

The informativeness of taxable income and book income before and after the adoption of IFRS in Brazil

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Abstract

This article analyzes the information content of taxable income in relation to book income in Brazil before and after the Transition Tax Regime (RTT), which was established as of calendar year 2010 to neutralize the tax effects of convergence of the country's accounting standards to IFRS. We define informativeness as the ability to cause changes in stock prices. Our sample is composed of firms listed on the BM&FBovespa between 2005 and 2011. The results indicate greater informativeness of taxable income in relation to book income in the sample as a whole. Despite the advent of the RTT and the process of convergence to international accounting standards, the informative content of taxable income continued being more significant than book income after this advent, although the relative difference fell.

Key words: Tax Income; Book Income. Adoption of IFRS



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INTRODUCTION

In this article we examine the informativeness of taxable income in relation to book income before and after the establishment of the Transition Tax Regime (RTT), which was established as of calendar year 2010 to neutralize the tax effects of convergence of the country's accounting standards to IFRS. In this paper, informativeness is defined as the ability to cause changes in stock prices. This research question is based on the growing tax accounting literature investigating whether taxable income can contain information for investors regarding stock returns in addition to that provided by book income (Shevlin, 2002; Hanlon, Laplante & Shevlin, 2005; Ayers, Jiang & Laplante, 2009).

Taxable income and book income are calculated according to different rules for recognition of revenues and expenses. According to the financial accounting rules, revenue is recognized when the criteria for this recognition are satisfied, and expenses are recognized when incurred or at the same time as the related revenues. In general, the time of receipt or the flow of payments is irrelevant to the moment of recognition for purposes of financial accounting (Chen, Dhaliwal & Trombley, 2007).

The objectives of tax and financial accounting are also different. Financial accounting is intended to supply users of the financial statements with information to reach decisions. Book income is calculated according to the accrual regime and is used as a summarized measure of the firm's performance by a wide range of users of accounting information, especially investors (Dechow, 1994). In contrast, the objectives of the rules on taxable income are: 1) to provide rules for efficient and fair determination of tax obligations and subsequent payment of taxes; and 2) to provide incentives for firms to become involved in activities of interest to the government (Scholes et al., 2002; Manzon & Plesko, 2001). Thus, the profits are determined by different sets of rules and should be different (Hanlon, 2003).

Hanlon, Lima & Shevlin (2005) suggest that these different incentives applied to book and taxable income have the effect of making each measure incrementally informative in relation to the other and present evidence that taxable income is informative, even after controlling for book income.

Studying the incremental information provided by taxable income on the return of Brazilian companies has special relevance due to the changes in accounting in the country produced by Law 11,638 of December 28, 2007, which amended Law 6,404/1976 (Law of Corporations) and marked the start of the convergence to international accounting standards (IFRS). Subsequently, Law 11,941 of May 27, 2009 established the Transition Tax Regime (Regime Tributária de Transição, or RTT), serving to neutralize the tax effects of the accounting rules and procedures established by Law 11,638/2007 (Iudícibus et al., 2010). This study fills in a gap in the Brazilian accounting literature by investigating the relevance of the information contained in taxable income, considering the effects of tax planning. More particularly, we

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examine whether the recent changes in Brazilian accounting rules for convergence to international standards, marked by the RTT, caused the informativeness of taxable income in relation to book income to increase or decrease.

For this purpose, we examine the following two questions: (i) whether there is a correlation between the relevance of the information contained in taxable income, considering the effects of tax planning; and (ii) whether the information contained in taxable income in relation to book income increased or decreased with the process of convergence of Brazilian accounting.

We believe this study will contribute to the Brazilian literature on accounting in two ways: (i) by investigating taxable income as a performance measure in the Brazilian context, as suggested by Ayers, Jiang & Laplante (2009); and (ii) by investigating whether tax planning has contrasting effects on the information contained in taxable income before and after the change.

THEORETICAL FRAMEWORK

The association between firms' performance and taxable income

This study follows in the footsteps of previous ones by, among others, Revsine, Collins & Johnson (2002), Palepu, Healy & Bernard, (2000) and Penman (2001) regarding the association between firms' performance and taxable income. In this context, the empirical study of Hanlon (2005, p. 164) in particular indicates that large differences between book income and taxable income – book-tax differences (BTDs) – provide information on the persistence of the current performance of firms and has predictive power on their future profits.

Heflin & Kross (2005) investigated how taxable income can measure the economic performance of firms in relation to book income. According to them, taxable income used as a performance measure can contain two sources of error: (1) management bias; and (2) inaccuracy due to regulatory mechanisms. Management bias occurs when managers opportunistically use the discretionarity of accounting rules while regulatory mechanisms come into play when accounting rules, even when applied without any bias, do not precisely measure the economic performance of companies. They considered operating cash flows as a common component of book and taxable income, and defined total tax accruals as the difference between taxable income and operating cash flows, and total book accruals as the difference between book income and operating cash flows. Their results demonstrated that tax accruals have explanatory power regarding contemporaneous annual stock returns incremental to book accruals and operating cash flows, but that book accruals have relatively higher explanatory power.

Ayers, Jiang & Laplante (2009) studied the use of taxable income as an alternative performance measure to assess the creditworthiness of companies, particularly examining the influence of tax planning and the low quality of earnings. The results suggested that the incremental information contained in the estimate of taxable income in relation to book income is smaller for companies with high tax planning.

In general, the studies in the international literature have indicated that in determined contexts, the informativeness of taxable income can be relevant to predicting stock returns.

The impact of the process of convergence to international accounting standards on the information content of accounting information

Various studies have suggested that international accounting standards help increase the quality of financial information and improve the prediction of firms' financial situation, i.e., enhance the content of accounting information (Barth, Landsman & Lang, 2008; Bartov, Goldberg & Kim, 2005; Morais & Curto, 2009; Chalmers, Clinch & Godfrey, 2009; Lima, 2011; Macedo, Araújo & Braga, 2012).

