International Journal of Business and Management; Vol. 10, No. 7; 2015
ISSN 1833-3850 E-ISSN 1833-8119
Published by Canadian Center of Science and Education

The Difference between the Accounting Result and Taxable Income in Detecting Earnings Management and Tax Management: The Tunisian Case

Wiem Dridi[1] & Adel Boubaker[1]

[1] Université de Tunis El Manar, International Finance Group Tunisia, Tunisia

Correspondence: Wiem Dridi, PhD Student, Faculty of Management and Economic Sciences of Tunis, Université de Tunis El Manar, Tunisia. E-mail: wiembououni@gmail.com

Received: April 1, 2015 Accepted: May 6, 2015 Online Published: June 20, 2015

doi:10.5539/ijbm.v10n7p131 URL: http://dx.doi.org/10.5539/ijbm.v10n7p131

Abstract

In this study, we examine empirically whether the gap between the pre-tax income and the taxable income predicts simultaneously earnings management and tax management. Prior researches have begun to estimate several indictors of earnings quality. We extends this works by investigating whether the book-tax differences (BTD) provides information about managerial discretion. BTD can be used as an attribute of information quality and can contain incremental information for investors and users of financial reports of companies We compose a sample of 21 listed Tunisian firms over the 2003-2012 periods, we apply a statistical methodology implementing a linear panel regression. We develop a model in which we estimate abnormal BTD. All earnings and tax management activities are captures by our abnormal BTD indicator (ABTD). From this regression we are going to test the effect of the variables of the earnings and tax management on the ABTD variable. We find, as expected, a significant association between BTD and manager discretion proxies. Our results indicate that BTD contains a predictive power over the earnings and tax management. We find that Tunisian companies are concerned about tax reducing rather than improved information quality and increasing the financial result.

Keywords: book-tax differences, earnings management, tax management, Tunisia

1. Introduction

In this study, we examine empirically whether the gap between the pre-tax income (hereafter called book income) and the taxable income predicts simultaneously earnings management (Note 1) (EM) and tax management (Note 2) (TM). Prior researches have begun to investigate the difference between the tax and accounting systems (Lamb et al., 1998; Hoogendoorn, 1996; Nobes & Schwencke, 2006). Considering the recent financial scandals, a large body of literature extends this works by investigating whether the book-tax differences (BTD) provides information about managerial discretion (Desai, 2002; Mills, 1998; Wilson, 2009; Tang & Firth, 2011; Hanlon, 2005). For example, a number of studies link BTD with earnings quality or earnings persistence (Hanlon, 2005; Blaylock et al., 2012), cost of capital (Dhaliwal et al., 2009; Goh et al., 2013), audit fees (Hanlon et al., 2012). Assessing the BTD is important because BTD can be used as an attribute of financial reporting quality and can contain incremental informations for investors and users of companies' financial reports. Recent research focus on either BTD are associated with earnings management (Joos et al., 2000; Mills & Newberry, 2001; Donohoe & McGill, 2010; Comprix et al., 2011) or tax planning (Wilson, 2009). Some studies attribute the BTD to both EM and TM (Tang & Firth, 2011; Chen et al., 2012).

We continue this recent innovation here and contribute further to the debate by analyzing the role of BTD in detecting the earnings manipulation in a Tunisian setting. We employ Tunisia as the setting for our study for two reasons. First, because Tunisia has a close relationship between financial and tax accounting, the level of financial information disclosure remains limited due to the pressures from the tax authorities (the most important user of financial reporting). While present literature is based on empirical data from Anglo-Saxon countries; the results from these studies must be applied in continental countries setting where the dominance of the public sector and the bad organization of financial market in the economy. Second, like most developing countries, Tunisia has highly family firms and characterized by less developed and emerging stock market.

This paper examines whether BTD is associated with financial fraud and tax shelters. Prior studies distinguish

between earnings management proxy such as discretionary accruals and tax aggressiveness proxy such as effective tax rate (ETR). We assess the usefulness of BTD to detect both EM and TM. According to Tang and Firth (2011), BTD can be a powerful measure to detect manager's discretion. In order to identify the incremental information provided in BTD, we develop a model in which we decompose normal and abnormal components from total BTD. Normal BTD (NBTD) is designed to reflect differences between accounting and tax systems. All earnings and tax management activities are captured by our abnormal BTD indicator (ABTD). We estimate ABTD as the residual from the BTD regression model. The potential of BTD to inform about EM and TM has been examined previously. The closest to our study is Tang and Firth (2011), reporting a positive association between abnormal BTD and incentives for earnings and ax management. We introduce our measures of both EM and TM into established model of ABTD. First of all, we measure EM with accruals, real earnings management and changes in accounting methods. In addition, we evaluate the TM through tax evasion and tax fraud proxies.

We extend the contribution of this study in several directions. First, we focus on the degree of conformity between tax rules and accounting practices. According Dridi and Boubaker (2015), we select the major differences between GAAP and tax law of Tunisian setting. This difference will be used to measure NBTD due to relative proxies. Second, we focus on managerial discretion, including more reliable proxies for earnings and tax management activities that may increase the gap between book income and taxable income.

We examine a sample of Tunisian listed firms from the years 2003 to 2012, constituting 210 firm-years. Our two main set of tests examines firstly whether BTD can contain information about earnings quality and secondly whether companies based on a continental accounting system (where tax rules are closely related to GAAP) have also manager's discretion in order to improve the information quality. We find that, as expected, a significant association between BTD and manager discretion proxies. Our results indicate that BTD contains a predictive power over the earnings and tax management. We find that Tunisian companies are concerned about tax reducing rather than improved information quality and increasing the financial result.

The remainder of this study is organized as follows. The second section outlines the literature and presents our hypotheses. The two next sections describe our method and expose our results, the final section concludes.

2. Prior Literature and Hypothesis Development

2.1 The Book-Tax Difference Debate

Changes in accounting and taxation are synchronized with the proliferation of dispersed ownership structures and stock firms. Reliable information becomes useful not only for shareholders but also to investors and outsiders. The application of accounting standards and tax rules involves considerable judgment and the use of GAAP and tax laws provide managers substantial discretion. Paradoxically, reliable information that objectively represents firm performance is generated by managers with a discretionary area which require a subjective behavior. Managers have a diversified portfolio of accounting choices and tax options to, legally, manipulate information reported to outsiders. The book-tax literature has mostly focused on aggressiveness in reporting book and tax incomes. The reason for the divergence between book income and taxable income are not fully due to conflicting goals of financial statements and fiscal reports. Reporting discretion may be reflected in the BTD. Previous research has suggested that BTDs are incrementally useful in detecting aggressive financial reporting. BTD can reveal earnings management in accounts such as depreciation, inventory allowance, warranty reserves and bad debts.

