# Tax avoidance in management-owned firms: evidence from Brazil

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## Abstract

**Purpose** – The purpose of this paper is to test if companies with a greater concentration of management ownership (and thus more risk-averse managers) avoid less tax.

**Design/methodology/approach** – The authors use a regression analysis with panel data, using as a sample of Brazilian companies from 2001 to 2015. The authors investigate the impact of insider ownership on tax avoidance, testing how and how much different ownership levels of inside owner are associated with tax avoidance measured by effective tax rates and book-tax differences.

**Findings** – The results indicate that different levels of management ownership are associated with different levels of tax avoidance behavior.

**Originality/value** – This paper contributes to the literature showing that ownership and decision making are not always focused on only a few decision makers. The owners are likely to be more risk averse and therefore less willing to invest in risky projects such as tax avoidance.

**Keywords** Tax, Tax avoidance, Tax management

**Paper type** Research paper

## 1. Introduction

This paper analyzes the relationship between the concentration of managerial ownership and the behavior of tax avoidance in Brazilian public companies.

The tax burden in Brazil is heavy, complex and dynamic. In 2014, the tax burden reached 33.47 percent of the gross domestic product (Receita Federal do Brasil, 2015). There are 92 types of taxes in Brazil, and the Brazilian tax legislation has constant modifications. Firms are subject to most taxes; consequently, the direct tax cost and the cost of tax compliance are high for Brazilian firms.

According to Martinez and Ramalho (2014) and Chen *et al.* (2010), the evidence shows a significant relationship between the classification as a Brazilian family firm and the tax aggressiveness, showing that Brazilian family firm was more aggressive than non-family firm. However, there is no study which investigates whether other firm structures have an impact on tax avoidance in Brazil. The study of Martinez and Ramalho (2014) suggests analyzing whether the association between Brazilian family firms and tax avoidance is mitigated by other factors.

Previous studies show that the ownership structure can explain tax avoidance (Chen *et al.*, 2010; Badertscher *et al.,* 2013; Khurana and Moser, 2013; Minnick and Noga, 2010; McGuire *et al.*, 2014). According to Badertscher *et al.* (2013, p. 2), Fama and Jensen's (1983) theory predicts that when equity ownership and corporate decision making are concentrated in just a few numbers of decision makers, these owner-managers will likely be more risk-averse and thus less disposed to invest in risky projects. Rego and Wilson (2012) assert that tax avoidance is a risky activity imposing significant costs on firms and their managers. Badertscher *et al.* (2013, p. 2) confirm that: "firms with more highly concentrated

ownership and control (and thus more risk-averse managers) avoid less income tax than firms with less concentrated ownership and control."

However, these studies use different samples and the results can be different in the Brazilian context, because of weaker institutions, inefficient tax enforcement (Batista, 2017), heavy tax burden, complex and dynamic tax legislation. Even if institutions are weak and tax inspection is inefficient, companies are subject to the rules imposed by the tax legislation. As the tax burden is heavy, companies, considering self-interest, will try to avoid tax. Cabello (2012), using a sample of companies listed on the BMF&Bovespa, asserts that many Brazilian companies avoid tax payment using certain tax shelters.

Another gap observed is that studies that test the behavior of tax avoidance, considering the ownership structure, do not test the levels of the management-owner. The study by Badertscher *et al.* (2013) tests only majority owners (more than 50 percent) and minority owner (less than 50 percent).

Motivated by: an environment that encourages companies to practice tax planning; evidences that ownership can explain tax avoidance; a suggestion in previous literature to test other characteristics of ownership structure; the prediction of Fama and Jensen (1983) theory and Badertscher *et al.* (2013) results; and the gap in tax literature, this research aims to answer the following question: Do Brazilian companies with greater concentration of management ownership avoid less income tax?

Using a sample of management-owned Brazilian companies, this study tests if firms with a greater concentration of management ownership (and thus more risk-averse managers) avoid less income tax.

The study of Badertscher *et al.* (2013) uses management-owned firms as a sample. This study will use the same expression (management-owned firms), defined by firms which have managers, and, at the same time, these managers have a participation in the ownership structure.

## 2. Background and empirical predictions

### 2.1 Ownership structure and tax avoidance

Prior literature on tax management in an agency theory context (Table I) can be separated in two approaches: managerial diversion as an agency cost, observed in the Desai and Dharmapala (2006) study; and corporate governance features and tax management, divided in: board characteristics, found by Minnick and Noga (2010), Lanis and Richardson (2011), Richardson *et al.* (2013) and Armstrong *et al.* (2015); institutional ownership, observed by Khurana and Moser (2013); governance as a moderator in the valuation of tax avoidance, Desai and Dharmapala (2009), Hanlon and Slemrod (2009) and Wilson (2009); managerial entrenchment, observed in the Chen *et al.* (2010),

| Approaches | Divisions | Studies |
|---|---|---|
| Managerial diversion as an agency cost | | Desai and Dharmapala (2006) |
| Corporate governance features and tax management | Board characteristics | Minnick and Noga (2010), Lanis and Richardson (2011), Richardson *et al.* (2013), Armstrong *et al.* (2015) |
| | Institutional ownership | Khurana and Moser (2013) |
| | Governance as a moderator in the valuation of tax avoidance | Desai and Dharmapala (2009), Hanlon and Slemrod (2009), Wilson (2009) |
| | Managerial entrenchment | Chen *et al.* (2010), Minnick and Noga (2010), Badertscher *et al.* (2013), McGuire *et al.* (2014), Moore *et al.* (2017) |