Barth, Landsman & Lang (2008) examined whether the application of International Financial Reporting Standards (IFRS) is associated with higher quality of accounting information. Their results indicated that the application of the international standards by firms in 21 countries generally led to less earnings management, more timely recognition of losses and higher information content when compared to samples of companies that follow local accounting standards.

Bartov, Goldberg & Kim (2005) analyzed the financial statements of German companies between 1998 and 2000, because during these years firms published these statements according to German GAAP, US GAAP and IFRS. They compared the information content of the statements prepared according to these three standards through regressions relating returns to earnings. The results indicated greater relevance of accounting information according to US-GAAP and IFRS than German GAAP.

Morais & Curto (2009), based on a sample of European-listed firms, studied whether the value relevance of accounting information increased after the mandatory application of international standards (IFRS) in relation to the application of local standards. The results indicate that the information content is greater in countries where financial and tax accounting rules clearly separated.

Chalmers, Clinch & Godfrey (2009) investigated whether the adoption of IFRS increase the informativeness of Australian firms' accounting figures. They used samples from periods before and after the adoption of IFRS and found that the information content of book income increased after IFRS adoption, but that the equity value did not change significantly.

Lima (2011) examined the relevance of accounting information before and after the convergence to international standards in Brazil. He analyzed 2,277 quarterly observations of all the firms included in the Ibovespa index between 1995 and 2009. The results indicated that the relevance of accounting information, measured by price and return models, increased after the partial adoption of IFRS, and that the adjustments to reconcile net income and stockholders' equity are relevant for the Brazilian capital market.

Also in the Brazilian context, Macedo, Araújo & Braga (2012) studied whether the process of convergence to international standards affected the relevance of net earnings per share and book value per share of the nonfinancial companies with highest trading volume listed on the BM&FBovespa. According to the results, there was a structural break from 2009 to 2010, revealing an impact of the convergence process.

There is still a gap in the Brazilian accounting literature regarding whether the relative informativeness of taxable income in relation to book income increased or decreased with the process of convergence to international accounting standards and the Transition Tax Regime (RTT). To fill this gap, the first hypothesis tested here is H1: The information contained in taxable income in relation to book income increased with the Transition Tax Regime (RTT) and the process of convergence to international accounting standards (IFRS) in Brazil.

Tax planning and accounting income

Book-tax differences (BTDs) can arise from a variety of sources. Passamani, Martinez & Teixeira (2012) exemplified some practical situations that can generate BTDs according to Brazilian tax legislation. According to them, negative BTDs can be the result of, among other factors: (i) depreciation charges appropriated in the financial accounts corresponding to assets already fully depreciated in the tax accounts due to tax incentives; and (ii) different timing of recognition of earnings from foreign subsidiaries for accounting and tax purposes. In turn, positive BTDs can occur due to: (i) use of tax loss carryforwards to offset current taxes (limited to 30% of the adjusted net income); and; (ii) events that are deductible from book income but not from taxable income, such as accelerated depreciation.

According to Hanlon & Heitzman (2010), various studies have investigated why differences in tax ledgers are associated with properties of earnings and valuations by market participants (such as lower persistence, the relationship with credit ratings, etc.) and have identified firms with greater propensity of manage earnings or engage in more aggressive tax planning.

Following this approach, Ayers, Laplante & McGuire (2010) found that the relationship between credit ratings and BTDs is weaker when BTDs are motivated by tax planning. Blaylock, Shevlin & Wilson (2010) found evidence that firms with large BTDs likely resulting from tax planning (tax avoidance) show greater persistence of earnings and accruals than other firms with large BTDs, but that firms with large BTDs likely arising from upward earnings management exhibit lower earnings and accruals persistence than other companies with large BTDs. In this same line, Desai (2006) identified that aggressive tax planning practices, such as deferring taxable income, can impair the analysis of firms' real performance.

On the other hand, Lev & Nissam (2004) argued that companies can have incentives to smooth taxable income and diminish the present income tax liability, so that tax planning can in this case increase the capacity of taxable income to provide information about growth of future gains.

According to Ayers, Jiang & Laplante (2009), the incentive to smooth taxable income among American companies is a function of the convexity of the present value of income taxes in taxable income that is attributable to: (a) progressive income tax tables; (b) the alternative minimum tax and investment tax credit in the United States; and (c) asymmetric treatment between taxable income and losses. However, Graham & Smith (1999) concluded that firms have few tax incentives to smooth earnings. Based on this,

Ayers, Jiang & Laplante (2009) expected tax planning to diminish the information contained in taxable income.

In Brazil there is also a gap in the accounting literature regarding whether aggressive tax planning practices reduce the information contained in taxable income, leading to our second hypothesis: H2 – The information content of taxable income is relatively lower among companies with aggressive tax planning than other companies.

METHODOLOGY

Sample selection parameters

Our sample consists of firms listed on the São Paulo Stock, Mercantile and Future Exchange (BM&FBovespa) in the period from 2004 to 2011, enabling analysis of the variation between 2005 and 2011. We excluded financial institutions from the sample because they are subject to different accounting and tax rules than firms in other sectors.

Data collection technique

We collected data from the financial statements contained in the Economática database. For firms with more than one class of shares, we chose the class with the highest trading volume. Besides financial institutions, we excluded firms with incomplete data over the study period of 2004 to 2011. The final sample was composed of 52 companies and 364 quarterly observations.

Data analysis technique

Estimation of taxable income and book income

We estimated the taxable income, which is protected by fiscal secrecy, from the information in the financial statements according to the model adapted to Brazilian reality used by Passamani, Martinez & Teixeira (2012), as presented below:

$$TI_{ij} = FTE_{ij} / str_t \quad (\text{Equation 1})$$

Where:

FTE_{ij} = current income tax expense (provision for IR and CSLL), taken from the income statement; and
str_t = nominal tax rate, of 34%.

In turn, the book income is defined as the earnings before income tax (EBIT).