The literature on managerial discretion in financial and tax reporting is beginning with Watts and Zimmerman (1986). Since this study, several researches have tried to find the best proxy of this discretion. Hanlon (2005) finds evidence that large temporary BTD provide information about the persistence of earnings and concludes that investors interpret large BTDs as a "red flag" indicating lower earnings persistence. Tang and Firth (2012) find that regulatory and opportunistic sources of BTDs decrease the earnings persistence. Blaylock et al (2012) extend Hanlon's finding by looking through to the source of BTD. They provide evidence with large positive BTD being associated with earnings management. They establish a model of earnings persistence and interacted current earnings with tax avoidance and earnings management proxies. They find that large positive BTD capture discretion in the accrual process, but find tax shelters have no relation with the persistence of pre-tax earnings. Lev and Nissim (2004) show that BTD predict future earnings growth and Weber (2009) report evidence that BTD can explain analysts' forecast errors. Guenther (2011) conduct a similar analysis to investigate the results of Hanlon (2005) by using "data snooping" in order to examine "influential observations. He tries to investigate if the link between lower earnings persistence and large BTDs can be hold when he add several set of control variables (such as age of the firm, large Transitory items, large accruals, and high levels of pre-tax return on assets). He concludes that this relation is impacted by those factors. By investigating the

association between temporary BTD and firm life cycle, Drake (2012) find also that life cycle capture the relation between BTD and earnings persistence and concludes that this relation is more complicated. Mills and Newberry (2001) focus on the relation between BTD and managers 'incentives to overstate earnings. Phillips et al. (2003) examine the association between BTD and various measures of earnings management.

Academic research has also claimed that BTD contain information about tax avoidance (Manzon & Plesko, 2002; Desai, 2003; Plesko, 2004; Desai & Dharmapala, 2006). A report issued by U.S. Treasury (1999) recognized the increasing in BTD as substantiation of the raise in tax shelters activities. This assertion gives rise to the usefulness of BTD as measurement of tax sheltering. Wilson (2009) investigates the characteristics of firms that can be engaged in tax sheltering activity. He provides evidence consistent with tax shelter participation positively associated with large book-tax differences. Frank et al. (2009) highlights that in the US which have a book-tax nonconformity managers may boost financial reporting and minimize income reported to tax authorities far away the book-tax trade-offs. He finds that tax reporting aggressiveness and financial reporting aggressiveness are strongly and positively associated. Similarly, Manzon and Plesko (2002) Desai and Dharmapala (2006, 2009) use BTD as a proxy for corporate tax avoidance.

Corporate tax management can't be treated detached from earnings management. In fact, manager may have incentives to manipulate the two reports in order to avoid costs that may be incurred if he overlooks tax administrators or outside investors in the firm.

Desai and Dharmapala (2006, 2009) report that BTD is unable to reflect tax aggressiveness itself. Managers can be engaged in both earnings management and tax aggressiveness (Frank et al., 2009; Tang & Firth, 2011; Tang & Firth, 2012).

Considering the above, we propose to verify the following hypotheses.

Hypothesis 1: Earnings management by manager explains the difference between the accounting result and taxable income (BTD) presented by the listed companies.

Hypothesis 2: Tax management by manager explains the difference between the accounting result and taxable income (BTD) presented by the listed companies.

2.2 Book-Tax Difference in Tunisian Setting

BTD in Tunisia has been a long history since the disconnection of the accounting and the tax systems maintained even before the creation of the accounting system in 1997 (Dridi & Boubaker, 2015). However, the usefulness of BTD in detecting managerial manipulations (mainly the earning management) should be established in Tunisia especially after the increase of listed companies (24 firms introduced in the last 5 years which shows that the market is in emergence).

The Tunisian context is characterized by the concentrated bank-dominated system and the largest owner shareholder (Ben, Amar, & Abaoub, 2010). Despite attempts to companies' privatization from the 90th, the size of public firms remains important. The Tunisian sector is dominated by micro, small and medium firms (83% of a total of 84,500 firms are micro companies). The Tunisian capital market can be characterized by a concentrated ownership structure. Until 2009, the stock exchange of Tunis has only 52 companies of which 23 companies are financial institutions (a number that reflects the mentality of Tunisian investors to funding from financial institutions). Most of shareholders represent important monitoring blocks (Kouki & Guisani, 2009). Tunisia creates its Stock Exchange in 1969. The Tunisian capital market role in financing the economy was insignificant due to the dominance of financial institutions and the State in the economy. The first half of the 1980s there has been a deterioration of the Tunisian economy with a historic slump in the real production (-1.86%) which caused the rise of privatization and the will of the State to renounce its role as an economic planner. These events have made many changes.

Since 1997, the accounting system has become an autonomous legal division. It applies to any person or entity in the private sector, which by law must keep accounting records. The Tunisian corporate accounting system is based on an Anglo-Saxon vision that meets the evolving needs of the Tunisian economy based on information transparency and opening market (Note 3). Benchmarking the Anglo-Saxon logic is characterized by the development of technical and specific accounting standards developed through a framework requiring a clear separation between accounting (which should be closer to economic and financial reality) and taxation (which requires legal formalism). The aim of this separation is the disclosure of high information quality to investors. Like many accounting systems in several countries, the Tunisian's system provides to manager a variety of accounting choice and operations structuring. The manager can use his discretionary latitude to report a high income quality. Evidence suggests that Tunisian managers opportunistically use the discretion in accounting

standards. For example, Ben Amar and Abaoub (2010) provide evidence that Tunisian firms managed earnings to earnings decreases and to avoid losses.

Tunisian corporate taxation has developed with close relation to financial reporting. Tunisian tax system is a declarative system. The taxable income is resulting from the accounting income after making adjustments to comply with the tax law. Unlike the Anglo-Saxon countries, the use of these adjustments will not result in the production of two separate reports (tax statements and financial reports). The fiscal balance sheet is only a table which includes the integrations and deductions of some items forced by tax law to calculate the taxable income. The model of this table (prepared by the tax administration) takes the net income after accountings changes as base for calculating taxable income. In fact, the tax law requires taxpayers to calculate their taxable income on the basis of reporting income given by GAAP. Tunisian tax law requires only one tax rate of 30% of taxable income. Tunisian legislation give companies a number of tax options and tax benefits (through the investment incentives code by law n°93-120 of 27 December 1993) such as the income reinvestment abatement. These incentives give to the manager the opportunity of tax optimization.

3. Research Design

3.1 Sample Selection and Data Source

Our sample originally consisted of 65 listed Tunisian firms over the 2003-2012 period. However, the final sample used for empirical testing consisted of 21 firms (210 firm-years) after excluding financial firms as well as firms with missing data. We chose the balanced panel to increase the number of observations since most companies have been newly introduced to the stock market. The choice of listed firms is justified by the availability of data. Financial data are collected from the financial statement available on the website of the Financial Market Council.