**Table I.**
Prior literature on tax management in an agency theory context

Minnick and Noga (2010), Badertscher *et al.* (2013) and McGuire *et al.* (2014) studies. This study focuses on the managerial entrenchment.

Jensen and Meckling (1976) develop a theory of the ownership structure of the firm, bringing to discuss the relationship between the agent and principal in any kind of company's transaction that generate agency costs. Tax planning is a transaction too and, consequently, gives rise to agency costs. According to Jensen and Meckling (1976), to reduce agency costs, firms write contracts that align managers' incentives with those of shareholders. These contracts incentivize managers to invest in projects that increase firm value.

According to Williamson (1985), the economy of transaction costs characterizes human nature, as it is known by reference to limited rationality and opportunism. The first recognizes the limits of cognitive competence. The second replaces it with the simple search for self-interest. Therefore, companies, considering their costs of tax transactions in environments with a heavy tax burden, will seek alternatives according to their self-interest.

Considering agency theory (Jensen and Meckling, 1976), Fama and Jensen (1983) argue that there are some circumstances in which firms must separate decision management and decision making with residual risk sharing. The authors explain that decision management, usually by top executives, includes the initiation and implementation of decisions by "decision agents"; decision-making, usually by a board of directors, includes the ratification and monitoring of decisions and decision makers; and the residual claimants of a company, usually shareholders, share the company's residual risk and cash flows. The separation between decision management and residual risk sharing is often referred to as the separation of ownership and control.

Badertscher *et al.* (2013, p. 6) summarize the differences between ownership and control in small and large organizations, using the Fama and Jensen (1983) theory. According to the authors, in small companies, the ownership and control should be combined in the same decision agent, because information relevant to decision making is concentrated in small groups. Therefore, in small companies, the benefits of low agency costs and efficient decision making are greater than the costs of reduced risk sharing.

On the other hand, the authors assert that, in large companies, the decision management should be separated from residual claims, because the information relevant to decision making is dispersed across individuals at all levels of the organization. Thereby, decision management must be delegated to individuals that own relevant information, and decision management should be separated from decision control to reduce the agency costs associated with diffuse residual claims (Badertscher *et al.,* 2013).

It is possible to identify, in large organizations, the role of the decision management and decision control to reduce agency costs. Considering that this study classifies the management-owned firms corresponding to insider ownership (stock by high-level executives and directors. Classification of Capital IQ®), all management-owned firms can be classified by decision management and decision control according to Fama and Jensen (1983) (top executives and board of directors).

Rego and Wilson (2012) argue that aggressive tax strategies involve significant uncertainties and can impose costs on both companies and managers. According to the authors, equity risk incentives motivate managers to use risky fiscal strategies. As a result, the authors mention that managers must be incentivized to engage in risky tax avoidance that is expected to generate net benefits for the firm and its shareholders. The results indicate that there is a relationship between equity risk incentives and fiscal risk. The higher the incentives the greater the risks. However, the inverse relationship is not true. The greater fiscal risk does not imply greater incentives.

Chen *et al.* (2010) study the tax aggressiveness of family firms. They analyzed whether family businesses are more tax aggressive than non-family businesses. They considered the

prediction that the companies held and the administration by the founding members of the family are characterized by a single conflict between dominant and small shareholders. Using a sample of 3,865 firm-year observations from 1996 to 2000, they found that family firms are less aggressive than their non-family counterparts, ceteris paribus.

Minnick and Noga (2010) investigate the role of governance in corporate tax management considering a long-term perspective. A total of 2,339 observations were analyzed annually, between 1996 and 2005, concentrating the sample on S&P 500 companies. They point out that incentive compensation leads managers to make investments in long-term payments, such as tax management. They also conclude that the shareholders are benefited by the investment in tax management. The results indicate a positive relationship between efficient tax management and higher returns to shareholders. McGuire *et al.* (2014) investigated whether the agency conflicts inherent in a two-class ownership structure are associated with the level of corporate tax avoidance. According to the authors, two-tiered companies consist of a single agency problem, because insiders control the majority of votes, despite claiming a minority of the firm's cash flows. A sample of 3,609 annual observations of companies was used between the periods 1995–2002. They find that the extent of tax avoidance declines as the difference between voting rights and cash flow rights increases, and they also find that dual-class firms engage in less tax avoidance as the wedge between insiders' voting rights and cash flow rights increases.