Identification of firms with aggressive tax planning

We identified firms with high tax planning by the long-run cash effective tax rate. As applied here, the measure consists of the sum of current tax expenses for seven years divided by the sum of the pretax income over the same period, according to the model below:

$$ETR_{jt} = \frac{\sum_{m=t-6}^t CTE_{jm}}{\sum_{m=t-6}^t BI_{jt}} \quad (\text{Equation 2})$$

Where:

CTE denotes current tax expenses, the total income tax liability minus deferred taxes of firm j in the 7-year period from t-6 to t (the total sample period); and

BI is the sum of the book income (EBIT) of firm j in the 7-year period from t-6 to t.

We compared the difference in tax planning propensity in the period before and after the RTT, namely 2005 to 2008 and 2009 to 2011.

The tax planning measure long-term effective tax rate (ETR) was developed by Dyreng, Hanlon & Maydew (2008). In their setup it was obtained by estimating the sum of income taxes paid in 10 years divided by the pretax earnings in the same period. According to Hanlon & Heitzman (2010), this measure can be used for intervals between three and ten years, and the main benefit of using a longer period is to avoid the volatility of annual effective tax rates.

Estimate of the informativeness of book and taxable income

We performed tests of the informativeness of taxable and book income for firms with high tax planning in comparison with other companies. According to Ayers, Jiang & Laplante (2009), the informativeness of income is defined as the capacity of each estimate of taxable or book income to capture, or summarize, the information that affects companies' stock returns. Note that the objective of this study is to analyze

the capacity of taxable and book income to summarize information that affects return, not to analyze any causality.

Therefore, the regressions below demonstrate how we examined the relationship between the relevance of information from taxable income for book income for companies with high tax planning against other firms, to test H1 and H2. We measured the relevance of taxable income and book income separately by calculating the adjusted R² in regressions of the returns of each income measure as shown below:

$$R_{ij} = \alpha_0 + \alpha_1 \Delta TI_{ij} + \varepsilon_{ij} \quad (\text{Equation 3})$$

$$R_{ij} = \alpha_0 + \alpha_1 \Delta BI_{ij} + \varepsilon_{ij} \quad (\text{Equation 4})$$

Where: R_{ij} is the buy-and-hold market-adjusted return, free of risk, of firm j over the 16-month period starting in fiscal (calendar) year t and ending 4 months after the close of year t.

Alternatively, we used the BTDs to examine the relevance of the information, as described below:

$$R_{ij} = \alpha_0 + \alpha_1 \text{BTD}_{ij} + \varepsilon_{ij} \quad (\text{Equation 5})$$

Where: BTD is the difference between book income and taxable income of firm j in year t.

The reason for choosing the period of 16 months is that information on taxable income is protected by fiscal secrecy and the annual results of each year must be published within four months of year end. In this respect, we followed the footsteps of Ayers, Jiang & Laplante (2009).

As a stock return measure, we used the excess (abnormal) return, calculated from the difference between the return of firm i on day t and the return of representative market portfolio index (Ibovespa) in an equal period, to relate the events "book income" and "taxable income" to firms' abnormal earnings. The changes in estimated taxable income and book income, ΔTI_{jt} and ΔBI_{jt} , are equal to the difference of each measure for firm j from year t-1 to year t: $[(TI_{jt} - TI_{jt-1}) \text{ and } (BI_{jt} - BI_{jt-1})]$, scaled by the firm's total assets at the start of year t, respectively. TI_{jt} and BI_{jt} are defined as previously.

We used specification of variations (variations in taxable income and book income) to mitigate the concerns associated with regression levels, such as bias from correlated omitted variables and heteroskedasticity (Kothari, 2001; Ayers, Jiang & Laplante, 2009).

We also analyzed the regressions with panel data, allowing quantitative analysis of the data, through time series observations on cross sectional data in the same model, a process called pooling. The panel data were balanced because each firm i had the same number of time-series observations. The regressions were fitted by ordinary least squares (OLS). Finally, the statistical test was given by the ratio of the adjusted R² of taxable income over the adjusted R² of book income for each group of companies during the sample period, as shown below:

$$\text{Adjusted R}^2 \text{ of taxable income} / \text{adjusted R}^2 \text{ of book income} \quad (\text{Equation 6})$$

According to Ayers, Jiang & Laplante (2009), an advantage of this test statistic is that it allows comparing the information contained in two performance measures (taxable and book income) while keeping the firms' returns constant. Further according to them, this measure compares the relevance of information about taxable income in relation to book income of groups of companies segregated by specific characteristics, here those with aggressive tax planning versus other firms.

Since the paper by Lev (1989), many other authors have used the adjusted R² to assess the value relevance of accounting information. These studies have compared the adjusted R² during different time periods (e.g., Collins, Maydew & Weiss, 1997; Lev & Zarowin, 1999; Francis & Schipper, 1999) or between countries (e.g., Alford et al., 1993; Ali & Hwang, 2000). Here our model follows that developed by Ayers, Jiang & Laplante (2009) and is used in similar form as by Hanlon, Laplante & Shevlin (2005, p. 426).

We should mention the limitations of this model, as pointed out by Francis & Schipper (1999), Brown, Lo & Lys (1999) and Gu (2002), all of whom argued that the adjusted R² values resulting from different samples may not be directly comparable because the total variance of the dependent variable (such as stock return) is not constant in different samples, a problem that can weaken the explanatory power of the independent variables. However, Ayers, Jiang & Laplante (2009) stressed that the model developed

by them does not suffer from the problem caused by the volatility of the dependent variable because the returns of the company are constant (e.g., the comparison will be between the explanatory power of taxable and book income of the same firm).

Besides this, in testing H1 and H2 between the groups, the volatility of returns is of less concern because we are comparing test statistics in two groups composed of companies from the same country and during the same period. Therefore, the model proposed by Ayers, Jiang, Laplante (2009) can be applied for our purposes.

Test of the incremental explanatory power of taxable income

Our interest here is to evaluate the additional (incremental) explanatory power of including taxable income in the regression of book income on the returns of firms with high tax planning in comparison with other firms. The proposed model is described by the following formula:

$$R_{ij} = \beta_0 + \beta_1 \Delta BI_{ij} + \beta_2 \Delta TI_{ij} + \varepsilon_{ij} \quad (\text{Equation 7})$$

Where all the variables are as previously defined.

