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ANALYSIS OF THE RELATIONSHIP BETWEEN THE COMPONENTS OF BOOK-TAX DIFFERENCES AND ANNUAL VARIATIONS IN EARNINGS AND TAX EXPENSES OF FIRMS LISTED ON THE BMF&BOVESPA

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Abstract: The objective of this article is to analyze if there is a relationship between the components of temporary and permanent book-tax differences (BTDs) with the annual variations of earnings before income tax (EBIT) and income tax expenses (INCTAX), respectively, and the possible influence of earnings management on these relations. The study is based on a sample of 130 companies with shares listed for trading on the BMF&Bovespa between 2004 and 2011. To investigate the relationship of the independent variables (components of temporary and permanent BTDs) and the dependent variables (annual variations in earnings before income tax and income tax expenses), we created models according to the method of Jackson (2011), segregating BTDs into permanent and temporary and analyzing the relations for 1, 3, 5 and 7 years ahead. In this context, we tried to identify the relationship between temporary BTDs and annual variations in EBIT and that between permanent BTDs and the annual variation of INCTAX, with or without the influence of earnings management. To indicate the existence of earnings management, we used the method developed by DeFond and Park (2001), which captures abnormal working capital, used as a proxy for earnings management here. The results demonstrate there is no influence of earnings management on the relationship of BTDs with annual variations in EBIT and INCTAX. However, the signs of the variables in the models indicate a negative relation between temporary BTDs with variation in EBIT and a positive relation between permanent BTDs with income tax expenses for all the years analyzed.

Keywords: Book-tax differences. Temporary and permanent BTDs. Earnings management.

1 INTRODUCTION

The conflicts between accounting and tax rules are longstanding and have led to the development of criteria for measurement and recording that are different between financial and tax accounting, by which firms must prepare two measures of performance, one for the financial statements, according to generally accepted accounting principles, and the other for the tax return, as determined by tax rules (Noga & Schnader, 2013; Comprix, Graham & Moore, 2010; Kronbauer, 2006). Accounting income and taxable income are the two performance measures, and the differences between them are called book-tax differences (BTDs) (Jackson, 2011).

There are two types of BTDs, temporary (or timing) differences, arising from divergences in treatment given by accounting standards and tax rules that will reverse (be adjusted) in subsequent years, and permanent differences, which will not reverse in subsequent years (Drake, 2013; Comprix, Graham & Moore, 2010; Lev & Nissim, 2004).

These differences between accounting income and taxable income that arise because of divergences between accounting and tax rules can be used opportunistically by firms for the purpose of earning management. Plesko (2002) suggests that BTDs arise when managers are successful in increasing accounting profits without increasing taxable profits. Therefore, taxable income can be relevant for external users, as a way to measure the firm's value.

On this matter, Jackson (2011) emphasizes the importance of studying BTDs and their capacity to predict future performance, by stating that understanding the relation between BTDs and changes in future earnings is important to provide evidence on the utility of taxable income to determine firm value. Lev & Nissim (2004) found evidence that BTDs contain information on firms' future performance, but did not detect the determining factors of this relation.

According to Hanlon (2005), temporary differences indicate the persistence of earnings. However, Jackson (2011) found robust results in a sample of American companies of the existence of a negative relation between the temporary components of BTDs with the variation of earnings before income tax and a positive relation between the permanent BTD components and the variation of income tax expense.

Phillips, Pincus & Rego (2003) state that temporary BTDs are affected by earnings management. According to the findings of Dhaliwal et al. (2008), earnings management influences the permanent differences and firms manage tax expenses to obtain the ideal profit level. However, Jackson (2011) disagrees, stating there is little or no evidence of this interdependent relationship between BTDs and earnings management.

The objective of this study is to analyze whether there is a relation between the temporary and permanent components of book-tax differences and the annual variations of before-tax earnings and income tax expense, with or without the influence of earnings management, in Brazilian public companies between 2004 and 2011. For this purpose, we investigate the following hypotheses:

Hypothesis 1: There is a negative relation between the temporary components of BTDs and the variation of earnings before income tax with and without the influence of earnings management.

Hypothesis 2: There is a positive relation between the permanent components of BTDs and the variation of income tax expenses with and without the influence of earnings management.

We assume that the temporary components of BTDs have a negative relation to the annual variation in pretax profits because the measurement and recognition of revenues or expenses in the current period, without their inclusion in the base for calculating income tax in the same period, generates higher or lower accounting income than taxable income (positive or negative BTDs). This explains the theoretical basis for the first hypothesis, in line with the findings of Jackson (2011). Further according to Jackson (2011), if the events that lead to these differences persist in the future, the pretax earnings will be greater or smaller, suggesting a negative relation between temporary BTDs and variations in earnings before taxes, even in the absence of earnings management.