Another research that considers the double entrenchment is the study of Moore *et al.* (2017). This paper examined whether there is a relationship between multiple managerial entrenchment devices within a company and the tax management. The focus was on the structure of the board of directors and the status of the family business. A sample of 4,000 annual observations of the US firm year was used in the period 1999–2013. The authors note that the structure of the classified council and the status of the family firm are negatively related to tax avoidance. These results confirm the evidence at Minnick and Noga (2010) and Chen *et al.* (2010) showed in the literature. In a Brazilian context, the study of Martinez and Ramalho (2014), which uses 441 Brazilian firms listed in BMF&Bovespa, between 2001 and 2012, found a significant relationship between classification as a family firm and tax aggressiveness, showing that the family firms were more tax aggressive than the non-family firms. The authors classify family firms as companies in which a member of the founding family in at least one of the three levels present: control, ownership or management. This study does not consider the influence of the founder. It considers just managerial stock ownership, including insider owner (stock by high-level executives and directors).

Desai and Dharmapala (2009) assert that are two perspectives on the motivation and effects in corporate tax avoidance activity. According to the authors, there are several studies that investigate corporate tax avoidance as an extension of other tax-favored activity, such as the use of debt. The Graham and Tucker (2006) study, using a sample of firms involved in 44 corporate tax shelter cases over the period 1975–2000, identify characteristics (such as size and profitability) that are positively associated with the use of tax shelters and argue that tax shelters serve as a substitute for interest deductions in determining capital structure.

Desai and Dharmapala (2009) also argue that it is an alternative theoretical approach that emphasizes the interaction of tax avoidance activities and the agency problems inherent in publicly traded companies. According to the authors, obfuscatory tax avoidance activities can create a shield for managerial opportunism and the diversion of rents; and they mention that this perspective motivates recent studies (Desai and Dharmapala, 2006; Desai *et al.*, 2007), and forms part of an emerging paradigm that highlights the relations between firms' governance arrangements and their responses to taxes. Considering this view, according to the authors, the corporate tax avoidance not only entails distinct costs, but these costs may

outweigh the benefits to shareholders, given the opportunities for diversion that these vehicles provide. They mention the study by Desai and Dharmapala (2009) as examples of the interaction between tax shelters and forms of managerial opportunism. They show that straightforward diversion and subtle forms of earnings manipulation can be facilitated when managers undertake tax avoidance activity (Desai and Dharmapala, 2009).

## 2.2 Empirical prediction

Badertscher *et al.* (2013) use a sample of 549 private firms, including private firms that are majority owned by the firm's managers (they call them the management-owned firms) and private firms that are owned by private equity (PE) firms. The sample selection is composed of: private firms that are majority-owned by PE firms (350 firms), private firms that are minority owned by PE firms (71 firms) and private firms that are owned by management (128 firms). The study's results show that the marginal cost of tax avoidance and the separation of ownership and control both influence corporate tax practices. Firms with more highly concentrated ownership and control (and thus more risk-averse managers) avoid less income tax than firms with less concentrated ownership and control. Using a variety of measures of corporate income tax avoidance and a propensity score matching procedure, the authors find evidence that management-owned firms avoid less income tax than PE-backed firms, consistent with firms with more concentrated ownership and control, tolerating less corporate tax risk. In contrast to Badertscher *et al.* (2013) we investigate listed firms.

The study of Jacob *et al.* (2016) presents a model that comes to different conclusions as Badertscher *et al.* (2013). According to these authors the impact of separating ownership from control on tax avoidance depends on the potential to increase earnings. The authors assert that tax planning depends on the interaction of the following three factors: firm-level costs; incentivization costs at the agent-level; and the potential to increase earnings. They assert that firms with high firm-level costs, such as reputational or political costs, but low incentivization costs tend to engage in more aggressive tax planning compared to other firms if the potential to increase earnings is low; the opposite is true if the potential to increase earnings is high (Jacob *et al.*, 2016).

Jacob *et al.* (2016) propose a model that could be tested. However, the sample and the data collected for this study do not allow running this test.

Considering the study of Badertscher *et al.* (2013), it is possible to infer that: the ownership structure and the concentrations of management ownership and control are associated with tax avoidance behavior; in management-owned firms, owner-managers tend to be more risk-averse and tolerate less tax risk than managers at non-management owned firms. Therefore, the hypothesis of the study follows:

> *H1.* The increase of the concentration of manager-owner in the ownership structure results in the avoidance of less income tax.

Based on this hypothesis, we investigate the impact of different levels of managerial ownership on proxies of tax avoidance behavior.

## 3. Sample and research design

### 3.1 Research design

In the study, we use a regression analysis with unbalanced panel data and cross-section fixed models. The regression analysis aims at comparing the explanatory power of the variable inside the owner (IO) on the dependent variables ETR and book-tax differences (BTD). We consider three types of analysis for the variable IO: the percentage form; dummies ($Dj_{it}$), by levels, according to the study of Chen *et al.* (2010), as shown in Table II; and an interaction term of the IO percentage with the dummies. It allows you to evaluate

the impact of each level of ownership separately. Thus, the model tested follows three functional forms.