Alternatively, we use the book-tax differences to evaluate the additional explanatory power, as described below:

$$R_{ij} = \beta_0 + \beta_1 \Delta BI_{ij} + \beta_2 \text{BTD}_{ij} + \varepsilon_{ij} \quad (\text{Equation 8})$$

In both cases the test statistic is the difference between the adjusted R² of equation (6) and the adjusted R² of equation (4) for each group of companies during the same sample period, as below:

$$\text{Adjusted R}^2 \text{ BI+ TI Equ (7)} - \text{Adjusted R}^2 \text{ BI Equ (4)} \quad (\text{Equation 9})$$

RESULTS

Informativeness of taxable income and book income

Table 1, reports the test statistics of all the firms referring to the adjusted R² values of the regressions and the results of the test statistics from the following equations: (i) Adjusted R² for taxable income / Adjusted R² for taxable income; and (ii) Adjusted R² BI+ TI – Adjusted R² BI.

In this way, we tested the relevance of the information contained in book income and taxable income by comparing the adjusted R² of the regression of the returns on the variation of taxable income.

The results indicate that, considering all the firms in the sample, without distinction between the tax planning characteristics, the adjusted R² of the taxable income regression is greater than that of the book income regression. In this case, taxable income has explanatory power of the variation of annual return that is higher by a factor of 1.5763 in relation to book income (Adjusted R² Taxable Income / Adjusted R² Book Income = 1.5763).

Table 1: Information content of taxable income in relation to book income

Year	Obs	R ² AjustΔBI	R ² AjustΔTI	R ² AjustΔTI/R ² AjustΔBI	R ² Ajust BI + TI	R ² Ajust:(BI + TI) - BI
Pre RTT2008	208	0,284407	0,843285	2,965064151	0,977709	0,693302
Pos RTT2009	156	0,861005	0,987831	1,147299958	1	0,138995
All Period	364	0,543547	0,856799	1,576310788	0,871409	0,327862

We also tested the additional explanatory power of including taxable income in the regression of book income on the returns of all the firms in the sample, without distinction of tax planning characteristics, and obtained an adjusted R² of 0.871409 ($R_{ij} = \beta_0 + \beta_1 \Delta BI_{ij} + \beta_2 \Delta TI_{ij} + \varepsilon_{ij}$). In this case, in comparison with the adjusted R² of the regression of book income of 0.543547, there is an increase by a factor of 1.603190 in the regression's explanatory power ($0.871409 / 0.543547 = 1.603190$). The test statistic given by the difference between the adjusted R² of the equation: $R_{ij} = \beta_0 + \beta_1 \Delta BI_{ij} + \beta_2 \Delta TI_{ij} + \varepsilon_{ij}$ and the equation: $R_{ij} = \alpha_0 + \alpha_1 \Delta BI_{ij} + \varepsilon_{ij}$ demonstrates an increase of 0.327862 in the relevance of the information (Adjusted R² BI+ TI – Adjusted R² BI = 0.327862).

As a consequence, the results indicate that taxable income contains more information than book income in relation to the firms' stock returns over the entire period.

The information from taxable and book income in the period before and after the RTT

We also tested the sample divided into two sub-samples, before the establishment of the Transition Tax Regime- RTT (2005 to 2008) and after the RTT took effect (2009 to 2011), with the aim of testing whether the difference in the information contained in taxable income in relation to book income increased or decreased with the convergence process.

The results indicate that considering all the firms in the sample, without distinction as to tax planning characteristics, the adjusted R² of the regression of taxable income is greater than the adjusted R² of the regression of book income, both before and after the RTT.

In this case, the taxable income in the pre-RTT period has greater explanatory power of the variation of annual return by a factor of 2.9651 over that of book income (Adjusted R² Taxable Income / Adjusted R² Book Income = 2.9652). In turn, in the post-RTT period, the taxable income has stronger explanatory power on the variation of annual return by a factor of 1.1473 over the explanatory power of book income (Adjusted R² Taxable Income / Adjusted R² Book Income = 1.1473).

This produces a variation of -1.8178 (1.1473 - 2.9651) between the period before and after the RTT, a decline in the difference between the information contained in the taxable income and that contained in the book income with the advent of the RTT. There is an increase of 0.5966 (0.8610 - 0.2844) in the explanatory power of the regression of the excess (abnormal) return explained by the book income ($R_{ij} = \alpha_0 + \alpha_1 \Delta BI_{ij} + \varepsilon_{ij}$). On the other hand, there is an increase of only 0.1446 (0.9878 - 0.8432) in the explanatory power of the regression of the abnormal return explained by the taxable income ($R_{ij} = \alpha_0 + \alpha_1 \Delta TI_{ij} + \varepsilon_{ij}$).

We also tested the additional explanatory power of including taxable income in the regression of the book income in the periods before and after the RTT, considering all the companies in the sample, without distinction as to tax planning characteristics.

In the period before the RTT, the regression of the abnormal returns explained by the book income and taxable income presents an adjusted R² of 0.977709 ($R_{ij} = \beta_0 + \beta_1 \Delta BI_{ij} + \beta_2 \Delta TI_{ij} + \varepsilon_{ij}$). In comparison with the adjusted R² of the regression of book income of 0.284407, this is an increase by a factor of 3.4355 in the regression's explanatory power (0.977709 / 0.284407 = 3.435534). The test statistic given by the difference between the adjusted R² of the equation: $R_{ij} = \beta_0 + \beta_1 \Delta BI_{ij} + \beta_2 \Delta TI_{ij} + \varepsilon_{ij}$ and the equation: $R_{ij} = \alpha_0 + \alpha_1 \Delta BI_{ij} + \varepsilon_{ij}$ demonstrates an increase in the relevance of the information of 69.33% (Adjusted R² BI+ TI - Adjusted R² BI = 0.6933).