The impact of each type of temporary difference (positive or negative) on profits can be a factor to motivate managers to make their current accounting choices regarding economic events that generate temporary BTDs so as to increase or decrease future profits. The premise for the second hypothesis is that permanent differences have a positive relation with tax expenses, since the occurrence of nondeductible expenses in the accounting will imply recognition of liabilities in the tax ledgers. If these events persist, there will be a positive relation between permanent BTDs and income tax expenses, not impacting variations in future profits.

2 REVIEW OF THE LITERATURE

2.1 Concept and factors determining BTDs

The managers of listed corporations annually report at least two separate profit measures, one of the financial statements according to accounting principles and the other for tax purposes pursuant to tax rules (Comprix, Graham & Moore, 2010). According to Graham, Raedy & Shackelford (2011), the rules for calculating taxable income differ from the accounting principles for calculation of accounting income, because lawmakers allow some items to be permanently excluded from tax calculation and others to be valued differently for tax purposes than by accounting principles. Each of these cases generates a difference between taxable income and the earnings before income tax in the financial statements. Conceptually, the difference between these two profit measures – accounting (or book) income and taxable income – is called book-tax differences, or BTDs (Jackson, 2011). According to Formigoni, Antunes & Paulo (2009), BTDs arise due to the divergent purposes between accounting regulations and the tax system, so there will almost always be differences between the accounting and taxable income (Noga & Schnader, 2013).

2.2 The concept of earnings management and the relationship with BTDs

Earnings management is a type of interference in the formulation of the accounts for the purpose of altering the economic reality of transactions. According to Schipper (1989), earnings management is "a purposeful intervention in the external financial reporting process, with the intent of obtaining some private gain (as opposed to say, merely facilitating the neutral operation of the process)." As put by Paulo & Leme (2007), earnings management is an opportunistic practice employed to interfere in the process of preparation and disclosure of accounting information, which affects the comprehension of the economic and financial reality of firms, and consequently interferes in the decisions of potential and actual investors, lenders and other interested parties.

Studies dating back over 50 years have investigated the relationship of earnings management with taxation, finding indications that firms smooth income for the purpose of lowering their tax liability (Drake, 2013, Hepworth, 1953). Illustrating the ways that earnings management can affect taxes, Graham, Raedy & Scackelford (2011) present evidence that managers' massage earnings by using the specific tax accounts of provisions for losses and contingencies so as to be able to meet analysts' forecasts.

Earnings management is only one of the reasons for the existence of differences between accounting and taxable income, because BTDs often simply result from mechanistic differences between accounting standards and tax rules. Therefore, BTDs can result both from opportunistic efforts to manage earnings prompted by various motivations (meeting analysts' forecasts, boosting book profits to increase executive bonuses, etc.) and simply from a mismatch of accounting and tax rules. (Chen, Dhaliwal, & Trombley, 2012)

2.3 Abnormal working capital accruals

Abnormal working capital accruals (AWAC) are often a proxy used to identify the existence of earnings management. The aim is to capture to what extent working capital deviates from its "normal" level in light of past and present sales, due to the belief that the real need for working capital remains in the same proportion to the level of sales over time. Formally, AWCA is defined as the current working capital less the result of the previous year's working capital divided by the previous year's revenues and multiplied by the current year's revenues (De Fond & Park, 2001).

2.4 Empirical evidence of the relation between BTDs and variations in earnings

The literature analyzed demonstrates that BTDs have content that can be used to predict future earnings and other outcomes, and the empirical results suggest that firms with large BTDs tend to have future earnings growth, implying changes in credit risk and stock prices (Ayers, Laplante & Mcguire, 2010; Lev & Nissim, 2004; Hanlon, 2005).

Comprix, Graham & Moore (2010) tested the associations between BTDs and measures of market participants' uncertainty regarding the information disclosed in the financial reports. The uncertainty measures used were share turnover, dispersion in analysts' forecasts and stock return variance. After desegregating BTDs into their permanent and temporary components, they found that both are positively associated with market uncertainty, although the permanent component is generally more strongly and consistently related to uncertainty measures than the temporary component. The result can be interpreted as to part indicating the existence of the possible effect of uncertainty contained in BTDs, especially the permanent components.

Lev & Nissim (2004) investigated the capacity of a tax fundamental, the tax-to-book income ratio, to predict earnings growth and stock returns and to explain the earnings-price ratio. They found indications that portions of BTDs can be used to predict changes in earnings for up to five years ahead.

