, consistent with the findings from the univariate analysis, after controlling for the other factors affecting the *BTD*, we find that *BTD* is significantly lower for public firms than for private firms (-0.074, $p < 0.05$). In the previous subsection we found some evidence for more conservatism in the income statements of public firms, compared with private firms. If the book earnings of public firms are more conservative, then the starting point for calculating taxes in terms of pre-tax book earnings is lower. Therefore, the motivation for aggressive tax manipulation to reduce the tax burden is reduced. We do not find evidence for a direct effect of *Big4Auditor* on *BTD*, which may provide an additional explanation for the counter-intuitive finding of a lower *BTD* for public firms. It may also suggest that the difference between private and public firms with regard to *BTD* does not necessarily reflect more aggressive tax planning activity by private firms. We gain further support for this inference in the following analysis of *ATI*.

We now move to analyzing the differences in our *ex-post* measure of tax planning – *ATI*. The results from the univariate tests presented in Panel A of Table 3 indicate that *ATI* is larger for private firms than for public firms, consistent with the findings for our *ex-ante* measure of tax planning, *BTD*. Specifically, the mean (median) *ATI* for private firms is 3.5 (1.5) percent of total assets, while for public firms it is 1.9 (0.8) percent. The differences are significant at the 1% level. One possible explanation for this finding is that private firms conduct more aggressive tax planning in their tax returns, resulting in larger additional income required by the tax authorities. Another possible explanation is that private firms conduct less sophisticated tax planning, making it easier for the tax authorities to uncover evidence of tax evasion. Nonetheless, after controlling for other factors potentially affecting the level of *ATI*, the difference between private and public firms with regard to *ATI* becomes insignificant. The results from the multivariate model, presented in Panel B of Table 3, also show that *ATI* is negatively related to the firm's size, and positively related to its growth and profitability. Furthermore, *ATI* is positively related to *LossCarryforwards* and *BTD*. A possible explanation for the positive relation with *LossCarryforwards* is that firms may offset losses that are not allowed to be offset as per the tax rules. The positive relation with *BTD* is expected given that *BTD* captures tax avoidance. It may also be explained by the tighter scrutiny applied by the tax authorities to larger *BTD* firms as shown in prior research. Lastly, we find evidence for a significantly positive relation between *ATI* and *Big4Auditor*. In fact, it seems that only the *ATI* is affected by the identity of the firm's auditors. This impact of Big4 auditors on *ATI* implies that regardless of whether Big4 auditors were involved in the tax planning,

the tax assessor dealing with the tax reports of a Big4 auditee is, at the outset, more suspicious of tax sheltering activity. This suspicion leads to higher *ATIs*.

The results in this subsection indicate that even though the *BTD* is larger for private firms than for public firms, after controlling for key factors such as size, growth, profitability, the existence of loss carryforwards and the identity of the auditor, the *ATI* that is determined for private firms in their final tax assessment is no different than that of public firms.³⁰ As per the *ATI*, tax reporting aggressiveness is not directly affected by the firm being private rather than public or vice versa, implying that the differences between private and public firms with regard to the *BTD* may not reflect tax-avoidance activity.

The Relationship between Book Earnings Management and Tax Planning

Tests. One of the inferences from regression models (4) and (5) is that book earnings management is not significantly related to tax planning. The results presented in Table 3 show that, after controlling for incentives for book earnings and tax manipulations, total accruals are not related to either *BTD* or *ATI*. The results remain qualitatively similar when we replace *TA* with the other proxies for book earnings management. To further validate this finding, we explore the relationship between book earnings management and tax planning in additional ways, consistent with Frank et al. (2009). Initially, we compute the correlations between our book earnings management and tax planning measures. Second, we examine the median values of book earnings management (tax planning) by quintile of our tax planning (book earnings management) measures. Third, we examine the frequency of firms across each quintile combination of

³⁰ With respect to the finding that *ATI* is not directly affected by the firm being private versus public, note that the tax authorities in Israel have been criticized for the way they handle the task of assessing tax reports. Specifically, the tax authorities were criticized for allocating a limited amount of time for examining a firm's reports, an amount of time that does not always take into consideration the complexity of the inspection, or of the specific business and its transactions (e.g., Yitzhaki and Vakneen 1989).

a measure of book earnings management and a measure of tax planning. The tests are conducted for private firms and public firms separately.