In turn, in the period after the RTT, the regression of abnormal returns explained by the book income and taxable income presents an R² of 1 ($R_{ij} = \beta_0 + \beta_1 \Delta BI_{ij} + \beta_2 \Delta TI_{ij} + \varepsilon_{ij}$). In comparison with the adjusted R² of the regression of the book income of 0.861005, this is an increase of by a factor of 1.1614 in the explanatory power of the regression (1 / 0.861005 = 1.161433). This increase is smaller than in the period before the RTT. The test statistic given by the difference between the adjusted R² of the equation: $R_{ij} = \beta_0 + \beta_1 \Delta BI_{ij} + \beta_2 \Delta TI_{ij} + \varepsilon_{ij}$ and the equation: $R_{ij} = \alpha_0 + \alpha_1 \Delta BI_{ij} + \varepsilon_{ij}$ demonstrates a smaller increase in the relevance of the information of 0.1390 (Adjusted R² BI+ TI - Adjusted R² BI = 0.1390).

Therefore, the information contained in the taxable income, despite the advent of the RTT, continued being more significant than that of the book income to explain the returns. However, there was a decline in the difference between the informativeness of the taxable income and the book income with the advent of the RTT.

The information from taxable and book income between companies with high tax planning and other firms

With respect to the distinction between firms according to their tax planning characteristics, the results indicate that the information contained both in taxable income and book income has less power to explain the abnormal returns of firms with high tax planning than of other firms.

Table 2, panels "a" and "b", report the test statistics of the adjusted R² values of the regressions for the two types of firms.

Table 2: Information content of taxable income in relation to book income

Panel a: All firms

Year	Obs	R ² AjustΔBI	R ² AjustΔTI	R ² AjustΔTI/R ² AjustΔBI	R ² Ajust BI + TI	R ² Ajust:(BI + TI) - BI
Pre RTT2008	156	0,28324	0,843029	2,976376924	0,977636	0,694396
Pos RTT2009	117	0,860701	0,987805	1,147674977	1	0,139299
All period	273	0,544394	0,851167	1,563512823	0,864027	0,319633

Panel b: Tax Aggressive Firms

Year	Obs	R ² AjustΔBI	R ² AjustΔTI	R ² AjustΔTI/R ² AjustΔBI	R ² Ajust BI + TI	R ² Ajust:(BI + TI) - BI
Pre RTT2008	52	0,014937	0,453959	30,39157796	0,683584	0,698521
Pos RTT2009	39	0,263692	0,602498	2,284855058	1	0,736308
All period	91	0,015616	0,004842	0,310066598	0,305459	0,289843

The taxable income of firms with high tax planning, considering the entire sample period, has only 0.3100 of the explanatory power over the variation of annual return than that of book income (Adjusted R² Taxable Income / Adjusted R² Book Income = 0.3100). In comparison, for other firms, this ratio is 1.5635 (Adjusted R² Taxable Income / Adjusted R² Book Income = 1.5635).

Hence, there is a variation of 1.2535 (1.5635 - 0.3100) between the explanatory power of the information for firms with high tax planning in relation to other firms. Companies with high tax planning present an adjusted R² of the regression of abnormal returns explained by book income ($R_{ij} = \alpha_0 + \alpha_1 \Delta BI_{ij} + \varepsilon_{ij}$) of 0.0156 and an adjusted R² of the regression of the abnormal returns explained by taxable income ($R_{ij} = \alpha_0 + \alpha_1 \Delta TI_{ij} + \varepsilon_{ij}$) of 0.0084, a figure with little statistical significance.

In turn, the other firms present an adjusted R² of the regression of abnormal returns explained by book income ($R_{ij} = \alpha_0 + \alpha_1 \Delta BI_{ij} + \varepsilon_{ij}$) of 0.54436 and an adjusted R² of the regression of the abnormal returns explained by taxable income ($R_{ij} = \alpha_0 + \alpha_1 \Delta TI_{ij} + \varepsilon_{ij}$) of 0.8511.

We also tested the additional explanatory power of including taxable income in the regression of book income in comparing the firms with high tax planning and other firms, considering the entire sample period.

The firms with high tax planning present a regression of abnormal returns explained by book income and taxable income with adjusted R² of 0.3055 ($R_{ij} = \beta_0 + \beta_1 \Delta BI_{ij} + \beta_2 \Delta TI_{ij} + \varepsilon_{ij}$), while for other firms the adjusted R² is 0.8640.

The test statistic given by the difference between the adjusted R² of the equation: $R_{ij} = \beta_0 + \beta_1 \Delta BI_{ij} + \beta_2 \Delta TI_{ij} + \varepsilon_{ij}$ and the equation: $R_{ij} = \alpha_0 + \alpha_1 \Delta BI_{ij} + \varepsilon_{ij}$ demonstrates a small difference between the relevance of the information for firms with high tax planning, with 28.98% (Adjusted R² BI+ TI - Adjusted R² BI = 0.2898) in comparison with the other firms, where the figure is 0.3196, so the explanatory power on returns is stronger for the other firms.

Therefore, the information contained in the taxable income in relation to book income in the firms with a high tax planning for the entire sample period is lower than that for the other firms. Furthermore, both taxable income and book income present lower statistical significance to explain the abnormal returns of firms with high tax planning.

We ran similar tests between firms with high tax planning and other firms, covering the period before and after the RTT. The results indicate that for firms with high tax planning, both book income and taxable income lose informativeness between the period before and after the RTT.

Specifically, the quotient of the explanatory power of taxable income in the pre-RTT period of the firms with high tax planning over the variation of annual returns explained by book income is an -30.3915 (Adjusted R² Taxable Income / Adjusted R² Book Income = -30.3915). Furthermore, the regression of the abnormal return explained by the book income in the pre-RTT period is statistically insignificant for companies with high tax planning, which present an adjusted R² of -0.014937 ($R_{ij} = \alpha_0 + \alpha_1 \Delta BI_{ij} + \varepsilon_{ij}$). For the other firms, the explanatory power is 2.9763 and the regression of the abnormal returns explained by the book income is statistically significant, with an adjusted R² of 0.28324.

In the post-RTT period, the taxable income of firms with com high tax planning has explanatory power of 2.2848 in relation to the variation of annual returns explained by book income (Adjusted R² Taxable

Income / Adjusted R² Book Income = 2.2848). For the other firms, this ratio of explanatory power is 1.1476.