3.2 Regression Model Specifications

To verify our research hypotheses we apply a statistical methodology implementing a linear panel regression. From this regression we are going to test the effect of the variables of the EM and TM as well as the control variables on the ABTD variable. Our mode is as follows:

$$ABTD_{i,t} = \alpha_0 + \alpha_1 DA_{i,t} + \alpha_2 RM\_PROXY_{i,t} + \alpha_3 INV_{i,t} + \alpha_4 DEP_{i,t} + \alpha_5 REINV_{i,t} + \alpha_6 ETR_{i,t} + \alpha_7 SIZE_{i,t} + \alpha_8 ROA_{i,t} + \varepsilon_i \quad (1)$$

Where:

$ABTD_{i,t}$: abnormal book-tax differences of firm i in year t; $DA_{i,t}$: discretionary accruals of firm i in year t; $RM\_PROXY_{i,t}$: real activities manipulation of firm i in year t; $INV_{i,t}$: inventory, this variable is measured by a binary value which takes 1 if the firm adopts the weighted average cost method and 0 otherwise; inventory of firm, $DEP_{i,t}$: depreciation of the firm, this variable is measured by a binary value which takes 1 if the firm apply both accelerate and straight-line depreciation method and 0 otherwise; $REINV_{i,t}$: reinvestment of profits, this variable is measured by a binary value which takes 1 if the firm practice the reinvestment of earnings and 0 otherwise ; $ETR_{i,t}$: effective tax rate of firm i in year t ; $SIZE_{i,t}$: natural logarithm of total assets of firm i in year t ; $ROA_{i,t}$: profitability of the firm i in year t, this variable is measured by a binary value which takes 1 if the firm has a positive profit before tax and 0 otherwise.

3.2 Variables Measurement

3.2.1 Dependent Variable Measurement-Abnormal Book-Tax Differences

Prior studies have used different measures of BTD. Some researchers separated BTD into two components; permanent and temporary differences. The reason is that temporary differences are more informative about earnings manipulations because it represents the differences between accounting and tax treatment. Temporary differences capture items (income or expense) that are recognized at different times for book and tax purposes. Permanent differences include items that are accepted by accounting (taxation) but that are never taken into consideration by taxation (accounting). Therefore, temporary differences (generally identified by the deferred tax expense) are the essential component of the BTD which can provide information about earnings quality (Philips et al., 2003; Mills, 1998; Hanlon, 2005; Hanlon & Krishnan, 2006; Guenther, 2011). Further studies have used the total differences as a measure of BTD (Mills & Newberry, 2001; Lev & Nissim, 2004; Weber, 2009; Dhaliwal et al., 2009; Manzon & Plesko, 2002) (Note 4). Some other studies have analyzed the DCF through its decompositions into normal and abnormal differences (Tang & Firth, 2011; Tang & Firth, 2012; Formigoni et al., 2009). These studies have referred to Desai and Dharmapala (2006). The idea is to use the residual of a regression of the total BTD on the normal BTD. This approach consists of measuring by the residue the portion

which is not observed in the difference between accounting and tax treatment. In this work, we choose this measure of BTD for three reasons. First, temporary differences are identified by the deferred tax expense. Unlike IFRS treatment, the deferred tax in Tunisia is totally ignored in practice, lack of specific standard in this issue. Second, the measure of BTD through the total difference is not relevant since this difference can only results from a simple disconnection between accounting and tax systems. In fact, Dridi and Boubaker (2015) found a total disconnection between these two disciplines. Third, the residual approach allows taking the total difference and subtracting the different items that may increase the gap of BTD. We divide the BTD into two sets: a set of variables represents the difference treatments between accounting and taxation. These variables reflect the normal difference which is not related to managerial manipulations. The remaining gap (residual) is the abnormal difference part which is caused by earnings aggressiveness (Eq.2). The second set of variables represents the proxies of EM and TM. In fact, the residual which measures ABTD is regressed on variables related to earnings manipulations (Eq.1).

$$BTD_{i,t} = \alpha_0 + \alpha_1 GW_{i,t} + \alpha_2 \Delta PPE_{i,t} + \alpha_3 \Delta REV_{i,t} + \alpha_4 FO_{i,t} + \alpha_5 \Delta SP_{i,t} + \varepsilon_i \quad (2)$$

Where: $BTD_{i,t}$: book-tax differences of firm i in year t, this variable is equal to income before tax minus taxable income scaled by total assets; $GW_{i,t}$: goodwill of firm i in year t, this variable is equal to the gross value of goodwill scaled by total assets; $\Delta INV_{i,t}$: change in investment in gross property, plants and equipment from year t-1 to year t, this variable is equal to the gross value of tangible assets in year t minus the gross value of tangible assets in year t-1; $\Delta REV_{i,t}$: changes in revenues, this variable is equal to the revenue in year t minus the revenue in year t-1; $FO_{i,t}$: the foreign operations of firm i in year t, this variable is measured by a binary value which takes 1 if the firm has make foreign operations in year t in 0 otherwise; $\Delta SP_{i,t}$: change in stock portfolio from year t-1 to year t, this variable is equal to the value of stock portfolio in year t minus the value of stock portfolio in year t-1 scaled by total assets.

NBTD is a result of difference between accounting standards and tax laws. It is divergence in the treatment of goodwill (GW), investment in gross property (ΔPPE), economic growth (ΔREV), foreign operations (FO) and stock portfolio (ΔSP). These items are inspired from that identified by Dridi and Boubaker (2015) as the items which represent a total disconnection in the accounting and tax treatment. All variables are scaled by total assets for year t except for FO to control for firm size. These variables are introduced to control the NBTD. ABTD will be determined based on equation (2) by the ordinary least squares method

The GW is used to control the difference in treatment between the accounting and tax rules in Tunisia. On the fiscal side, the law doesn't allow the deduction of goodwill depreciation from taxable income. However, accounting standard for intangible assets recommends the depreciation of goodwill over a period not exceeding 20 years. This variable was adopted by Manzon and Plesko (2002).

The ΔPPE is used to control the effect of investment growth on BTD. In fact, economic growth leads to value impairment of some assets that will be used and their life period will be limited. The value impairment will be recognized as the depreciation of assets. However, tax law allows only the deduction of depreciation of assets from taxable income. The ΔREV is used to control the growth of revenue which leads to an increase in bad debt. Bad debt is fully provisioned in the accounting. On the fiscal side, this type of allowance is allowed only if it meets some conditions such as a lawsuit. These variables was adopted by Manzon and Plesko (2002) and Tang and Firth (2011).

The FO is introduced to control the difference in treatment of changes in foreign currencies. The Tunisian accounting standard requires the evaluation of evaluation of receivables and payables in foreign currencies at the end of year using the applicable exchange rate on that date. The loss or gain recorded is not allowed in tax rule since the receipt or the payment of the debt has not occurred.