Insert Table 4 about Here

Results. Table 4 shows the Spearman correlations between our book earnings management and tax planning measures. As shown in the table, the correlations between each of the book earnings management measures and each of the tax planning measures are statistically insignificant, for private as well as for public firms. We note that the book earnings management measures are highly positively correlated amongst themselves (all pairs are above 0.5, $p < 1\%$, for the private as well as for the public sample). The two tax planning measures, *BTD* and *ATI*, are also significantly positively correlated (0.360 for private and 0.179 for public firms, $p < 1\%$).

Insert Table 5 about Here

Table 5 shows the median values for our non-empirical measures of book earnings management (*TA* and *NOA*) by quintile of tax planning measures (*BTD* and *ATI*) and vice versa. The results reported in Panel A are for private firms, and those reported in Panel B are for public firms. We do not find evidence for a consistent pattern in the behavior of book earnings management by quintile of tax planning measures, nor do we find a pattern of the behavior of tax planning by quintile of earnings management measures. Finally and consistently, we examine the frequency of firms across each quintile combination of *TA&BTD*, *TA&ATI*, *NOA&BTD* and *NOA&ATI* and do not identify any pattern that could indicate a relation between book and taxable income management either for private or for public firms (untabulated). We repeat all of the analyses using *DA* and *PMA* and obtain consistent inferences.

We conclude that tax planning is not related to book earnings management. This finding is of particular importance given that in Israel, areas of book-tax nonconformity offer an opportunity for managers to easily manage book income upward while managing taxable income downward. Given that they have not done so, the implication is that even though the tax authorities may have found that the management 'played with the numbers' for one purpose, such as to reduce their tax burden, one should not automatically suspect that the company has a tendency to engage in fraudulent financial reporting in general. Moreover, private firms do not differ from public firms in this regard. Finally, another important practical implication of our finding is that full alignment between tax and accounting rules is not a compulsory condition for managers to reduce their opportunistic (reporting) behavior. A diminution in the divergence between the tax and the accounting rules in countries with large book-tax nonconformity such as the US may suffice.

V. Conclusions

This study is motivated by the revelations of massive accounting frauds and aggressive tax planning during the past decade, by the growing book-tax gap, and by the gap in the literature with respect to the relationship between financial and tax manipulations in *private* companies in particular.

The growing gap between the income reported to shareholders and the income reported to the tax authorities may indicate that (1) firms are more aggressive in their financial reporting or (2) firms are more aggressive in their tax reporting or (3) both. Our study shows that in Israel, the manipulation of taxable income during the sample period was not related to that of book income. Firms that the tax authorities determined had

understated their earnings to avoid taxes did *not* overstate their book earnings. Furthermore, a comparison between private and public firms indicates that private firms do not seem to be significantly different from public firms in the quality of reported book earnings or in tax planning. We find modest evidence implying a tendency of *public* firms to be *less* aggressive than private firms in financial and tax reporting. Another surprising evidence in this study shows that Big4 auditors, who are more 'identified' with public firms, in effect do not have a significant impact on the quality of reported earnings.

Our research should be useful to legislators, regulators and investors, as it presents evidence that managers of private as well as of public firms do not necessarily take advantage of the ability to manage both book income and taxable income in the same reporting period, even if areas of nonconformity between accounting and tax rules allow them to do so. This finding implies that managers consider the book-tax trade-offs not just when book-tax conformity compels them to do so. Further, the results are useful to investors and academics, because it contributes to our knowledge about financial and tax reporting aggressiveness, using private information from public and private firms, which is generally unavailable to investors or researchers. Our research should also be useful to financial statement users in general as well as to regulators in assessing auditors' involvement in financial and tax manipulations. Such an assessment is particularly essential following the revelations of financial scandals in large corporations audited by large accounting firms and the enactment of SOX.

Given our access to information on *real BTDs* and *ATIs*, in future research we intend to examine the efficiency of various alternative measures of tax avoidance (e.g., *ETR*)

suggested in the literature to compensate for the lack of the actual *BTD* and *ATI* data. Furthermore, in future research we also intend to explore the change occurred in the degree of book-tax conformity in Israel in 2008 following the adoption of IFRS (which was not accepted by the IRS in Israel) and its impact on manager's reporting behavior. The growing gap between financial and taxable income has led researchers to call for an examination of the impact of a *change* in book-tax conformity in a particular country (rather than differences in book-tax conformity *between* countries). In examining what would happen in the US if book-tax conformity were adopted, Atwood et al. (2010) indicate that the ideal research design cannot be employed because the US has not switched from a book-tax conformity system to a system of nonconformity or vice versa. They suggest that this question can be examined only in a setting in which conformity has changed. Israel meets this criterion.