To support the existence of a relation between BTDs and earnings growth, Hanlon (2005) cites the accounting literature, according to which BTDs can provide information on current gains. She investigated the role of BTDs in indicating the persistence of earnings – accruals and cash flow – and found evidence that in years when companies present higher BTDs, the earnings are more persistent in relation to the years when firms show lower BTDs.

Several authors have specifically probed the relationship of components of BTDs with future results of firms.

Jackson (2011) decomposed BTDs into their two components and examined the relation between them and earnings growth, finding results suggesting that the temporary differences (identified as deferred taxes) are negatively related to the growth of pretax earnings, while permanent differences are positively related to changes in tax expenses.

Philipps et al. (2003) evaluated the usefulness of deferred tax expense (a temporary difference) in detecting earnings management, assuming the existence of greater discretion under GAAP than in tax legislation and that managers exploit that discretion to manage income upward, mainly in ways that do not affect current taxable income, so that such earnings management will tend to generate BTDs that increase deferred tax expenses.

Dhaliwal et al. (2008) investigated to what extent BTDs explain the difference in the cost of capital between companies. The findings indicate that the variability of BTDs estimated over five or six years is positively and significantly related to the cost of equity capital.

Blaylock, Shevlin & Wilson (2012) found indications that temporary BTDs appear to serve as a useful signal of earnings growth, highlighting that BTDs provide incremental information on the magnitude of increases for the persistence of earnings and accruals. Many studies have presented evidence that managers engage in earnings management by using temporary differences to meet credit analysts' and investors' expectations and to avoid declines in profits (Rego, 2006; Phillips, Pincus & Rego, 2003; Phillips et al., 2004; Burgstahler & Elliott, 2002).

3 METHODOLOGY

3.1 Data used

This study covers firms listed on the São Paulo Stock Exchange in the period from 2004 to 2011, selected according to the same criteria as Ferreira et al. (2012) and Passamani (2011). The sample was based on firms meeting at least one of the following qualifications:

- Firms included on the IBX100. This index consists of the 100 most actively traded firms on the BM&FBovespa (Angonese, Lavareda & Santos, 2011).
- Firms among the largest 200 listed companies in terms of sales revenue in any one of the years from 2004 to 2011, according to information disclosed in the business magazine *Exame*.

3.2 Methodological procedures

We used the regression model of Jackson (2011) as a reference for the statistical tests. We regressed the variables of the temporary and permanent BTD components with the variations in pretax earnings (EBIT) and income tax expenses (ITEXP) for 1, 3, 5 and 7 years. We used the following control variables: mean variation in return on assets (ROA) for 1, 3, 5 and 7 years and in current earnings to stock price (E/P) for the years analyzed. For ROA, we expect a positive relation with changes in future EBIT, and also a positive relation between E/P and changes in EBIT, because this ratio captures market expectations of future growth.

We used abnormal working capital accruals as a metric to infer the existence of earnings management, to see whether this interferes in the relation of permanent differences (PERM) or temporary differences (TEMP) with variations in pretax earnings and income tax expenses. After estimating the earnings management metric, we created a dummy variable (D).

To construct the models, the first step was to measure the total book-tax differences, as the ratio between the difference in accounting income and taxable income on the one hand and average value of assets on the other, as shown in Equation 1.

$$\textbf{Total BTD} = \textbf{(EBIT} - \textbf{TI)/AvAssets} \tag{1}$$

Where:
Total BTD: Total book-tax differences
EBIT: Earnings before income tax (according to accounting principles)
TI: Taxable income (according to tax rules)
AvAssets: Average value of total assets in the year

Taxable income is not disclosed in the financial statements, so we estimated it based on the current income taxes reported in the income statement. This account reports the portion of income subject to taxation according to the tax rules. The applicable corporate tax rate is 34% (basic company income tax rate of 15%, surcharge of 10% and social contribution on net profit of 9%), so the taxable income was estimated according to Equation 2:

$$\textbf{TI} = \textbf{(CurrIT/ 34\%)/AvAssets} \tag{2}$$

Where:
TI: Taxable income
CurrIT: Current income tax expenses
34%: Maximum income tax rate
AvAssets: Average value of assets in the year

BTDs are composed of two elements: the temporary portion (TEMP) is the coefficient that captures the impact of temporary differences on variation in earnings, estimated by extrapolation of deferred income tax expenses as shown in the income statement for the year (Equation 3).

$$\textbf{TEMP} = \textbf{(DefIT/34\%)/AvAssets} \tag{3}$$

Where:

TEMP: Temporary differences

DefIT: Deferred income tax expenses (amount of tax measured considering the temporary differences)

34%: Maximum corporate tax rate

AvAssets: Average value of assets in the year

The other component of BTDs is permanent differences (PERM), consisting of the difference between total BTDs and the temporary components. Theoretically, PERM is the coefficient that captures the impact of book-tax differences that do not reverse in future years on the variation of income tax expenses (Equation 4).