Finally, the ΔSP is used to control the growth of listed securities. Rise of the number of securities may increases the risk of impairment and consequently increases the allowance accounting record. Tax law provides for deduction of impairment of listed shares within the limit of 50% of taxable income (for illiquid shares). For highly liquid shares, accounting standard provides the recording of impairment (surplus) value a charge (gain).

3.2.2 Explanatory Variables Measurement

- Earnings management measures

We improve the robustness of our results by employing three measures of EM as the independent variable in our study that may have association with BTD. These variables are discretionary accruals (DA), real earnings management (RAM) and changes in accounting methods (INV).

To estimate discretionary accruals, we chose Jones model modified by Dechow et al. (1995). Several models

have been adopted (Healy, 1985; DeAngelo, 1986; Jones, 1991; Dechow et al., 1995; Dechow & Sloan, 1991). However, Guay (1996) concludes that the Jones model and his modified version are the most effective to give a reliable estimation of discretionary accruals.

The basic model to estimate discretionary accruals is a cross-sectional variation of Jones (1991) model:

$$TA_{i,t}/A_{i,t-1} = \alpha_1 (1/A_{i,t-1}) + \alpha_2 [(\Delta REV_{i,t} - \Delta REC_{i,t}) /A_{i,t-1}] + \alpha_3 (PPE_{i,t} /A_{i,t-1}) + \varepsilon_i \quad (3)$$

Where: $TA_{i,t}$: total accruals of firm i in year t scaled by lagged total assets; $A_{i,t-1}$: assets of firm i in year t-1; $\Delta REV_{i,t}$: change in net sales, this variable is equal to the revenue in year t minus the revenue in year t-1; $\Delta REC_{i,t}$: variation in net receivable ; $PPE_{i,t}$: the gross value of property, plant and equipment .

Total accruals (TA) are computed as:

$$TA_{i,t} = BN_{i,t} - FGE_{i,t} \quad (4)$$

Where: $BN_{i,t}$: net profit of firm i in year t; $FGE_{i,t}$: funds generated by operations of firm i in year t.

Using Equation (3), discretionary accruals are estimated by subtraction the predicted nondiscretionary accruals.

Our second proxy for EM is real earnings management activities. As in Roychowdhury (2006) and Cohen and Zarawin (2010) we use three metrics to estimate the level of real earnings management: the abnormal levels of cash flow from operations (CFO), production costs (PROD) and discretionary expenses (DISEXP) (Note 5).

To estimate the first measure, we express normal cash flow as a linear function of sales and changes in sales of firm from year t-1 to t (Eq. 5).

$$CFO_{i,t}/A_{i,t-1} = \alpha_1(1/A_{i,t-1}) + \alpha_2 REV_{i,t}/A_{i,t-1} + \alpha_3 \Delta REV_{i,t}/A_{i,t-1} + \varepsilon_i \quad (5)$$

We mode the production costs by the sum of costs of goods sold (COGS) and the inventory growth (ΔINV).

COGS is computed by the following

$$COGS_{i,t}/A_{i,t-1} = \alpha_1(1/A_{i,t-1}) + \alpha_2 REV_{i,t}/A_{i,t-1} + \varepsilon_i \quad (6)$$

We model change in inventory during the year as:

$$\Delta INV_{i,t}/ A_{i,t-1} = \alpha_1(1/A_{i,t-1}) + \alpha_2 \Delta REV_{i,t}/A_{i,t-1} + \alpha_3 \Delta REV_{i,t-1}/A_{i,t-1} + \varepsilon_i \quad (7)$$

We estimate the normal level of production costs using (6) and (7) as:

$$PROD_{i,t}/ A_{i,t-1} = \alpha_1(1/A_{i,t-1}) + \alpha_2 REV_{i,t}/A_{i,t-1} + \alpha_3 \Delta REV_{i,t}/A_{i,t-1} + \alpha_4 \Delta REV_{i,t-1}/A_{i,t-1} + \varepsilon_i \quad (8)$$

We model the normal level of discretionary expenses as a function of lagged sales

$$DISEXP_{i,t}/ A_{i,t-1} = \alpha_1(1/A_{i,t-1}) + \alpha_2(REV_{i,t-1}/A_{i,t-1}) + \varepsilon_i \quad (9)$$

In the above equations $CFO_{i,t}$: cash flow operations of firm i in year t; $A_{i,t-1}$: assets of firm i in year t-1 ; $REV_{i,t}$: current sales of firm i in year t; $\Delta REV_{i,t}$: change in net sales; $COGS_{i,t}$: costs of goods sold of firm i in year t; $\Delta INV_{i,t}$: change in inventory; $PROD_{i,t}$: production costs of firm i in year t; $DISEXP_{i,t}$: discretionary expenses of firm i in year t.

The abnormal component of CFO (D_CFO), PROD (D_PROD) and DISEXP (D_DISEXP) are computed as the difference between the actual values and the normal component estimated through equations (5), (8) and (9). These variables are used as our proxies for real earnings management. We created a single proxy that meets all these variables. We compute RM_PROXY as the sum of the variables (D_CFO), (D_PROD) and (D_DISEXP).

Our last proxy of EM is the changes in accounting methods. This variable is measured by the inventory (INV): this variable is measured by a binary value which takes 1 if the firm adopts the weighted average cost method and 0 otherwise.

- Tax management measures

To empirically test the relation between BTD and TM, we employ three variables. We use depreciation of the firm (DEP) this variable is measured by a binary value which takes 1 if the firm applies both accelerate and straight-line depreciation method and 0 otherwise. This variable is used to detect TM through tax options. Berg et al (2001) argue that firms can reduce the present value of the future tax payment through the choice of a particular method of depreciation among those admitted in the tax law.

The second variable is the reinvestment of profits (REINV) this variable is measured by a binary value which takes 1 if the firm practice the reinvestment of earnings and 0 otherwise. This variable allows controlling TM by tax incentives. To encourage and steer some areas and favor certain regions, the Tunisian legislation may be required to incite firms through its tax power. Tax legislation provides for the firms many incentives such as

exemptions, reductions in tax rates or accelerated depreciation. These incentives may encourage managers to engage in activities to avoid tax.

The third variable is the effective tax rate (ETR) measured by the ratio of cash taxes paid to pretax financial accounting income. This variable is used in several studies (Holland, 1998; Gupta & Mills, 2002; Rego, 2003; Blaylock et al., 2012; Dyreng et al., 2008, Minnik & Noga, 2006; Richardson, 2013) to control the effectiveness of tax avoidance. In fact, ETR represents the alternative measure of tax aggressiveness.

3.2.3 Control Variables Measurement

SIZE: Firm size measured by the natural logarithm of total assets at the fiscal year-end;

ROA: Profitability of the firm Dummy variable taking value 1 if the firm has a positive profit before tax and 0 otherwise.

4. Results

4.1 Descriptive and Univariate Statistics

The tables below present the descriptive and univariate statisctics for variables used in the analysis of our regression model.