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Table 1: Descriptive Statistics

Variable	Private firms			Public firms			Difference		
	Mean	Median	Std. Dev.	Mean	Median	Std. Dev.	Mean	Median	Std. Dev.
Unscaled Variables									
<i>Cash & Cash Equivalents</i>	3.35	0.51	10.69	199.37	38.67	586.69	***	***	***
<i>Current Assets</i>	34.00	12.08	58.80	627.90	185.00	1,410.01	***	***	***
<i>Long Term Liabilities</i>	17.64	2.38	62.33	468.04	56.39	1,018.65	***	***	***
<i>Total Assets</i>	69.04	20.98	216.58	1,678.03	375.90	3,706.65	***	***	***
<i>Book Value Equity</i>	15.25	4.50	29.49	427.72	137.40	767.38	***	***	***
<i>Total Sales</i>	51.97	23.62	79.30	853.64	234.20	1,356.42	***	***	***
<i>Depreciation & Amortization</i>	3.03	0.50	24.99	49.04	5.21	132.50	***	***	***
<i>Operating Margin</i>	4.94	1.34	10.93	107.25	18.95	233.00	***	***	***
<i>Pretax Income</i>	3.95	0.99	9.49	108.76	13.47	423.43	***	***	***
<i>Reported Taxable Income</i>	2.44	0.63	10.30	96.61	10.58	420.52	***	***	***
<i>Final Taxable Income</i>	3.15	0.94	10.65	103.76	12.65	423.96	***	***	***
<i>Net Income</i>	3.09	0.70	7.17	84.64	9.54	382.06	***	***	***
<i>EBITDA</i>	6.49	1.79	23.40	166.00	28.60	484.00	***	***	***
Scaled & Indicator Variables									
<i>SalesGrowth%</i>	0.48	0.08	1.96	0.65	0.10	5.90	***	***	*
<i>ProfitMargin</i>	0.20	0.09	0.69	0.28	0.12	1.05	**	*	**
<i>ROA</i>	0.08	0.08	0.16	0.18	0.09	0.47	***	***	***
<i>ROE</i>	0.05	0.12	1.90	0.08	0.16	1.62	***	***	***
<i>WorkingCapital</i>	0.12	0.10	0.80	0.17	0.15	0.31	***	***	***
<i>Leverage</i>	0.21	0.10	0.26	0.23	0.16	0.21	***	***	***
<i>Big4Auditor</i>	0.44	0	0.50	0.85	1	0.36	***	***	***

Notes:

This table provides descriptive statistics for our sample of 111 private and 55 public firms for the years 1994-2007, resulting in 313 (156 private and 157 public) firm-year observations. Extreme values (top and bottom 1%) of continuous variables are winsorized. Asterisks indicate that the private firms' value is significantly different than the corresponding public firms' value.

*** Significant at the 0.01 level (two-tailed).

** Significant at the 0.05 level (two-tailed).

* Significant at the 0.1 level (two-tailed).

We use a *t*-test to test for differences in means and the Wilcoxon test to test for differences in medians.

Variable Definitions

All financial statement data is measured in million NIS. (During the sample period, FX rate was in the range of 3 to 3.8 NIS per \$1 US). *Net Income* is net income before extraordinary items. *EBITDA* is earnings before interest, taxes and depreciation and amortization. *SalesGrowth%* is the percentage change in the annual sales. *ProfitMargin* is *EBITDA* divided by *Total Sales*. *ROA* is *EBITDA* divided by *Total Assets*. *ROE* is income before extraordinary items divided by *Book Value Equity*. *Working Capital* is current assets minus current liabilities, divided by *Total Assets*. *Leverage* is the ratio of total liabilities less current liabilities to total assets. *Big4Auditor* equals one if the auditor is a Big4 audit firm and zero otherwise.

TABLE 2
Analysis of Book Earnings Management

This table presents an analysis of the difference between private and public firms in earnings management metrics. Panel A compares the mean and median of discretionary accruals (*DA*), performance-matched abnormal accruals (*PMA*), total accruals (*TA*), and non-operating accruals (*NOA*) for private firms with those for public firms. Panel B presents the results of regressing these four earnings management measures on selected explanatory variables. We estimate various specifications of:

$$\text{Accrual Measure} = \alpha_0 + \alpha_1 \text{Public} + \alpha_2 \text{Size} + \alpha_3 \text{SalesGrowth\%} + \alpha_4 \text{ROA} + \alpha_5 \text{Leverage} + \alpha_6 \text{Big4Auditor} + \varepsilon$$