$$\mathbf{PERM = BTD\text{-}TEMP} \tag{4}$$

Where:

PERM = Permanent differences

BTD = Total BTDs

TEMP = Temporary differences

AvAssets = Average value of assets in the year

The ratio of net profit to total assets, or return on assets (ROA), captures the profitability of the firm, as expressed by Equation 5.

$$\mathbf{ROA = NP/\ AvAssets} \tag{5}$$

Where:

ROA: Return on assets

NP: Net profit

AvAssets: Average value of assets in the year

The ratio of net profit to share price, or earnings/price (E/P), captures the market expectations of future growth. It is expressed by Equation 6.

$$\mathbf{E/P = NP/Stock\ price} \tag{6}$$

Where:
E/P: Ratio of earnings to stock price
NP: Net profit
Stock price: Market price of the firm's shares

Then, to test whether the temporary components of BTDs have a negative relation with annual variations in pretax earnings, we created a model described by the following equation:

$$\mathbf{\Delta EBIT_{t=1,3,5,7} = \alpha - \beta_1\, TEMP_t + \beta\, ROA_t + \beta\, E/P_t + \varepsilon} \quad (7)$$

In turn, to test whether the permanent components of BTDs present a positive relation with annual variations in income tax expenses, we created a model described by the following equation:

$$\mathbf{\Delta INCTAX_{t=1,3,5,7} = \alpha + \beta_1\, PERM_t + {}_t + \beta\, ROA_t + \beta\, E/P_t + \varepsilon} \quad (8)$$

So far none of the models take into consideration, in analysis of the variables, the possible interference of earnings management. To investigate if this influences the relation of BTDs with variations in pretax profits and tax expenses, it is first necessary to estimate the abnormal working capital accruals (AWCA), which we use as a proxy for earnings management (Equation 9):

$$\mathbf{AWCA = WC - ((WC_{-1} / Rev_{t-1}) * Rev_t)} \quad (9)$$

Where:
AWCA: Abnormal working capital accruals
WC: Current working capital (difference between current operating assets and liabilities)
WC_{t-1}: Working capital of the previous year
Rev_{t-1}: Sales revenue of the previous year
Rev_t: Sales revenue of the current year

After calculating the AWCA, we performed a descriptive analysis and divided the AWCA values of the sample firms by quartiles.

As other authors have done, we considered the results falling in the extremities of the distribution (0% - 25% and 75% - 100%) as containing companies that can be inferred to engage in earnings management. We then created a dummy variable for earnings management, with value equal to 1 for firms that engage in this practice and 0 for the others.

To evaluate the effect of earnings management (D) on the relation between the temporary component of BTDs and variation in EBIT and INCTAX, we used TEMPD (Equation 10).

$$\mathbf{TEMPD=D*TEMP} \qquad (10)$$

Where:

TEMPD: Influence of earnings management on the temporary component of BTDs

D: dummy proxy for earnings management

TEMP: Temporary difference component

We used the same procedure to identify whether earnings management interferes in the relation of the permanent component of BTDs (PERMD) and EBIT and INCTAX (Equation 11).

$$\mathbf{PERMD=D*PERM} \qquad (11)$$

Where:

PERMD: Influence of earnings management on the permanent component of BTDs

D: dummy proxy for earnings management

PERM: Permanent difference component

To estimate the relation between the BTD components and annual variations in pretax income and the influence of earnings management on this relation, we used the following model:

$$\boldsymbol{\Delta EBIT_{t=1,3,5,7} = \alpha - \beta_1 TEMP_t + \beta_2 D_t - \beta_3 TEMPD_t + \beta ROA_t + \beta E/P_t + \varepsilon} \qquad (12)$$

Finally, to estimate the relation between the BTD components and annual variations in income tax expense and the influence of earnings management on this relation, we used the following model:

$$\Delta \mathbf{INCTAX}_{t=1,3,5,7} = \alpha_t + \beta_1 \mathbf{PERM}_t + \beta_2 \mathbf{D}_t + \beta_3 \mathbf{PERMD}_t + \beta\, \mathbf{ROA}_t + \beta\, \mathbf{E/P}_t + \varepsilon \quad (13)$$

4 RESULTS AND DISCUSSION

According to the results of the tests to accept or reject Hypothesis 1, it was not fully satisfied. The low value of the coefficient of determination for each of the equations ($EBIT_1$: R^2=0.1299, $EBIT_3$: R^2=0.4407, $EBIT_5$: R^2=0.5762 and $EBIT_7$: R^2=0.7123) indicates the explanatory variables are responsible for under 75% of the total variation of EBIT, meaning low explanatory power.