Table 1. Descriptive statistics and mean comparison of dichotomous variables

Variable	Modalities	Frequency	Mean ABTD	Student test	Fisher test
DEP	0	0.868	-0.010	(0.562)	(0.114)
	1	0.131	0.002		
REINV	0	0.649	-0.021	(0.022)*	(0.006)*
	1	0.350	0.015		
INV	0	0.426	-0.006	(0.823)	(0.264)
	1	0.573	-0.010		
ROA	0	0.197	-0.103	(0.000)*	(0.000)*
	1	0.802	0.015		

DEP: depreciation of the firm; REINV: reinvestment of profits; INV: inventory, this variable; ROA: profitability of the firm.

*represents significance.

Table 1 presents descriptive statistics for variables in ABTD model. The results show that only 13% of firms opt to depreciation method which allows a tax saving. Most of these firms do not practice the reinvestment of profit yet the results show a positive result for 80%. However, the inventory valuation by the weighted average cost method is greater than a half. The results can be explained by the trend toward earnings management by accounting choices rather than tax options. This trend comes back to the complexity of tax rules and the need for professional in this field.

In order to control the effect of qualitative variables on the ABTD, we conducted an average analysis. Firstly, we assumed a normal distribution and we compared the average of the ABTD under the different modalities. This analysis is done by the test for the equality of average through the Student-t. We conducted secondly a nonparametric test (Kruskal and Wallis test) since the first one assumes that variables have normal distributions. The Table 1 shows that both tests led to the same results of significance. These tests are significant for the variables (REINV) and (ROA).

Table 2. Descriptive statistics and correlations

Panel A: Descriptive statistics for BTD model					
Variable	N	Mean	Std. Dev.	Min	Max
BTD	210	0.022	0.141	-0.329	1.441
GW	210	0.003	0.007	0	0.040
ΔPPE	210	0.052	0.205	-0.595	2.549
ΔREV	210	0.070	0.331	-0.834	4.154
ΔSP	210	0.013	0.097	-0.426	0.560
Panel B: Pearson correlation coefficients.					

	BTD	GW	ΔPPE	ΔREV	FO	ΔSP
BTD	1.000					
GW	-0.000	1.000				
ΔPPE	0.049	-0.007	1.000			
ΔREV	0.537***	0.146**	-0.298***	1.000		
FO	0.069	-0.009	0.054	0.040	1.000	
ΔSP	0.353***	0.089	0.111	0.226***	-0.000	1.000
Panel C: Descriptive statistics for ABTD model						
Variable	N	Mean	Std. Dev.	Min	Max	
ABTD	210	-0.008	0.110	-0.497	0.971	
DA	210	-0.658	2.177	-25.359	0.218	
RM_PROXY	210	0.076	0.386	-1.560	2.308	
ETR	210	0.128	0.142	-0.340	0.748	
SIZE	210	17.955	1.073	13.319	21.131	
Panel D: Pearson correlation coefficients.						
	ABTD	DA	RM_PROXY	ETR	SIZE	
ABTD	1.000					
DA	-0.468***	1.000				
RM_PROXY	-0.333***	0.005	1.000			
ETR	-0.020	-0.044	0.153***	1.000		
SIZE	-0.080	-0.368***	-0.027	-0.369***	1.000	

BTD: book-tax differences; GW: goodwill ΔINV: change in investment in gross property, plants and equipment ΔREV: changes in revenues; FO: the foreign operations; ΔSP: change in stock portfolio; ABTD: abnormal book-tax differences; DA: discretionary accruals; DA: discretionary accruals; RM_PROXY: real activities manipulation; INV: inventory; DEP: depreciation of the firm; REINV: reinvestment of profits; ETR: effective tax rate; SIZE: natural logarithm of total assets of firm; ROA: profitability of the firm.

*/**/***represent significance at the 10/5/1% level, respectively.

Table 2 presents the statistics of numeric variables and Pearson correlations for variables used in the BTD and ABTD models. Panel A presents descriptive statistics for variables in BTD model. The mean of BTD is positive 0.022 which is consistent with aggregate BTD in the United States and opposite to aggregate Chinese BTD (Tang & Firth, 2011). The mean of ΔPPE and ΔREV is positive, indicating a growth in investment in gross property, plants and equipment and therefore a growth in revenues. The mean of ΔSP is 0.013 expressing the increase in investment in the stock market. Panel B allows observing the correlation of variables. The results show that the variables of BTD model are weakly correlated with each other and consequently an absence of multicollinearity. This Panel shows that BTD has a significantly positive association with ΔPPE and ΔSP, consistent with our predictions.

Panel C shows that the mean of ABTD is negative at 0.8% of total assets. The discretionary accruals have a negative mean (-0.65). This reveals that Tunisian companies manage their results down. The minimum and the maximum are -25 and 0.21 respectively which conclude (consistent with Kouaib & Jarboui, 2014) that in Tunisia, discretionary accruals have a significant important impact on the level of published results. The average for RM_PROXY our proxy for real earnings management for sample firms is 0.07 which takes small value comparing to the absolute value of accrual-based earnings management. This observation is consistent with Cohen et al. (2008) and Graham (2005) survey result. They suggest that real earnings management is more costly. This Panel shows also that the mean of the effective tax rate is 0.12 indicating a considerable performance of tax management by Tunisian companies. In fact, the average ETR is very small comparing to the statutory corporate tax rate (30%). This means that in average Tunisian firms pay less than half of statutory rate. This result can be explained by the tax benefits and options granted to business which allow tax avoidance.

Panel D shows the correlation matrix between metric variables of ABTD model. The results show the absence of a strong correlation between variables which may bias our estimates. ABTD has a significantly association with DA and RM_PROXY, consistent with our predictions. Discretionary accruals and real earnings management explain ABTD.

4.2 Multivariate Analysis

4.2.1 Testing Panel Data

Table 3. Model specification tests

	Tests	Hypotheses.	Results
Panel A: model specification			
specification test	Fisher test	H0: no fixed effects.	*F(20,182)=2.79*
			Prob>F=0.000
	Hausman test	H0: presence of random effects.	*Chi2(7)=26.71*
			Prob>chi2=0.000
Panel B: testing panel data			
Residuals normality test.	Shapiro-Wilk	H0: the errors are normally distributed.	Prob>z=0.000
Ramsey Reset test.	Ramsey Reset.	H0: well specified model.	F(3,198)=12.80
			Prob>F= 0.000
Heteroscedasticity test	Breush and Pagan	H0: the variance is homoscedastic.	Chi2(01)=20.54
			Prob>chi2=0.000
Autocorrelation errors test.	Wooldridge	H0 : the residuals are not autocorrelated	F(1, 20)=1.233
			Prob>F=0.279

The table 3 shows a presence of fixed effects in our model (Prob>F=0.000). According to Table 3, we conclude that the error distribution is not Gaussian (*Prob>z=0.000)* which prevents giving confidence interval prediction. The Ramsey Rest test is also significant; this model is not well specified. Finally these tables show a heteroscedasticity model and an auto correlated errors. To remedy the specification problem, we can correct the heteroscedasticity model and the autocorrelation error through the generalized least squares GLS.