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

Panel A: Univariate Analysis

	<i>DA</i> (1)	<i>PMA</i> (2)	<i>TA</i> (3)	<i>NOA</i> (4)
Public Firms				
Mean	-0.001	-0.000	-0.046***	-0.025***
Median	0.020	0.007	-0.022***	-0.027***
No. of Obs.	157	157	157	157
Private Firms				
Mean	0.000	-0.002	-0.013	-0.007
Median	0.020	0.023	-0.019	-0.013
No. of Obs.	156	156	156	156
Difference				
Mean	-0.001	0.002	-0.033	-0.018
(<i>t</i> -statistic)	(-0.021)	(0.061)	(-1.407)	(-0.932)
Median	0.000	-0.016	-0.003	-0.014**
(<i>z</i> -statistic)	(0.232)	(0.808)	(1.000)	(2.185)
No. of Obs.	313	313	313	313

TABLE 2 (Continued)
Analysis of Book Earnings Management

Panel B: Multivariate Analysis

	Predicted Sign	<i>DA</i> (1)	<i>PMA</i> (2)	<i>TA</i> (3)	<i>NOA</i> (4)
<i>Intercept</i>		0.344*	0.299*	0.099	0.047
<i>Public</i>	-	-0.064	-0.023	-0.078	-0.013
<i>Size</i>	-	-0.029**	-0.018*	-0.015*	-0.009*
<i>SalesGrowth%</i>	+	0.027***	0.026***	0.014***	0.014**
<i>ROA</i>	+	1.072**		0.772***	0.138**
<i>Leverage</i>	-/+	0.305***	0.161**	0.632***	0.016
<i>Big4 Auditor</i>	-	-0.025	-0.015	-0.060	-0.021
R-squared		0.403	0.270	0.237	0.153
No. of Obs.		313	313	313	313

Variable Definitions

DA is abnormal accruals derived from the modified Jones model, while *PMA* is derived from the performance-matched modified Jones model. *TA* is total accruals measured as the change in current assets, minus the change in current liabilities, minus the change in cash and cash equivalents, plus the change in debt included in current liabilities, minus depreciation, scaled by lagged total assets. *NOA* is non-operating accruals based on Givoly and Hayn (2000). *Public* is an indicator variable that equals one if the firm is public and zero otherwise. *Size* is the log of total assets. *SalesGrowth%* is the percentage change in annual sales. *ROA* is *EBITDA* divided by total assets. *Leverage* is the ratio of total liabilities less current liabilities to total assets. *Big4Auditor* equals one if the auditor is a Big4 audit firm and zero otherwise.

TABLE 3
Analysis of Tax Planning

This table presents an analysis of the difference between private and public firms in tax planning. Panel A of Table 3 compares the mean and median of the Book-Tax Income Difference (*BTID*) and of the Additional Taxable Income (*ATI*) in private and public firms, both scaled by lagged total assets. Panel B presents the results of regressing these tax planning measures on selected explanatory variables. We estimate various specifications of:

$$BTID = \alpha_0 + \alpha_1 \text{Public} + \alpha_2 \text{Size} + \alpha_3 \text{SalesGrowth\%} + \alpha_4 \text{ROA} + \alpha_5 \text{Leverage} + \alpha_6 \text{TA} \\ + \alpha_7 \text{TAsign} + \alpha_8 \text{LossCarryforwards} + \alpha_9 \text{Big4Auditor} + \varepsilon.$$

$$ATI = \alpha_0 + \alpha_1 \text{Public} + \alpha_2 \text{Size} + \alpha_3 \text{SalesGrowth\%} + \alpha_4 \text{ROA} + \alpha_5 \text{Leverage} + \alpha_6 \text{TA} \\ + \alpha_7 \text{TAsign} + \alpha_8 \text{LossCarryforwards} + \alpha_9 \text{BTID} + \alpha_{10} \text{Big4Auditor} + \varepsilon.$$

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

Panel A: Univariate Analysis

	<i>BTID</i> (1)	<i>ATI</i> (2)
Public Firms		
Mean	0.051***	0.019***
Median	0.043***	0.008***
No. of Obs.	157	157
Private Firms		
Mean	0.117***	0.035***
Median	0.043***	0.015***
No. of Obs.	156	156
Difference		
Mean	-0.066***	-0.016***
(<i>t</i> -statistic)	(-2.67)	(-2.68)
Median	0.000	-0.007***
(<i>z</i> -statistic)	(1.328)	(-12.68)
No. of Obs.	313	313