Nevertheless, note that R^2 grows nearly six times from $EBIT_1$ to $EBIT_7$. In other words, as the number of years analyzed increases, the variables better explain the total variation of EBIT (Table 1).

Table 1 - Variables, Expected Sign, Estimated Parameters and Probability of the Effect of each Variable, at 10% Significance, for Ebit Dependent Variable (continua)

PANEL A: FOR $EBIT_1$

Variable	**Expected Sign**	**Estimated Parameter**	**Pr> ltl**
Intercept		0.00151	0.92084
PERM		0.00008	0.65412
TEMP	-	-0.00001	0.75926
ROA	+	0.07549	0.67960
E/P	+	0.16557	0.09271
Pr > F			
0.2932		R^2 0.1299	N=80

PANEL B : FOR $EBIT_3$

Variable	**Expected Sign**	**Estimated Parameter**	**Pr> ltl**
Intercept		-0.03379	0.00187
PERM		-0.00002	0.89588
TEMP	-	-0.00001	0.67925
ROA	+	0.70812	0.00004
E/P	+	0.16783	0.13969

Table 1 - Variables, Expected Sign, Estimated Parameters and Probability of the Effect of each Variable, at 10% Significance, for Ebit Dependent Variable (conclusão)

PANEL A: FOR $EBIT_1$

Variable	Expected Sign	Estimated Parameter	Pr> ltl
Pr > F			
0.0039		R^2 0.4407	N=83

PANEL C: FOR $EBIT_5$

Variable	Expected Sign	Estimated Parameter	Pr> ltl
Intercept		-0.03863	0.00035
PERM		-0.00013	0.90115
TEMP	-	-0.00016	0.48499
ROA	+	0.84679	0.00002
E/P	+	0.17479	0.11224
Pr > F			
0.00012		R^2 0.5762	N=77

PANEL D : FOR $EBIT_7$

Variable	Expected Sign	Estimated Parameter	Pr> ltl
Intercept		-0.01891	0.00538
PERM		0.00010	0.89752
TEMP	-	-0.00271	0.10640
ROA	+	0.88109	0.00001
E/P	+	0.06022	0.01585
Pr > F			
0.0009		R^2 0.7123	N=70

The results of the model with inclusion of the earnings management dummy to capture the relationship between the variables also do not fully satisfy the first hypothesis. The low value of the coefficient of determination for each of the equations ($EBIT_1$: R^2=0.3155, $EBIT_3$: R^2=0.4582, $EBIT_5$: R^2=0.5857 and EBIT7 R^2=0.7139) indicates the explanatory variables are responsible for under 72% of the total variation of EBIT, again meaning low explanatory power.

As in the previous case, R^2 grows substantially from $EBIT_1$ to $EBIT_7$, indicating that as the number of years analyzed increases, the variables better explain the total variation of EBIT (Table 2).

Table 2 - Variables, Expected Sign, Estimated Parameters and Probability of the Effect of each Variable, at 10% Significance, for Ebit Dependent Variable and Earnings Management Dummy

PANEL A: FOR $EBIT_1$

Variable	Expected Sign	Estimated Parameter	Pr> ltl
Intercept		-0.01311	0.41875
TEMPD	-	-0.00012	0.73463
PERMD		0.00099	0.56699
ROA	+	0.10949	0.49979
E/P	+	0.15167	0.09076
D	+	0.01126	0.54970
Pr > F 0.2022		R^2 0.3155	N=77

PANEL B : FOR $EBIT_3$

Variable	Expected Sign	Estimated Parameter	Pr> ltl
Intercept		-0.03763	0.00239
TEMPD	-	-0.00014	0.59366
PERMD		0.00036	0.77064
ROA	+	0.68926	0.00010
E/P	+	0.17583	0.01351
D	+	0.00065	0.00096
Pr > F 0.00034		R^2 0.45825	N=75

PANEL C: FOR $EBIT_5$

Variable	Expected Sign	Estimated Parameter	Pr> ltl
Intercept		-0.04202	0.00716
TEMPD	-	-0.00016	0.48171
PERMD		0.00012	0.91281
ROA	+	0.82822	0.000042
E/P	+	0.17026	0.13845
D	+	0.00295	0.82099
Pr > F 0.0056		R^2 0.5857	N=69

PANEL D : FOR $EBIT_7$

Variable	Expected Sign	Estimated Parameter	Pr> ltl
Intercept		-0.04202	0.04400
TEMPD	-	0.00027	0.13128
PERMD		0.00037	0.66132
ROA	+	0.87842	0.00065
E/P	+	0.09155	0.01662
D	+	0.01066	0.30307
Pr > F 0.0042		R^2 0.7139	N=62

According to the results of the tests to accept or reject Hypothesis 2, it also was not fully satisfied, probably due to the small sample size and the time interval studied. The low values of the coefficient of determination of each of the equations ($INCTAX_1$: R^2=0.1104, $INCTAX_3$: R^2=0.3808, $INCTAX_5$: R^2=0.5095 and $INCTAX_7$ R^2=0.5691) indicate that the explanatory variables are responsible for less than 57% of the total variation of INCTAX, meaning low explanatory power.