4.2.2 BTD Estimation

Table 4. Book-tax differences regression on NBTD

$$BTD_{i,t} = \alpha_0 + \alpha_1 GW_{i,t} + \alpha_2 \Delta PPE_{i,t} + \alpha_3 \Delta REV_{i,t} + \alpha_4 FO_{i,t} + \alpha_5 \Delta SP_{i,t} + \varepsilon_i$$

Variables	***Predicted sign***	***Coefficient***	***Probability***
Intercept ($\alpha_{0)}$	?	-0.008	0.593
GW (α_1)	?	-1.923	0.075
ΔPPE (α_2)	?	0.130	0.000
ΔREV (α_3)	?	0.238	0.000
FO (α_4)	?	0.011	0.524
ΔSP (α_5)	?	0.313	0.000
R^2			0.39
F-statistic			211.7 (P=0.000)
N			210

BTD: book-tax differences; GW: goodwill; ΔINV: change in investment in gross property, plants and equipment; ΔREV: changes in revenues; FO: the foreign operations; ΔSP: change in stock portfolio.

We used the residual calculated from the model of Equation (2). This residual reflects ABTD. Table 4 shows that the coefficient of determination is 39%. This means that 39% of the variation of the BTD is explained by exogenous variables used in our model. In fact, among the criteria that determines the quality of model that the regression must contain all the necessary variables. This criterion is measured by the coefficient of determination R^2 which must be greater than 60%. However, in our case, we can explain this by the fact that there are other variables that may explain the BTD other than those listed in this model. This value (39%) confirms that the ABTD can be reflected by the residual of the model. The table shows a probability of the F-statistic=0.000; a value strictly less than the threshold of 5%. This result supports to conclude that the independent variables are jointly significant in influencing the endogenous variable. This table shows that the majority of independent variables are individually significant in explaining the dependent variable (the software sends a strictly smaller p-value at a threshold of 5% for GW, ΔPPE, ΔREV and ΔSP). We conclude that the model contains a good explanatory power.

4.3.3 ABTD Estimation

Table 5. Estimated coefficients from the BTD model

$$ABTD_{i,t} = \alpha_0 + \alpha_1 DA_{i,t} + \alpha_2 RM\_PROXY_{i,t} + \alpha_3 INV_{i,t} + \alpha_4 DEP_{i,t} + \alpha_5 REINV_{i,t} + \alpha_6 ETR_{i,t} + \alpha_7 SIZE_{i,t} + \alpha_8 ROA_{i,t} + \varepsilon_i$$

Variables	*Predicted sign*	*Coefficient*	*Probability*
Intercept (α_0)	?	-0.123	0.216
AD (α_1)	?	-0.026	0.000
RM_PROXY (α_2)	?	-0.069	0.000
INV(α_3)	+	-0.009	0.281
DEP (α_4)	+	0.011	0.307
REINV (α_5)	+	0.016	0.042
ETR (α_6)	?	-0.166	0.000
SIZE (α_7)	+	0.002	0.665
ROA(α_8)	+	0.105	0.000
Chi2		157.86	(P=0.000)
N		210	210

ABTD: abnormal book-tax differences; DA: discretionary accruals; RM_PROXY: real activities manipulation; INV: nventory, this variable; DEP: depreciation of the firm; REINV: reinvestment of profits; ETR: effective tax rate; SIZE: natural logarithm of total assets of firm; ROA: profitability of the firm.

Our estimate of ABTD, EM and TM made by MCG is presented in Table 5. It shows a Wald chi2 (8) is 165.43 and p-value is 0.000 indicating overall a significant model. The majority of the independent variables are individually significant in explaining the dependent variable. The software sends a strictly smaller p-value at a threshold of 5% for the coefficient relating to the variables ıADı, RM_PROXY, ETR, REINV, ROA, the coefficient relating to the variables SIZE, DEP, INV are not significant. We can conclude that the model contains a good explanatory power.

The results show that estimates coefficients on the variables AD and RM_PROXY are negative and significant (p-v=0.00). This finding is consistent with our predictions. Discretionary accruals and real earnings management; proxies of the EM can explain ABTD. The negative sign can be explained by the fact that the Tunisian companies manage their result in order to reduce the tax expense. The manager is interested with taxable income and therefore manages earnings by accruals or cash flows. These practices decrease the reintegration and deduction of items. In fact, the manager uses the accounting rules for tax purposes and therefore the gap between accounting result and taxable income is low. This result confirms that the corporate taxation has close relation to financial reporting. The Tunisian capital market role in financing the firm is insignificant comparing to the importance of the tax authority in the managerial optimization practices. Tunisian companies are concerned about tax reducing rather than improved information quality and increasing the financial result.

The coefficient on INV is not significant, suggesting that changes in accounting methods cannot explain ABTD. The coefficient on REINV is negative and significant which confirms our predictions. Tax benefits are an effective means of TM that generates an impact on ABTD. This finding can be explained by the fact that the Tunisian companies use the reinvestment earnings for an economic purpose but also for reducing the tax burden. Likewise, the coefficients on ETR which measure the tax aggressiveness is negative and significant. The negative sign explains that when ABTD increase the effective tax rate decrease which reflects a better tax optimization. The coefficient on DEP is not significant; suggesting that this variable cannot reflects manager manipulations.

5. Conclusion

We document whether the ABTD can detect both earnings and tax management. Our results indicate that BTD contains a predictive power over managerial manipulation. The latter is detected from the discretionary part of the BTD. We develop a multiple regression model in which estimated BTD is regressed on a set of variables that proxy for normal difference (NBTD). This difference is designed to reflect differences between accounting and tax systems. All earnings and tax management activities are captures by our abnormal BTD indicator (ABTD estimated as the residual from the BTD regression model). The main objective of this study is to identify whether BTD detect managerial discretion in the listed companies in Tunisia. Multiple regression analyses yielded evidence consistent with hypotheses: earnings and tax management by manager explains the difference between

the accounting result and taxable income (BTD) presented by the listed companies. The analyses adduced evidence of a significant relationship between ABTD and discretionary accruals and real earnings management. We find that ABTD is overall significantly associated with EM and TM proxies who can be used as a substitute of both earnings aggressiveness and tax shelters indicators. BTD can be used as an attribute of financial reporting quality and can contain incremental information for investors and users of financial reports of companies. Companies based on a continental accounting system (where tax rules are closely related to GAAP) have also manager's discretion. Unlike in developed countries, Tunisian companies are concerned about tax reducing rather than improved earnings quality and increasing the financial result.