Model I:

$$TaxAvoid_{it} = c_o + \beta_1 IO_{it} + \beta_2 ROA_{it} + \beta_3 LEV_{it} + \beta_4 PPE_{it} + \beta_5 SIZE_{it} + \beta_6 MB_{it} + e_{it}. \quad (1)$$

Model II:

$$TaxAvoid_{it} = c_o + \sum_{k=1}^{5} \beta_k Dj_{it} + \beta_6 ROA_{it} + \beta_7 LEV_{it} + \beta_8 PPE_{it}$$

$$+ \beta_9 SIZE_{it} + \beta_{10} MB_{it} + e_{it}. \quad (2)$$

Model III:

$$TaxAvoid_{it} = c_o + \sum_{k=1}^{5} \beta_k IO_{it} \times Dj_{it} + \beta_6 ROA_{it} + \beta_7 LEV_{it} + \beta_8 PPE_{it}$$

$$+ \beta_9 SIZE_{it} + \beta_{10} MB_{it} + e_{it}. \quad (3)$$

In Model II the levels of IO between 0 to 10 percent can be analyzed by the constant of the model. The dummy zero (D0) in this case is not used, only in the Model III this dummy is analyzed.

Tables III and IV show the descriptions of the variables. Table III presents a description of the BTD and ETR dependent variables and the forms of calculations. Table IV presents the calculation of the control variables used, according to equations.

Prior literature consolidated the use of ETR and BTD as dependent variables to capture tax avoidance (Chen *et al.*, 2010; McGuire *et al.*, 2014). We do not use Cash ETR, because the data required to calculate this variable are not disclosed by Brazilian companies. The ETR and BTD variables are calculated according to the study by Chen *et al.* (2010).

The control variables are chosen in the model, it also consolidated by prior literature (e.g. Manzon and Plesko, 2002; Mills, 1998; Rego, 2003; Dyreng *et al.*, 2008; Frank *et al.*, 2006; Chen *et al.*, 2010).

The control variables are presented in Table IV.

| Dummy | Levels |
|---|---|
| D0 | $0\% < IO < 10\%$ |
| D1 | $10\% < IO < 20\%$ |
| D2 | $20\% < IO < 30\%$ |
| D3 | $30\% < IO < 40\%$ |
| D4 | $40\% < IO < 50\%$ |
| D5 | $IO > 50\%$ |

Table II. Dummies

| Measure | Calculation | Description |
|---|---|---|
| ETR – Effective tax rate | Total income tax expense/earnings before income tax | Reflects the actual income tax rate in relation to pretax profit |
| BTD – Book-tax difference | (Earnings before income tax – taxable income)/Total assets | Reflects the difference between book income and taxable income, scaled by total assets |

Table III. Tax avoidance measures

We expect that the significance for the variable Inside Owner$_{,t}$, as well as the sign of the coefficient, will demonstrate the impact of a concentration of ownership firms on the level of tax avoidance.

### 3.2 Sample

The initial sample consists of 436 companies listed in the B3 (stock market from Brazil) in 2015, in the period of 2001–2015, observed in Standard & Poor's Capital IQ®. Yet, the accounting and taxation rules for financial firms are different from non-financial firms in Brazil; hence, the financial firms were excluded from the sample. We eliminated firms with negative equity, with insufficient data to calculate effective tax rate (ETR) and all firms that did not have sufficient data in Standard & Poor's Capital IQ® to calculate the BTD. The companies that presented the ETR higher than 2 were also eliminated in a specific year. Such values generated an outlier that compromised the analysis.

This procedure reduced the sample to 217 firms. Finally, we deleted all firms which did not have sufficient data to calculate the control variables used in the regression. This resulted in a final a sample of 107 firms on 875 observations in the period (2001–2015). We use the same percentage of the inside owner in the entire period. To classify the management owned and non-management owned, we use the database of Capital IQ® searching for insider-owner (stock by high-level executives and directors). The companies that have any participation (percent) of employees in the ownership structure are considered management-owned firms. In accordance with Fama and Jensen (1983), we consider both top executives and members of the board of directors for the determination of the management's share of equity.