Note once again that R^2 increases, in this case nearly fivefold, from $INCTAX_1$ to $INCTAX_7$. In other words, as the number of years analyzed increases, the variables better explain the total variation of INCTAX (Tables 3).

Table 3 - Variables, Expected Sign, Estimated Parameters and Probability of the Effect of each Variable, at 10% Significance, for Inctax Dependent Variable (continua)

PANEL A: FOR $INCTAX_1$

Variable	Expected Sign	Estimated Parameter	Pr> ltl
Intercept		-0.00328	0.52063
PERM	+	0.00021	0.74096
TEMP	-	-0.00043	0.73941
ROA	+	0.08810	0.15321
E/P	+	0.00079	0.98070
Pr > F 0.5389		R^2 0.1104	N=80

PANEL B : FOR $INCTAX_3$

Variable	Expected Sign	Estimated Parameter	Pr> ltl
Intercept		-0.00926	0.00434
PERM	+	0.00040	0.14600
TEMP	-	-0.00011	0.26622
ROA	+	0.18707	0.00017
E/P	+	0.03192	0.34757
Pr > F 0.0002		R^2 0.3808	N=83

PANEL C: FOR $INCTAX_5$

Variable	Expected Sign	Estimated Parameter	Pr> ltl
Intercept		-0.01155	0.00055
PERM	+	0.00028	0.12588
TEMP	-	-0.00011	0.39843
ROA	+	0.22658	0.00008
E/P	+	0.05050	0.13917
Pr > F 0.0002		R^2 0.5095	N=77

Table 3 - Variables, Expected Sign, Estimated Parameters and Probability of the Effect of each Variable, at 10% Significance, for Inctax Dependent Variable (conclusão)

PANEL D: FOR INCTAX$_7$

Variable	**Expected Sign**	**Estimated Parameter**	**Pr> ltl**
Intercept		-0.00745	0.00314
PERM	+	0.00018	0.09357
TEMP	-	-0.00001	0.54969
ROA	+	0.25707	0.00018
E/P	+	-0.00177	0.84433
Pr > F 0.0038		R^2 0.5691	N=70

The above results for taxable income did not change in the model including the earnings management dummy. The low values of the coefficient of determination for each of the equations (INCTAX$_1$: R^2=0.1711, INCTAX$_3$: R^2=0.4185, INCTAX$_5$: R^2=0.5344 and INCTAX$_7$ R^2=0.5854) indicated the explanatory variables are responsible for less than 60% of the total variation of INCTAX, meaning low explanatory power.

However, as in the previous models, R^2 grows substantially from INCTAX$_1$ to INCTAX$_7$. In other words, as the number of years analyzed increases, the variables better explain the total variation of INCTAX (Tables 13-16).

Table 3 - Variables, Expected Sign, Estimated Parameters and Probability of the Effect of each Variable, at 10% Significance, for $Inctax_1$ Dependent Variable and Earnings Management Dummy

PANEL A: FOR $INCTAX_1$

Variable	Expected Sign	Estimated Parameter	Pr> |t|
Intercept		-0.00851	0.10464
TEMPD	-	-0.00003	0.82533
PERMD	+	0.00013	0.82336
ROA	+	0.10334	0.05008
E/P	+	-0.00630	0.82510
D		0.00604	0.31854
Pr > F 0.2887		R^2 0.0171	N=77

PANEL B: FOR $INCTAX_3$

Variable	Expected Sign	Estimated Parameter	Pr> |t|
Intercept		-0.011540	0.00132
TEMPD	-	-0.00091	0.21913
PERMD	+	0.00040	0.26097
ROA	+	0.18243	0.00032
E/P	+	0.04138	0.22355
D		0.006284	0.87533
Pr > F 0.0351		R^2 0.4185	N=75

PANEL C: FOR $INCTAX_5$

Variable	Expected Sign	Estimated Parameter	Pr> |t|
Intercept		-0.12362	0.00093
TEMPD	-	-0.00846	0.22508
PERMD	+	0.00025	0.46099
ROA	+	0.22405	0.00018
E/P	+	0.05400	0.11906
D		-0.00093	0.81273
Pr > F 0.0020		R^2 0.5344	N=69

PANEL D: FOR $INCTAX_7$

Variable	Expected Sign	Estimated Parameter	Pr> |t|
Intercept		-0.006276	0.04506
TEMPD	-	-0.00079	0.21577
PERMD	+	0.00014	0.64602
ROA	+	0.25603	0.00018
E/P	+	0.00903	0.05060
D		-0.00444	0.24312
Pr > F 0.00011		R^2 0.5854	N=62

Analysis of the signs of the independent variables of the models allows affirming the existence of a negative relationship between temporary BTDs and annual variations of pretax earnings (EBIT) and a positive relationship between permanent BTDs and tax expenses, for all the years analyzed.