This finding is in line with previous studies that have shown that BTD provide information about the earnings quality (Guenther, 2011; Tang & Firth, 2011; Tang & Firth, 2012; Hanlon, 2005; Formigoni et al., 2009; Blaylock et al., 2012). The reduced number of listed Tunisian companies on the Tunisian Stock Exchange limits the generalization of this finding. We propose extending the number of firms and the period study to allow a more specific pooled analysis study. We suggest also applying this study to other continental countries to allow assessment with other researches. These results are important for the development of manager behavior detection by outsiders and particularly by financial analysts and investors. BTD can be an incremental indicator of earnings quality. This result allows reflecting on the adverse effect of the disconnection between accounting and tax systems and their negatives effects on the information quality.

References

Ben Amar, A., & Abaoub, E. (2010). Earnings management thresholds: the case in Tunisia. *Asian Academy of Management Journal of Accounting and Finance*, *6*(2), 35-56.

Berg, M., De Weageneare, A., & Wielhouwer, J. L. (2001). Optimal tax depreciation with uncertain future cash-flows. *European Journal of Operational Research*, *132*, 197-209. http://dx.doi.org/10.1016/S0377-2217(00)00132-6

Blaylock, B., Shevlin, T., & Wilson, R. (2012). Tax avoidance, large positive book-tax differences, and earnings persistence. *The Accounting Review, 87*, 91-120. http://dx.doi.org/10.2308/accr-10158

Chen, L. H., Dhaliwal, D. S., & Trombley, M. A. (2012). Consistency of Book-Tax Differences and Information Content of Earnings. *The Journal of American Taxation Association*, *34*(2), 93-116. http://dx.doi.org/10.2308/atax-50174

Cohen, D. A., & Zarrowin, P. (2010). Accrual-based and real earnings management activities around seasoned equity offering. *Journal of Accounting and Economics, 5*, 2-19. http://dx.doi.org/10.1016/j.jacceco.2010.01.002

Comprix, J., Graham, R., & Moore, J. (2011). Empirical Evidence on the Impact of Book-Tax Differences on Divergence of Opinion among Investors. *Journal of the American Taxation Association, 33*(1), 51-78. http://dx.doi.org/10.2308/jata.2011.33.1.51

DeAngelo, L. (1986). Accounting numbers as market valuation substitutes: A study of management buyouts of public stockholders. *The Accounting Review*, *61*(3), 400-420.

Dechow, P., Richard, G., Sloan, R., & Sweeney, A. P. (1995). Detecting Earnings Management. *The Accounting Review*, *70*(2), 193-225.

Dechow, P., & Sloan, R. (1991). Executive incentives and the horizon problem. *Journal of Accounting and Economics*, *14*, 51-89. http://dx.doi.org/10.1016/0167-7187(91)90058-S

Desai, M. A. (2002). The Corporate Profit Base, Tax Sheltering Activity, and the Changing Nature of Employee Compensation. *Working Paper*. NBER, Cambridge, MA. http://dx.doi.org/10.3386/w8866

Desai, M. A. (2003). The Divergence between Book Income and Tax Income. *Working Paper*. Harvard University, Cambridge MA, October 2002.

Desai, M. A., & Dharmapala, D. (2006). Corporate tax avoidance and high powered incentives. *Journal of Financial Economics*, *79*, 145-179. http://dx.doi.org/10.3386/w10471

Desai, M. A., & Dharmapala, D. (2009). Earnings Management, Corporate Tax Shelters, and Book-Tax Alignment. *National Tax Journal, 62*(1), 169-186. http://dx.doi.org/10.2139/ssrn.884812

Dhaliwal, D. S., Lee, H. S. G., & Pincus, M. (2009). Book-Tax Differences, Uncertainty about Information Quality, and Cost of Capital. *Working Paper,* University of Arizona. http://dx.doi.org/10.2139/ssrn.1127956

Donohoe, M. P., & McGill, G. A. (2010). The Effects of Increased Book-Tax Differences Tax Returns Disclosure

on Firm Valuation and Behavior. *Journal of American Taxation Association*, *33*(2), 35-65. http://dx.doi.org/10.2308/atax-10056

Drake, K. D. (2013). Does firm life cycle explain the relation between book-tax differences and earnings persistence? *American Taxation Association Midyear Meeting: Research Forum*. http://dx.doi.org/10.2139/ssrn.2547778

Dridi, W., & Boubaker, A. (2015). An Assessment of the Linkage between Financial Reporting and Taxation in Tunisia. *International Business Research*, *8*(4), 168-179. http://dx.doi.org/10.5539/ibr.v8n4p168

Dyreng, S., Hanlon, M., & Maydew, E. (2008). Long-run corporate tax avoidance. *The Accounting Review*, *83*(1), 61-82. http://dx.doi.org/10.2308/accr.2008.83.1.61

Formigoni, H., Antunes, M. T. P., & Paulo, E. (2009). Difference between accounting profit and taxable profit: An analysis of management of accounting results and tax management at Brazilian public companies. *Brazilian Business Review*, *6*(1), 42-58. http://dx.doi.org/10.15728/bbr.2009.6.1.3

Frank, M., Lynch, L., & Rego, S. (2009). Tax Reporting Aggressiveness and its Relation to Aggressive Financial Reporting. *The Accounting Review*, *84*(2), 467-496. http://dx.doi.org/10.2139/ssrn.647604

Goh, W., Lee, J., Lim, C., & Shevlin, J. (2013). The Effect of Corporate Tax Avoidance on the Cost of Equity. *Singapore Management University School of Accountancy Research Paper* (2014-11). http://dx.doi.org/10.2139/ssrn.2237742

Guay, W. R., Khotari, S. P., & Watts, R. L. (1996). A Market-based evaluation of discretionary accrual models. *Journal of Accounting Research*, *34*(Supplement), 83-105. http://dx.doi.org/10.2307/2491427

Guenther, D. (2011). What Do We Learn From Large Book-Tax Differences? *Working paper,* University of Oregon.