### 4. Empirical results

Table V presents the result of the descriptive statistics of the series used in our study. In addition to descriptive statistics, we present the test of normality proposed by Jarque and Bera (1980).

| Measure | Calculation |
|---|---|
| ROA – return on assets | Operating profit of firm $i$ in year $t$ divided by total assets in the previous year |
| LEV – leverage | Leverage of firm $i$ in year $t$, measured as the long-term debt divided by total assets in the previous year |
| PPE – plant, property and equipment | Natural logarithm of property, plant and equipment of firm $i$ in year $t$, divided by total assets in the previous year |
| SIZE | Natural logarithm of the market value of firm $i$ at the start of year $t$ |
| MB – market to book | Market value of firm $i$ at the start of year $t$ divided by its equity value at that time |

**Table IV.** Control variables

| | ETR | BTD | ROA | LEV | PPE | SIZE | MB | IO |
|---|---|---|---|---|---|---|---|---|
| Mean | 0.271 | 0.022 | 6.309 | 0.258 | 6.627 | 8.154 | 2.739 | 0.057 |
| Median | 0.260 | 0.017 | 5.620 | 0.240 | 6.860 | 8.325 | 1.966 | 0.000 |
| Maximum | 0.993 | 0.199 | 48.500 | 3.620 | 13.188 | 13.037 | 183.621 | 0.978 |
| Minimum | 0.002 | −0.222 | −18.700 | 0.000 | −3.297 | 0.000 | −2.108 | 0.000 |
| SD | 0.147 | 0.034 | 4.532 | 0.230 | 2.316 | 1.913 | 6.665 | 0.150 |
| Skewness | 1.562 | 0.714 | 1.452 | 6.360 | −0.409 | −0.851 | 23.465 | 3.399 |
| Kurtosis | 7.415 | 9.363 | 13.621 | 84.879 | 3.263 | 5.429 | 630.040 | 15.390 |
| Jarque–Bera | 1,054.3 | 1,532.9 | 4,369.4 | 247,463.9 | 26.6 | 317.0 | 14,250,200.0 | 7,198.3 |
| Probability | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |

**Table V.** Descriptive statistics

According to the values of skewness, we find that all series are asymmetric in their form. In some cases, the asymmetric goes to the right side of the distribution, as can be seen in the variables MB and ETR. The PPE and Size variables are asymmetric on the left. The kurtosis numbers higher than 3 indicate that leptokurtic behavior, with heavy tails, according to Cramer (1997). Thus, if kurtosis and skewness are different from 0, they indicate that the distribution is not normal. Evidence proved by the results of the Jarque–Bera test, according to $p$-values less than 5 percent.

Table VI presents the correlation matrix between the analyzed variables.

According to the values of the tables, the variables that have a significant correlation (greater than 0.3) were between BTD and ETR, ROA and BTD, Size and ROA, Size and Lev, MB and Size and PPE and Size. The negative correlation between BTD and ETR it is also observed in the study by Khurana and Moser (2013).

The low correlation values suggest that there is no effect of multicollinearity between the variables. The absence of multicollinearity is one of the premises for the good adjustment of the variables in a multiple linear regression. The positive correlation between ROA and tax avoidance, here measure by BTD, is also observed in the Lisowsky's (2010) study, that uses as tax avoidance measure, tax shelter. Guenther (2014) studies tax avoidance measures, comparing ETR and BTD, and finds that tax avoidance has a correlation with the return on assets (ROA).

Since there is no evidence of multicollinearity in the series, it is not necessary to use tests which prove their presence, as is the case of the Farrar and Glauber (1967) test.

Tables VII and VIII present the results of the regressions for the variable ETR and BTD, respectively.

In relation to the model specification it is possible to observe that the fit was satisfactory, by the values of square R and statistical F. The DW statistic also indicated the absence of serial autocorrelation.

The variable IO does have an impact of 11 percent on the percentage of ETR. The Model II showed that there is a significant relationship between the companies with management owners with participation between 20 and 30 percent and more than 50 percent and the percentage of ETR. The higher the management-owner, the lower the percentage of ETR, in other words, firms with ownership concentrated in 20 and 30 percent (second level) have 12.5 percent lower ETR (negative coefficient).

In Model III each 1 percent rise of share in the ownership decreases 0.65 percent the ETR in the second level (20 to 30 percent), 0.32 percent in the fourth level (40 to 50 percent) and 0.07 percent in the fifth level (more than 50 percent). Therefore, this means more tax avoidance with rising management ownership.

Table VIII presents the regression results for the BTD variable.

In general, the results of the regressions are satisfactory. The $R^2$ values are in agreement with the panel data analysis literature. The Durbin–Watson statistic for all three models

| | ETR | BTD | ROA | LEV | PPE | SIZE | MB | IO |
|---|---|---|---|---|---|---|---|---|
| ETR | 1.000 | | | | | | | |
| BTD | −0.698* | 1.000 | | | | | | |
| ROA | −0.131 | 0.335* | 1.000 | | | | | |
| LEV | 0.043 | −0.097 | 0.029 | 1.000 | | | | |
| PPE | 0.075 | −0.008 | 0.125 | 0.082 | 1.000 | | | |
| SIZE | −0.031 | 0.082 | 0.238** | 0.291** | 0.435* | 1.000 | | |
| MB | 0.029 | −0.030 | 0.160 | 0.086 | 0.047 | 0.215** | 1.000 | |
| IO | −0.106 | 0.060 | −0.112 | −0.032 | −0.054 | −0.002 | −0.016 | 1.000 |