5 CONCLUSIONS

The aim of this study was to analyze the relationship between the components of book-tax differences and variations in future pretax earnings and tax expenses, besides to verify whether the behavior of the temporary and permanent components of BTDs explains the signs and variations of these two variables, and also if earnings management influences these relationships.

The findings in this paper contribute to our understanding in Brazilian context of how various measures of BTDs relate to future earnings growth. It answers the call of Graham et al. (2011) and Hanlon and Heitzman (2010) for investigation into the components of BTDs using different context than U.S.. Somehow we can say that it bridges the conflicting results of two seminal papers on the relation between BTDs and future performance, as Hanlon (2005) finds a relation between temporary BTDs and earnings persistence, while Lev and Nissim (2004) find temporary BTDs to be unrelated to future earnings changes.

The expectations based on the theory are that there should be a negative relation between temporary BTDs and the variation of pretax earnings (EBIT) and a positive one between permanent BTDs and the variation of income tax expenses, even when there is no interdependence between BTDs and earnings management. To investigate these expectations, we observed the behavior of the components of BTDs for the current period with the variations of pretax earnings and tax expenses 1, 3, 5 and 7 years ahead.

We carried out the analysis in two steps. In the first, we calculated the abnormal working capital accruals of the firms as a proxy for earnings management, while in the second we performed regressions according to the method proposed by Jackson (2011) to check whether the explanatory variables permanent BTDs and temporary BTDs have relations with variations in pretax earnings and tax expenses, respectively, with and without indications of earnings management (Philips et al. , 2003; Dhaliwal et al. , 2004).

The results obtained do not fully validate and satisfy the reliability of the relations between EBIT and temporary BTDs and INCTAX and permanent BTDs, so there is no robust confirmation of the existence of a relation between the temporary and permanent components of BTDs and variations in pretax earnings and income tax expenses, with and without the presence of earnings management.

However, we observed a rising trend in R^2 with the increase in the number of years analyzed, so that the unconditional variables better explain the relations. Although these findings do not present robust results to support the research hypotheses, the signs of the variables in the models contributed to explain the relations between the temporary and permanent variables and the behavior of variations in pretax earnings and income tax expenses, and also provide evidence, as suggested by Jackson (2011), that there is a relation between temporary and permanent BTDs and pretax earnings and tax expenses, even without an influence of earnings management.

Understanding how temporary BTDs map into future pretax earnings growth and permanent BTDs map into future tax expense changes can be a useful distinction for researchers investigating investor or analyst reaction to BTDs, or when attempting to use BTDs as a measure of earnings quality.

Other important conclusion is that many studies examining the impact BTDs have on market participants define BTDs with the tax/book ratio. Because of this paper, we can infer that the different components of BTDs imply different things about future economic performance, the breakdown of BTDs into its components may reveal how well market participants understand these differences.

Due to the small sample size and short period of years observed, which limit the scope of this study, we suggest future research with larger samples, as well as the inclusion of new explanatory variables in the periods analyzed. We also recommend expanding this area of study in Brazil, to investigate whether permanent or temporary BTDs are related to income smoothing and income tax expenses and to what extent taxable income is a measure of performance in the view of credit analysts.

Notas:
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REFERENCES

angose, r., santos, p.s.a., & lavarda, c.e.f. Valor econômico agregado (VEA) e estrutura de capital em empresas do IBRX 100. **Contexto**, Porto Alegre, v. 11, n. 20, 2011.

AYERS, B. C., LAPLANTE, S. K., & MCGUIRE, S. T. Credit ratings and taxes: the effect of book-tax differences on ratings changes. **SSRN**, Available at: <http: //ssrn.com/abstract=1316564>, 2010.

BLAYLOCK, B., SHELVIN, T., & WILSON, R. **Tax avoidance, large positive book-tax differences and earnings persistence.** Working Paper, University of Iowa, University of Washington, 2010.

BURGSTAHLER, D., ELLITOTT, B. W., & HANLON, M. **How firms avoid losses: Evidence of the use of the net deferred tax asset account.** SSRN Working paper, University of Washington, 2002. Available at: <http:// ssrn.com/abstract=355780>.