We further tested the incremental explanatory power of including taxable income in the regression of book income in the pre- and post-RTT periods, considering the firms with high tax planning and the other firms separately.

In the period before the RTT, the regression of abnormal returns explained by the book income and taxable income presents an adjusted R² of 0.6835849 ($R_{ij} = \beta_0 + \beta_1\Delta BI_{ij} + \beta_2\Delta TI_{ij} + \varepsilon_{ij}$) for companies with high tax planning and of 0.977636 for the other firms. Comparing the adjusted R² of the regression of book income of 0.014937 and the adjusted R² of the regression of taxable income of 0.4539 for the high tax planning firms ($0.6835849 / (0.014937) = 3.435534$) produces a ratio of explanatory power of -30.3915 versus 2.9763 for the other firms ($0.8430 / 0.28324$). The test statistic given by the difference between the adjusted R² of the equation: $R_{ij} = \beta_0 + \beta_1\Delta BI_{ij} + \beta_2\Delta TI_{ij} + \varepsilon_{ij}$ and the equation: $R_{ij} = \alpha_0 + \alpha_1 \Delta BI_{ij} + \varepsilon_{ij}$ demonstrates an increase in the relevance of the information (Adjusted R² BI+ TI - Adjusted R² BI = 0.6985) for the firms with high tax planning and 0.6943 for the other firms.

In turn, in the period after the RTT, the regression of the abnormal returns explained by book income and taxable income presents an adjusted R² of 1 ($R_{ij} = \beta_0 + \beta_1\Delta BI_{ij} + \beta_2\Delta TI_{ij} + \varepsilon_{ij}$) both for firms with and without aggressive tax planning. Comparing the adjusted R² of the regression of book income of 0.263692, there is an increase by a factor of 3.7923 in the explanatory power of the regression ($1 / 0.263692 = 3.7923$) for the firms with high tax planning and by a factor of 1.1618 for the other firms ($1 / 0.860701$). The test statistic given by the difference between the adjusted R² of the equation: $R_{ij} = \beta_0 + \beta_1\Delta BI_{ij} + \beta_2\Delta TI_{ij} + \varepsilon_{ij}$ and the equation: $R_{ij} = \alpha_0 + \alpha_1 \Delta BI_{ij} + \varepsilon_{ij}$ shows an increase in the relevance of the information of 0.7363 (Adjusted R² BI+ TI - Adjusted R² BI = 0.7363) for firms with high tax planning and of 0.1392 for the other companies.

Therefore, with respect to the distinction between firms according to their tax planning characteristics, there is a loss of informativeness both of book and taxable income from the period before to that after the advent of the RTT.

The information contained in the book-tax differences

The information of the BTDs and book income

Table 3, reports the test statistics of all the companies regarding the adjusted R² values of the regressions and the results of the test statistics of the following equation: Adjusted R² BTD / Adjusted R² Book Income.

Table 3: Information content of BTDs in relation to book income

Year	Obs	R ² AjustΔBI	R ² AjustBTD	R ² AjustBTD/R ² AjustΔBI
Pre RTT2008	208	0,284407	-0,004599	-0,016170488
Pos RTT2009	156	0,861005	0,579249	0,672759159
All period	364	0,543547	0,097527	0,179426986

We tested the relevance of the information contained in the book income and BTD by comparing the adjusted R² of the regression of returns on the variation of the book income and the adjusted R² of the regression of the returns on the variation of the BTD.

The results show that, for all the companies without distinction regarding tax planning characteristics, the adjusted R² of the BTD regression is smaller than that of book income. The BTD explains 0.1794 of the variation of annual return explained by the book income (Adjusted R² BTD / Adjusted R² Book Income = 0.1794).

Therefore, the results indicate there is less information contained in BTD than in book income to explain the firms' stock returns. In comparison with taxable income, BTD contains less information to explain the firms' returns.

The information content of BTD in the period before and after the RTT

We further tested the samples divided between the period before the RTT (2005 to 2008) and after its advent (2009 to 2011) to check whether the information contained in BTDs in relation to book income increased or decreased with the convergence process.

The results considering all the companies without distinction as to tax planning characteristics indicate that the adjusted R² of the regression of the BTDs became statistically significant after the RTT. The BTD information is statistically insignificant in the pre-RTT period, with a ratio of -0.0161 on the variation of the annual returns explained by the book income (Adjusted R² BTD / Adjusted R² Book Income = -0.0161). In the post-RTT period the ratio is 0.6727 (Adjusted R² BTD / Adjusted R² Book Income = 0.6727). Hence, the information contained in the BTDs is only statistically significant after the advent of the RTT. However, the information content of the BTDs is lower than that of the book income even after the RTT.

The information of BTDs between firms with high tax planning and other firms

We ran similar tests between firms with aggressive tax planning and the other firms covering the period before and after the RTT. The results show that for both groups of firms, the informativeness of BTDs becomes statistically significant in the post-RTT period.

Table 4, panels “a” and “b”, report the test statistics of the adjusted R² values of the regressions for firms with high tax planning and the other firms.

Table 4: Information content of BTDs in relation to book income

Panel a: All firms				
Year	Obs	R²AjustΔBI	R²AjustBTD	R²AjustBTD/R²AjustΔBI
Pre RTT2008	156	0,28324	-0,006237	-0,022020195
Pos RTT2009	117	0,860701	0,578328	0,67192672
All period	273	0,544394	0,092139	0.1692081

Panel b: Tax Aggressive Firms				
Ano	Obs	R²AjustΔBI	R²AjustBTD	R²AjustBTD/R²AjustΔBI
Pré RTT2008	52	-0,014937	-0,019363	1,296311174
Pós RTT2009	39	0,263692	0,14735	0,558795868
Todo Período	91	0,015616	0,304098	19,47348873

As can be seen, the regression of the abnormal return explained by BTDs is statistically insignificant in the pre-RTT period both for firms with high tax planning, which have an adjusted R² of -0.019363 ($R_{tj} = \alpha_0 + \alpha_1 \Delta BTD_{tj} + \epsilon_{tj}$), and the other companies, which have adjusted R² of -0.006237.