Notes: *,**Significant at the 0.01 and 0.05 levels, respectively

Table VI.
Pearson correlation
results

| Variable | Model I | | Model II | | Model III | |
|---|---|---|---|---|---|---|
| | Coef | t-stat | Coef | t-stat | Coef | t-stat |
| C | 0.285* | 6.768 | 0.268* | 6.138 | 0.261* | 6.476 |
| IO | −0.111** | −2.159 | | | | |
| D1 | | | −0.003 | −0.073 | | |
| D2 | | | −0.125* | −2.924 | | |
| D3 | | | −0.011 | −0.149 | | |
| D4 | | | −0.110 | −1.310 | | |
| D5 | | | −0.05*** | −1.924 | | |
| IO_D0 | | | | | −0.878 | −1.354 |
| IO_D1 | | | | | −0.239 | −1.240 |
| IO_D2 | | | | | −0.654* | −4.233 |
| IO_D3 | | | | | −0.141 | −0.731 |
| IO_D4 | | | | | −0.321*** | −1.785 |
| IO_D5 | | | | | −0.076*** | −1.887 |
| ROA | −0.006* | −3.753 | −0.006* | −3.541 | −0.006* | −3.499 |
| LEV | 0.037** | 2.164 | 0.036** | 2.287 | 0.036** | 2.332 |
| PPE | 0.007* | 3.670 | 0.006* | 2.791 | 0.006* | 2.989 |
| SIZE | −0.004 | −0.870 | 0.001 | 0.221 | 0.002 | 0.345 |
| MB | 0.001 | 1.308 | 0.000 | 0.978 | 0.000 | 0.973 |
| $R^2$ | 0.447 | | 0.462 | | 0.464 | |
| Adjusted $R^2$ | 0.342 | | 0.356 | | 0.358 | |
| SE of regression | 0.120 | | 0.118 | | 0.118 | |
| Sum squared resid | 10.374 | | 10.101 | | 10.058 | |
| F-statistic | 4.255 | | 4.362 | | 4.364 | |
| Prob(F-statistic) | 0.000 | | 0.000 | | 0.000 | |
| Mean dependent var | 0.271 | | 0.271 | | 0.271 | |
| SD dependent var | 0.147 | | 0.147 | | 0.147 | |
| Durbin–Watson stat | 1.347 | | 1.373 | | 1.391 | |
| Model | Cross-section fixed | | Cross-section fixed | | Cross-section fixed | |

**Table VII.**
Regression result for the ETR variable

**Notes:** The asymptotic limits for the t-statistics at 1 and 5 percent levels, respectively. For the 1 percent level the DU and DL of the DW statistic are 1.59 and 1.16. *,**,***Significant at 1, 5, 10 percent levels, respectively

indicates the non-rejection of the null hypothesis at the 1 percent level. This indicates that the residuals of the regressions are independent, there is no serial autocorrelation of the residues. The DW statistic is between 1.56 and 2.84 (4-DL). The F-statistic also rejects the null hypothesis at the 1 percent level. This indicates that at least one variable contributes to explain the model.

Analyzing the parameter of the variable IO, we find that it is significant. This indicates that the management-owner, in general, does influence the BTD. However, the results of Table VIII were similar to the results in Table VII, observing the results of Model II, dummy D2, that represents percentages between 20 and 30 percent equity, hold a significant influence on BTD. The positive coefficients indicate that the share between 20 percent and 30 percent generates a 3 percent increase in BTD. Analyzing the results of Model III, each 1 percent rise of share in the ownership increases 0.14 percent the BTD in the second level (20–30 percent).

The positive coefficient indicates that management-owned firms tend to have a greater gap between book income and taxable income, avoiding income tax in Level 2 Model II and Model III.

Further, we find that the three control variables explain the ETR and BTD behaviors. Size and market book variables were not statistically significant at the 0.10 levels. Therefore, we can observe that the increase in ROA also contributes to the increase in BTD and reduces the ETR. This is expected as the ROA is a measure of a firm's profitability.