Gupta, S., & Mills, L. (2002). Corporate multistate tax planning Benefits of multiple jurisdictions. *Journal of Accounting and Economics*, *33*(1), 117-139. http://dx.doi.org/10.1016/S0165-4101(01)00045-3

Gupta, S., & Newberry, K. (1997). Determinants of the variability in corporate effective tax rates: Evidence from longitudinal data. *Journal of Accounting and Public Policy*, *6*(1), 1-34. http://dx.doi.org/10.1016/S0278-4254(96)00055-5

Hanlon, M. (2005). The persistence and pricing of earnings, accruals and cash flows when firms have large book-tax differences. *The Accounting Review*, *80*, 137-166. http://dx.doi.org/10.2308/accr.2005.80.1.137

Hanlon, M., Krishnan, G. V., & Mills, L. F. (2012). Audit Fees and Book-Tax Differences. *Journal of American Taxation Association*, *34*(1), 55-86. http://dx.doi.org/10.2308/atax-10184

Healy, P. M. (1985). The effect of bonus schemes on accounting decisions. *Journal of Accounting and Economics,* 7, 85-107. http://dx.doi.org/10.1016/0165-4101(85)90029-1

Holland, K. (1998). Accounting policies choices: The relationship between corporate tax burdens and company size. *Journal of Business Finance and Accounting*, *25*(3), 265-288. http://dx.doi.org/10.1111/1468-5957.00187

Hoogendoorn, M. N. (1996). Accounting and Taxation in Europe–A Comparative Overview. *The European Accounting Review*, *5*(Supplement), 783-794. http://dx.doi.org/10.1080/09638189600000050

Jones, J. (1991). Earnings management during import relief investigations. *Journal of Accounting Research*, *29*(2), 193-228. http://dx.doi.org/10.2307/2491047

Joos, P., Pratt, J., & Young, D. (2000). Book-tax differences and the value relevance of earnings. *Working Paper*. Massachusetts Institute of Technology, Indiana University, and INSEAD.

Kouaib, A., & Jarboui, A. (2014). External audit quality and ownership structure: interaction and impact on earnings management of industrial and commercial Tunisian sectors. *Journal of Economics, Finance and Administrative Science*, *19*, 78-89. http://dx.doi.org/10.1016/j.jefas.2014.10.001

Kouki, M., & Guizani, M. (2009). Ownership structure and dividend policy evidence from the Tunisian Stock Market. *European Journal of Scientific Research, 25*(1), 42-53.

Lamb, M., Nobes, C., & Roberts, A. (1998). International Variations in the connections between Tax and Financial Reporting. *Accounting and Business Research*, *28*(3), 173-188. http://dx.doi.org/10.1080/00014788.1998.9728908

Leuz, C., Nanda, D., & Wysocki, P. D. (2003). Earnings management and investor protection: An International comparison. *Journal of Financial Economics, 69*(3), 505-527. http://dx.doi.org/10.1016/S0304-405X(03)00121-1

Lev, B., & Nissim, D. (2004). Taxable Income, Future Earnings, and Equity Values. *The Accounting Review*, *79*(4), 1039-1074. http://dx.doi.org/10.2308/accr.2004.79.4.1039

Manzon, G. J., & Plesko, G. (2002). The Relation between Financial and Tax Reporting Measures of Income. *Tax Law Review*, *55*(2), 175-214. http://dx.doi.org/10.2139/ssrn.264112

Mills, L., Erickson, M. M., & Maydew, E. L. (1998). Investments in Tax Planning. *The Journal of the American Taxation Association*, *20*(1), 1-20.

Mills, L., & Newberry, K. (2001). The Influence of Tax and Non-Tax Costs on Book-Tax Reporting Differences: Public and Private Firms. *Journal of the American Taxation Association*, *23*, 1-19. http://dx.doi.org/10.2308/jata.2001.23.1.1

Minnick, K., & Noga, T. (2010). Do corporate governance characteristics influence tax management? *Journal of Corporate Finance, 16*, 703-718. http://dx.doi.org/10.1016/j.jcorpfin.2010.08.005

Nobes, C., & Schwencke, H. R. (2006). Modelling the links between tax and financial reporting: A longitudinal examination of Norway over 30 years up to IFRS adoption. *Europeean Accountign Review*, *15*(1), 63-87. http://dx.doi.org/10.1080/09638180500510418

Phillips, J., Pincus, M., & Rego, S. (2003). Earnings management: New evidence based on deferred tax expense. *The Accounting Review*, *78*, 491-521. http://dx.doi.org/10.2308/accr.2003.78.2.491

Plesko, G. (2004). Corporate tax avoidance and the properties of corporate earnings. *National Tax Journal*, *57*(3), 729-737.

Rego, O. S. (2003). Tax-Avoidance Activities of U. S. Multinational Corporations. *Contemporary Accounting Research*, *20*(4), 805-833. http://dx.doi.org/10.1506/VANN-B7UB-GMFA-9E6W

Richardson, G., Taylor, G., & Lanis, R. (2013). The impact of board of director oversight characteristics on corporate tax aggressiveness: An empirical Analysis. *Journal of Accounting and Public Policy*, *32*, 68-88. http://dx.doi.org/10.1016/j.jaccpubpol.2013.02.004

Roychowdhury, S. (2006). Earnings management through real activities manipulation. *Journal of Accounting and Economics, 42*(3), 335-370. http://dx.doi.org/10.2139/ssrn.477941

Tang, T., & Firth, M. (2011). Can Book-Tax Differences Capture Earnings Management and Tax Management? Empirical Evidence from China. *The International Journal of Accounting*, *46*(2), 175-204. http://dx.doi.org/10.1016/j.intacc.2011.04.005

Tang, T., & Firth, M. (2012). Earnings persistence and stock market reactions to the different information in book-tax difference: Evidence from China. *The International Journal of Accounting*, *47*, 369-397. http://dx.doi.org/10.1016/j.intacc.2012.07.004

U.S. Treasury. (1999). *The Problem of Corporate Tax Shelters: Discussion, Analysis and Legislative Proposals.* Washington, D. C.: Governmental Printing Office.

Watts, R. L., & Zimmerman, J. L. (1986). *Positive Accounting Theory.* New Jersey: Pentice-Hall.

Weber, D. (2009). Do analysts and investors fully appreciate the implications of book-tax differences for future earnings? *Contemporary Accounting Research, 26*, 1175-1206. http://dx.doi.org/10.1506/car.26.4.7

Wilson, R. (2009). An examination of corporate tax shelter participants. *The Accounting Review*, *84*, 969-999. http://dx.doi.org/10.2308/accr.2009.84.3.969

Notes

Note 1. Following Leuz et al. (2003, p. 506) we define earnings management as being the "alteration of firms' reported economic performance by insiders either to mislead some stakeholders or to influence contractual outcomes".

Note 2. we define aggressive financial reporting as upward earnings management that may or may not be within the confines of generally accepted accounting principles (GAAP) and aggressive tax reporting as downward manipulation of taxable income through tax planning that may or may not be considered fraudulent tax evasion

(Frank et al., 2009).

Note 3. The Tunisian reconciliation to the Anglo Saxon model and especially international standards remains defaulting and few developed. Until today, the Tunisian normalize still attached to the historical cost, which puts the reliability of financial reporting before the information relevance (which implies the use of fair value). It is the main difference between the Tunisian standards and international standards.

Note 4. Mills and Newberry (2001) have focused on the differences between taxable income and accounting income before tax Lev and Nissim (2004) developed a tax-based fundamental defined as the ratio of net taxable income on the net accounting income. This ratio captures the total BTD. They found that this ratio is associated with earnings growth.

Note 5. We include a scaled intercept $\alpha(1/A_{i,t-1})$ as it is suggested by the literature when estimating the nondiscretionary part.