In turn, in the post-RTT period the same regressions produce statistically significant values for BTDs both for firms with high tax planning, with adjusted R² of 0.14735 ($R_{tj} = \alpha_0 + \alpha_1 \Delta BTD_{tj} + \epsilon_{tj}$), and the other firms, with adjusted R² of 0.578328.

Furthermore, in the post-RTT period the ratio of the explanatory power of BTDs in relation to that of book income for firms with high tax planning is 0.5587 (Adjusted R² BTD / Adjusted R² Book Income = 0.5587), while this ratio is 0.6719 for the other firms.

Therefore, with respect to the distinction between companies with aggressive tax planning and other firms, the BTDs become informative after the advent of the RTT for both types of firms.

CONCLUSION

This article investigates the existence of information in the taxable income in relation to the annual stock returns of listed Brazilian companies considering the effects of tax planning. The research questions are based on the literature on tax accounting that debates whether the taxable income can contain incremental information for investors regarding returns in relation to the information captured by book income (Shevlin 2002; Hanlon, Laplante & Shevlin, 2005; Ayers, Jiang & Laplante, 2009).

Based on the study of Hanlon, Laplante & Shevlin (2005), we tested whether taxable income provides information to the market that is incrementally “useful” over and above the book income figure, by regressions of the stock returns on the variations of book income and the variations of taxable income. As

done by Ayers, Jiang & Laplante (2009), we also considered the tax planning characteristics of the firms in the sample.

Consistent with the results reported by Hanlon, Laplante & Shevlin (2005), we found that both book income and taxable income have explanatory power over stock returns. The results indicate that taxable income contained more information than book income in relation to forecasting the future stock returns of the firms in the sample during the study period.

We analyzed separate samples for the period before and after the advent of the Transition Tax Retime - RTT (2005 to 2008 and 2009 to 2011, respectively), for the purpose of testing whether the information contained in BTDs in relation to book income increased or decreased with the process of convergence of accounting standards to IFRS in Brazil. In this case, the results indicate that the information contained in taxable income, despite the advent of the RTT, continued to be more significant than book income to explain the firms' returns. However, there was a decline in the difference between the information contained in taxable income and that contained in book income with the advent of the RTT.

In line with the findings of Ayers, Jiang, Laplante (2009), the gap between the information contained in taxable income in relation to that contained in book income over the entire period was smaller than that for other firms. However, both taxable and book income were less statistically significant in explaining excess (abnormal) return for the firms with high tax planning. Further regarding the distinction between aggressive tax planners and other firms, the results show that for the former firms, the informativeness of both book and taxable income declined from the period before the RTT to that afterward.

With respect to book-tax differences, the results indicate that these only became informative after the advent of the RTT, both for aggressive tax planners and other firms. One of the aims of this study was to fill in a gap in the Brazilian accounting literature in the sense of verifying the relevance of the information contained in taxable income, considering the effects of tax planning.

The results for the Brazilian case suggest that aggressive tax planning obscures the relation between taxable income and book income, and as a consequence, the ability to use these two types of information to predict the future performance of firms, measured by abnormal stock returns.

This study also contributes to the literature on the use of taxable income as a performance measure in the Brazilian case, as proposed by Ayers, Jiang & Laplante (2009). Given the nature of the method employed, it is possible to use other methods to investigate the distinction between firms with high tax planning and others and to estimate the taxable income. Therefore, future studies could test the robustness of these results by analyzing subsequent periods to those covered here.

REFERENCES

- Alford, A., J. Jones, R. Leftwich, and M. Zmijewski. 1993. The Relative Informativeness of Accounting Disclosures in Different Countries. *Journal of Accounting Research* 31 (Supplement): 183-229.
- Ali, A. and L-S. Hwang. 2000. Country-specific factors related to financial reporting and the value relevance of accounting data. *Journal of Accounting Research* 38 (1): 1-21.
- Ayers, B., Laplante, S., McGuire, S., 2010. Credit rankings and taxes: the effect of book/tax differences on ratings changes. *Contemporary Accounting Research* 27, 359-402.
- _____,Jiang,X.,Laplante,S.,2009.Taxable income as a performance measure: the effects of tax planning and earnings quality. *Contemporary Accounting Research*26(1),15-54.
- Barth, M. E.; Landsman, W. R.; Lang, M. H. International accounting standards and accounting quality. *Journal of Accounting Research*, v. 46, n. 3, p. 467-498, 2008.
- Bartov, E.; Goldberg, S. R.; Kim, M. Comparative Value Relevance among German, U.S., and International Accounting Standards: A German Stock Market Perspective. *Journal of Accounting, Auditing & Finance*, v. 20, p. 95-119, 2005.
- Blaylock, B., Shevlin, T., Wilson, R., 2010. Tax avoidance, large positive book-tax differences, and earnings persistence. Working Paper, University of Washington.
- Brown, S., K. Lo, and T. Lys (1999). Use of R2 in accounting research: measuring changes in value relevance over the last four decades. *Journal of Accounting and Economics* 28: 83 - 115.
- Chalmers, K.; Clinch, G. J.; Godfrey, J. M. Changes in Value Relevance of Financial Information upon IFRS Adoption. *Social Science Research Network (SSRN)*, 2009.