TABLE 3 (Continued)
Analysis of Tax Planning

Panel B: Multivariate Analysis

	Predicted Sign	<i>BTD</i> (1)	<i>ATI</i> (2)
<i>Intercept</i>		-0.206*	0.138****
<i>Public</i>	?	-0.074**	0.008
<i>Size</i>	?	0.013**	-0.007****
<i>SalesGrowth%</i>	+	0.012****	0.002****
<i>ROA</i>	+	0.682****	0.063****
<i>Leverage</i>	-	-0.209****	-0.012
<i>TA</i>	+	0.019	0.034
<i>TAsign</i>	+	0.046**	-0.002
<i>LossCarryforwards</i>	-	-0.065****	0.161*
<i>BTD</i>	+		0.073*
<i>Big4 Auditor</i>	?	0.012	0.014****
R-squared		0.587	0.406
No. of Obs.		313	313

Variable Definitions

BTD is calculated as the discrepancy between the pre-tax book income and the taxable income (before loss carryforwards) reported in the tax return. *ATI* is the Additional Taxable Income determined for these firms by the tax authorities. *Public* is an indicator variable that equals one if the firm is public and zero otherwise. *Size* is the log of total assets. *SalesGrowth%* is the percentage change in annual sales. *ROA* is *EBITDA* divided by total assets. *Leverage* is the ratio of total liabilities less current liabilities to total assets. *TA* is total accruals measured as the change in current assets, minus the change in current liabilities, minus the change in cash and cash equivalents, plus the change in debt included in current liabilities, minus depreciation, scaled by lagged total assets. *TAsign* is an indicator variable that equals one if total accruals are positive and zero otherwise. *LossCarryforwards* is net operating losses that can be offset against taxable income. *Big4Auditor* equals one if the auditor is a Big4 audit firm and zero otherwise.

TABLE 4
Correlations between Measures of Book Earnings Management and Tax Planning

The table presents the Spearman correlations between our measures of book earnings management and tax planning. The variables are as defined in Tables 2 and 3.

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

	<i>Private Firms</i>			<i>Public Firms</i>	
	<i>BTD</i>	<i>ATI</i>		<i>BTD</i>	<i>ATI</i>
<i>DA</i>	0.079	0.081		0.097	-0.014
<i>PMA</i>	-0.027	-0.044		0.013	0.005
<i>TA</i>	-0.074	-0.049		0.124	-0.082
<i>NOA</i>	0.023	0.031		-0.017	0.030

TABLE 5
Distribution of Median Values of Book Earnings Management (Tax Planning)
across Quintiles of Tax Planning (Book Earnings Management)

BTD, ATI, TA and NOA are as defined in Tables 2 and 3.

Panel A: Private Firms

		Q1	Q2	Q3	Q4	Q5
<i>BTD</i> <i>Quintiles</i>	<i>TA</i>	-0.057	0.023	-0.019	-0.024	0.002
	<i>NOA</i>	-0.048	-0.006	-0.019	-0.023	0.002
<i>ATI</i> <i>Quintiles</i>	<i>TA</i>	-0.034	-0.020	-0.012	0.025	-0.030
	<i>NOA</i>	-0.014	-0.008	-0.004	-0.019	-0.019
<i>TA</i> <i>Quintiles</i>	<i>BTD</i>	0.048	0.020	0.057	0.026	0.054
	<i>ATI</i>	0.018	0.013	0.009	0.014	0.019
<i>NOA</i> <i>Quintiles</i>	<i>BTD</i>	0.035	0.123	0.050	0.039	0.146
	<i>ATI</i>	0.015	0.012	0.011	0.008	0.012

Panel B: Public Firms

		Q1	Q2	Q3	Q4	Q5
<i>BTD</i> <i>Quintiles</i>	<i>TA</i>	-0.040	-0.0148	-0.006	-0.049	-0.029
	<i>NOA</i>	-0.038	-0.024	-0.015	-0.031	-0.028
<i>ATI</i> <i>Quintiles</i>	<i>TA</i>	-0.022	-0.045	0.001	-0.061	-0.009
	<i>NOA</i>	-0.027	-0.032	-0.027	-0.018	-0.028
<i>TA</i> <i>Quintiles</i>	<i>BTD</i>	0.009	0.068	0.034	0.058	0.031
	<i>ATI</i>	0.008	0.008	0.006	0.006	0.012
<i>NOA</i> <i>Quintiles</i>	<i>BTD</i>	0.041	0.059	0.056	0.043	0.021
	<i>ATI</i>	0.008	0.006	0.013	0.006	0.009