| Variable | Model I | | Model II | | Model III | |
| --- | --- | --- | --- | --- | --- | --- |
| | Coef | $t$-stat | Coef | $t$-stat | Coef | $t$-stat |
| C | 0.002 | 0.125 | 0.003 | 0.183 | 0.006 | 0.360 |
| IO | 0.020*** | 1.774 | | | | |
| D1 | | | −0.003 | −0.387 | | |
| D2 | | | 0.031** | 2.575 | | |
| D3 | | | −0.013 | −0.968 | | |
| D4 | | | 0.017 | 1.167 | | |
| D5 | | | 0.003 | 0.494 | | |
| IO_D0 | | | | | 0.141 | 1.604 |
| IO_D1 | | | | | −0.001 | −0.018 |
| IO_D2 | | | | | 0.145* | 3.304 |
| IO_D3 | | | | | −0.024 | −0.695 |
| IO_D4 | | | | | 0.045 | 1.342 |
| IO_D5 | | | | | 0.017 | 1.646 |
| ROA | 0.003* | 5.834 | 0.003* | 5.737 | 0.003* | 5.703 |
| LEV | −0.016* | −2.893 | −0.015* | −2.912 | −0.015* | −2.950 |
| PPE | −0.002*** | −1.764 | −0.002 | −1.430 | −0.002 | −1.441 |
| SIZE | 0.002 | 1.162 | 0.001 | 0.935 | 0.001 | 0.670 |
| MB | 0.000 | −1.423 | 0.000 | −1.316 | 0.000 | −1.247 |
| $R^2$ | 0.495 | | 0.512 | | 0.516 | |
| Adjusted $R^2$ | 0.399 | | 0.417 | | 0.420 | |
| SE of regression | 0.026 | | 0.026 | | 0.026 | |
| Sum squared resid | 0.495 | | 0.478 | | 0.474 | |
| $F$-statistic | 5.154 | | 5.343 | | 5.380 | |
| Prob($F$-statistic) | 0.000 | | 0.000 | | 0.000 | |
| Mean dependent var | 0.022 | | 0.022 | | 0.022 | |
| SD dependent var | 0.034 | | 0.034 | | 0.034 | |
| Durbin–Watson stat | 1.392 | | 1.413 | | 1.427 | |
| Model | Cross-section fixed | | Cross-section fixed | | Cross-section fixed | |

**Notes:** The asymptotic limits for the $t$-statistics at 1 and 5 percent levels. For the 1 percent level the DU and DL of the DW statistic are 1.59 and 1.16. *,**,***Significant at 1, 5, 10 percent levels, respectively

**Table VIII.**
Regression result for
the BTD variable

When companies have fewer profits they pay less taxes. It is a direct relationship. The results of the control variables were similar to the study by Chen *et al.* (2010).

These results do not confirm the prediction that the increase of the concentration of manager-owner in the ownership structure results in avoidance of less income tax. Looking at both measures, Tables VII and VIII, it is possible to observe that tax avoidance increases with more management ownership. Firms with an ownership percentage between 20 and 30 result in lower income tax. The results were for the variable BTD and ETR.

It is possible to assert, in Brazil, that firms with a greater concentration of ownership do not avoid less income tax.

Part of the results are not consistent with predictions based on Fama and Jensen's (1983) theory, according to Badertscher *et al.* (2013, p. 2), that when equity ownership and corporate decision making are concentrated in just a small number of decision makers, these owner-managers will likely be more risk-averse and thus less disposed to invest in risky projects. However, the results are in line with the hypothesis. The higher incentives generate tax avoidance for owners with a greater share of corporate control. Shareholders who participate in managerial decisions of companies have both the incentive to maximize net profits and a significant portion of the power to make decisions that maximize profit within the company. This might be the case especially in countries with weaker institutions and inefficient tax enforcement, as in Brazil.

These results are not identical with the findings of Badertscher *et al.* (2013) and Chen *et al.* (2010), even considering that the sample (different country) and the research designs (PE investment and management in private firms/family firms) are not the same. In this way, it is possible to make some comparisons. PE and family firms can be considered as business owners. The study by Badertscher *et al.* (2013) uses majority ownership (more than 50 percent) and minority ownership (less than or equal to 50 percent) and finds that minority firms avoid significantly less income tax than most. This result indicates that the concentration of management's results in avoiding the lowest income tax, but our results indicate otherwise. Considering the second level Models II and III indicate greater tax avoidance and the fifth level indicates less tax evasion. In the second level, ETR is the model-dependent variable.

The results of Chen *et al.* (2010) study indicate that family firms are less aggressive than their non-family members. The author addresses this result indicating that family business owners are more concerned about the possible penalty imposed by the Internal Revenue Service and the subsequent damage to reputation. Perhaps the opposite result of this study is due to the lack of concern for Brazilian companies with reputational penalties and damages. A reason for this could be that Brazil is known worldwide for political crises caused by scandals of corruption.

A similar study with Brazilian firms is the one in Martinez and Ramalho (2014), which finds that management-owned firms and family firms in Brazil have the same performance. This outcome is not completely comparable, since Martinez and Ramalho (2014) classify family firms as Dummy variable and use this Dummy in all period of analysis (2001 from 2012), but these data were collected considering the presence of a member of the founding family in control, ownership of management, only in the last year of the analysis (2012). We provide a more robust analysis of the impact of inside ownership on tax avoidance, with more flexible variables and a variable identification strategy.

## 5. Conclusion

This paper examines if Brazilian firms with a greater concentration of ownership present evidence of lower levels of tax avoidance behavior. The results indicate that a greater concentration of ownership in Brazilian firms does not imply less tax avoidance. However, it was evidenced that the different levels of managerial ownership are associated to different levels of tax avoidance behavior. Firms with management ownership between 20 and 30 percent are associated with higher levels of tax avoidance behavior considering both measures used for tax avoidance (ETR and BTD) compared to all other levels. With regard to the ETR, we find that tax avoidance behavior increases in levels of management ownership between 40 and 50 percent, and more than 50 percent. These results: do not confirm Fama and Jensen (1983) prediction; are not similar with Badertscher *et al.* (2013) and Chen *et al.* (2010) results; and are aligned with and Martinez and Ramalho (2014) study.