- Chen, L., Dhaliwal, D., Trombley, M., 2007. The Impact of Earnings Management and Tax Planning on the Information Content of Earnings. University of Arizona Working Paper.
- Collins, D., E. Maydew and I. Weiss. 1997. Changes in the value-relevance of earnings and book values over the past forty years. *Journal of Accounting and Economics* 24: 39-67.
- DeAngelo (1986). Accounting Numbers as Market Valuation Substitutes: A Study of Management Buyouts of Public Shareholders. *The Accounting Review* 61, 400-420.
- Dechow P. Accounting earnings and cash flows as measures of firm performance: The role of accounting accruals. *Journal Of Accounting & Economics* [serial online]. July 1994;18(1):3-42. Available from: Business Source Premier, Ipswich, MA. Accessed November 11, 2012.
- Sloan, R., Sweeney, A., 1995. Detecting earnings management. *The Accounting Review* 70(2), 193-225.
- Ge, W, Schrand, C. Understanding Earnings Quality: A review of the proxies, their determinants and their consequences. *Journal of Accounting and Economics*, v. 50, n. 3, p. 344-401, 2010.
- Desai, Mihir. May 9, 2006. Testimony of Mihir Desai Associate Professor Harvard University before the Subcommittee on Select Revenue Measures. (Committee on Ways and Means, House of Representatives May 9).
- Dyregang, S., M. Hanlon and E. L. Maydew. 2008. Long run corporate tax avoidance. *The Accounting Review* (forthcoming).
- Ferreira, Felipe Ramos; Martinez, Antonio Lopo; Costa, Fábio Moraes da and Passamani, Renato Rovetta. Book-tax differences e gerenciamento de resultados no mercado de ações do Brasil. *Rev. adm. empres.* 2012, vol.52, n.5.
- Francis, J. and K. Schipper. 1999. Have financial statements lost their relevance? *Journal of Accounting Research* 37(2): 319 - 351.
- Graham, J. R., and C. Smith. 1999. Tax incentives to hedge. *Journal of Finance* 54, 2241-2262.
- R., Raedy, Jana Smith and Shackelford, Douglas A., *Research in Accounting for Income Taxes* (March 2011). Available at SSRN: <http://ssrn.com/abstract=1312005> or <http://dx.doi.org/10.2139/ssrn.1312005>.
- Gu, Z. (2002). Across-sample incomparability of R2s and additional evidence on value relevance changes over time. Working paper, Carnegie Mellon University.
- Hanlon, M. 2003. What can we infer about a firm's taxable income from its financial statements? *National Tax Journal* 56: 831-863.
2005. The persistence and pricing of earnings, accruals and cash flows when firms have large book-tax differences. *The Accounting Review* 80 (1): 137-166.
- S.K. Laplante, and T. Shevlin. 2005. Evidence for the possible information loss of conforming book income and taxable income. *Journal of Law and Economics* 48 (2): 407-442.
- Heitzman, Shane, *A Review of Tax Research* (July 25, 2010). Available at SSRN: <http://ssrn.com/abstract=1476561> or <http://dx.doi.org/10.2139/ssrn.1476561>.
- Heflin, Frank and Kross, William, *Book versus Taxable Income* (January 2005). Available at SSRN: <http://ssrn.com/abstract=604528> or <http://dx.doi.org/10.2139/ssrn.604528>.
- Iudícibus, Sergio, Martins, Eliseu, Gelbcke, Ernesto Rubens, Santos, Ariovaldo dos. *Manual de Contabilidade Societária*. São Paulo: Atlas, 2010.
- Kothari S. Capital markets research in accounting. *Journal Of Accounting & Economics* [serial online]. September 2001;31(1-3):105-231. Available from: Business Source Premier, Ipswich, MA. Accessed November 11, 2012.
- Lev, B. 1989. On the usefulness of earnings and earnings research: Lessons and directions from two decades of empirical research. *Journal of Accounting Research* 27(Supplement): 153 -192.
- D. Nissam. 2004. Taxable income, future earnings and equity values. *The Accounting Review* 79 (4): 1039-1074.
- P. Zarowin. 1999. The boundaries of financial reporting and how to extend them. *Journal of Accounting Research* 37(2): 353 - 385.
- Lima, J. B. N. A relevância da informação contábil e o processo de convergência para as normas IFRS no Brasil. 2011. Tese (Doutorado em Ciências Contábeis) - Programa de Pós Graduação em Controladoria e Contabilidade, FEA/USP, São Paulo, 2011.

- Macedo, Marcelo Alvaro da Silva; ARAÚJO, Marcelo Bicalho Viturino de; BRAGA, Josué Pires. Impacto do Processo de Convergência às Normas Internacionais de Contabilidade na Relevância das Informações Contábeis. REPeC - Revista de Educação e Pesquisa em Contabilidade, ISSN 1981-8610, Brasília, v. 6, n. 4, art. 2, p. 367-382, Oct.-Dec. 2012.
- Manzon, Jr., Gil B. and Plesko, George A., The Relation Between Financial and Tax Reporting Measures of Income (May 2001). MIT Sloan Working Paper No. 4332-01. Available at SSRN: <http://ssrn.com/abstract=264112> or <http://dx.doi.org/10.2139/ssrn.264112>.
- Martinez, Antônio Lopo. Detectando Earnings Management no Brasil: Estimando os Accruals discricionários. São Paulo. USP. v. 19, p. 7 -17, 2008.
- Morais, A. I.; Curto, J. D. Mandatory adoption of IASB Standards: value relevance and country-specific factors. Australian Accounting Review, v. 19, n. 49, p. 128-143, 2009.
- Palepu, K., Healy, P., Bernard, V., 2000. Business Analysis and Valuation: Using Financial Statements. South Western College Publications.
- Passamani, Renato Rovetta, Martinez, Antonio Lopo and Teixeira, Aridélmo, The Value Relevance of Book-Tax Differences in Brazil (August 31, 2012). Available at SSRN: <http://ssrn.com/abstract=2139429> or <http://dx.doi.org/10.2139/ssrn.2139429>.
- Penman, S., 2001. Financial Statement Analysis and Equity Valuation. McGraw-Hill, Boston, MA.
- Revsine, Lawrence, Collins, Daniel, Johnson, Bruce, Mittelstaedt, Fred. Financial Reporting and Analysis. Financial Reporting & Analysis. Edition: 4. 2002.
- Scholes, M. M, Wollson, M, Erickson, E. Maydew, and T. Shevlin. 2002. Taxes and Business Strategy: A Planning Approach. Second edition. Upper Saddle River, NJ: Prentice Hall.
- Seida, J. 2003. Enron: The Joint Committee on Taxation's Investigative Report. Testimony before the Senate Committee on Finance (108th Congress - First Session). S. Hrg. 108-117 (February 13).
- Shevlin, Terry. 2002. Commentary on corporate tax shelters and book-tax differences. Tax Law Review 55: 427-443..