CHEN L. ,DHALIWAL D., TROMBLEY M. Consistency of book-tax differences and the information content of earnings. **The Journal of the American Taxation Association**, v. 34, n. 2, p. 93-116, 2012.

COMPRIX, J., GRAHAM, R. C., & MOORE, J, A. Empirical evidence on the impact of book-tax differences on divergence of opinion among investors. **JATA Journal of the American Taxation Association***,* forthcoming, v. 33 n. 1, 2010.

DHALIWAL, D. S., HUBER, R., & GRACE LEE, H.S, Pincus, Mortno (2008). Book-tax differences, uncertainty about fundamentals and information quality and cost of capital. **SSRN**. Available at: <http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1127956>.

DEFOND, M. L., & PARK, C. K. The reversal of abnormal accruals and the market valuation of earnings surprises. **The Accounting Review***,* v. 76, n. 3, 2001.

DRAKE, K. D. **Does firm life cycle explain the relation between book-tax differences and earnings persistence**? American Taxation Association Midyear Meeting: Research Forum, 2013. Available at SSRN: http://ssrn.com/abstract=2217145

FERREIRA, F. R., MARTINEZ, A.L., COSTA,F.M, & PASSAMANI, R. Book-tax Differences e Gerenciamento de Resultados no Mercado de Ações do Brasil**, Revista de Administração de Empresas –RAE** , v. 52, p. 481-501, 2012.

FORMIGONI, H., ANTUNES, M. T. P., & PAULO, E. Diferença entre o lucro contábil e lucro tributável: uma análise sobre o gerenciamento de resultados contábeis e gerenciamento tributário nas companhias abertas brasileiras. **BBR Brazilian Business Review**, v. 6 n. 1, 2009.

GRAHAM, R. J., RAEDY, J. S., & SHACKELFORD, D. A. Research in accounting for income taxes. **Journal of Accounting and Economics**, University of North Carolina, 2011.

HANLON, M.The persistence and pricing of earnings, accruals and cash flows when firms have large book-tax differences. **The Accounting Review**, v. 80, n. 1, 2005.

HANLON, M., & HEITZMAN, S. A review of tax research. **Journal of Accounting and Economics**, 2010. Available at: <http:// ssrn.com/abstract=1476561>.

HEPWORTH, S. R. Periodic income smoothing. **The Accounting Review**, v. 28 , p. 32-39, 1953.

JACKSON, M. Book-tax differences and earnings growth. **SSRN**. 2011. Available at: <http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1410790>.

KRONBAUE , C. A. **Contabilización y divulgación de información relativa al impuesto sobre benefício: uma camparacion entre las normas espanõlas y brasileñas**. Universidad de Sevilla, Sevilla, Spain, 2006.

LEV, B., & NISSIN, D. Taxable income, future earnings and equity values. **The Accounting Review***,* v. 79, n. 4, p. 1039-1074, 2004.

NOGA, T., & SCHNADER, A. L. Book-Tax Differences as an Indicator of Financial Distress. **Accounting Horizons** In-Press. 2013. doi: http://dx.doi.org/10.2308/acch-50481

PASSAMANI, R. R. ***Book-tax differences*** **e a relevância informational no mercado de capitais no Brasil**. 2011. Master's Dissertation in Acconting, Programa de Pós-Graduação em Ciências Contábeis da Fundação Instituto Capixaba de Pesquisa em Contabilidade, Economia e Finanças (FUCAPE), Vitória, 2011.

PAULO, E., & LEME, J. R. Gerenciamento de resultados contábeis e o anúncio dos resultados contábeis pelas companhias abertas brasileiras. **Revista Universo Contábil**, Blumenau, v. 5, n. 4, p. 27-43, 2009.

PHILLIPS J. M., & PINCUS, S.; REGO. A. Earnings management: new evidence based on deferred tax expense. **The Accounting Review**, v. 78, n. 2, p. 491-521, 2003.

______. Decomposing changes in deferred tax assets and liabilities to isolate earnings management activities. **The Journal of the American Taxation Association**, v. 26, p. 491–521, 2004.

PLESKO, G. Reconciling corporation book and tax net income, tax years 1996–1998. **Statistics of Income Bulletin**, p. 111–132, 2002.

REZENDE, G. P., & NAKAO, H. S. Gerenciamento de resultados e a relação com o lucro tributável das empresas brasileiras de capital aberto. **Revista Universo Contábil**, Blumenau, v. 8, n. 1, p. 06-21, 2012.

SCHIPPER, K. Commentary on earnings management. **Accounting Horizons**, Sarastosa, v. 3, p. 91-102. 1989.

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