These differences can also be related to the effects of earnings and the top executives on tax avoidance presented by Jacob *et al.* (2016). However, the sample and the data collected in this study do not allow running the test used in this study.

Alternatively, the results of Rego and Wilson (2012) indicate that managers must be incentivized to engage in risky tax avoidance that is expected to generate net benefits for the firm and its shareholders; and the equity risk incentives motivate managers to undertake risky tax strategies. They find that larger equity risk incentives associated with greater tax risk and the magnitude of this effect are economically significant. Therefore, maybe the managers-owners of Brazilian firms invest in risk projects considering possible futures net benefits.

Overall, this paper contributes to the literature by showing that not always equity ownership and corporate decision making are concentrated on only a few decision makers,

these owner-managers are likely to be more risk-averse and therefore take less risk to invest in risky projects, as Fama and Jensen (1983) predicted; the participation of the internal owner in the ownership structure and the country must be observed. Further, we contribute by showing that companies in the implementation of policies for managers, for example, implementation of action-based payment policy for executives, should consider the effects of management contracts on tax avoidance. Finally, our research helps governments by presenting the behavior of the taxpayer.

This study has some limitations, considering that the sample is composed only by Brazilian firms and the use of other measures of tax avoidance, as long-run cash ETR, cash ETR or an adapted BTD.

Considering the results and some studies present in this paper, it is possible to suggest the continuity of this research. The tax avoidance in Brazilian firms including the possibility to increase earning like the Rego and Wilson's (2012) study, testing the effect on tax avoidance. The comparison with other countries and the use of variables of perceived corruption, penalties and reputational damage, may also be suggested for future research.

## References

Armstrong, C.S., Blouin, J.L., Jagolinzer, A.D. and Larcker, D.F. (2015), "Corporate governance, incentives, and tax avoidance", *Journal of Accounting and Economics*, Vol. 60 No. 1, pp. 1-17.

Badertscher, B.A., Katz, S.P. and Rego, S.O. (2013), "The separation of ownership and control and corporate tax avoidance", *Journal of Accounting and Economics*, Vol. 56 No. 2, pp. 228-250.

Batista, V. (2017), "Tribunal de Contas da União acusa Receita Federal de ineficiência", *Correio Braziliense*, February 6, 2018, available at: www.correiobraziliense.com.br/app/noticia/economia/2017/11/15/internas_economia,641097/tribunal-de-contas-da-uniao-acusa-receita-federal-de-ineficiencia.shtml

Cabello, O.G. (2012), "Análise dos efeitos das práticas de tributação do lucro na Effective Tax Rate (ETR) das companhias abertas brasileiras: uma abordagem da teoria das escolhas contábeis", Faculdade de Economia, Administração e Contabilidade da Universidade de São Paulo, São Paulo.

Chen, S., Chen, X., Cheng, Q. and Shevlin, T. (2010), "Are family firms more tax aggressive than non-family firms?", *Journal of Financial Economics*, Vol. 95 No. 1, pp. 41-61.

Cramer, D. (1997), *Fundamental Statistics for Social Research*, Routledge, London, p. 89.

Desai, M. and Dharmapala, D. (2006), "Corporate tax avoidance and high-powered incentives", *Journal of Financial Economics*, Vol. 79 No. 1, pp. 145-179.

Desai, M. and Dharmapala, D. (2009), "Corporate tax avoidance and firm value", *Review of Economics and Statistics*, Vol. 91 No. 3, pp. 537-546.

Desai, M.A., Dyck, A. and Zingales, L. (2007), "Theft and taxation", *Journal of Financial Economics*, Vol. 84 No. 3, pp. 591-623.

Dyreng, S.D., Hanlon, M. and Maydew, E.L. (2008), "Long-run corporate tax avoidance", *The Accounting Review*, Vol. 83 No. 1, pp. 61-82.

Fama, E. and Jensen, M. (1983), "Separation of ownership and control", *Journal of Law and Economics*, Vol. 26 No. 2, pp. 301-325.

Farrar, D.E. and Glauber, R.R. (1967), "Multicollinearity in regression analysis: the problem revisited", *Review of Economics and Statistics*, Vol. 49 No. 1, pp. 92-107.

Frank, M., Lynch, L. and Rego, S. (2006), "Does aggressive financial reporting accompany aggressive tax reporting (and vice versa)?", working paper, The University of Virginia, Mimeo.

Graham, J. and Tucker, A. (2006), "Tax shelters and corporate debt policy", *Journal of Financial Economics*, Vol. 81 No. 3, pp. 563-594.

Guenther, D.A. (2014), "Measuring corporate tax avoidance: effective tax rates and book-tax differences", August 8, available at: https://ssrn.com/abstract=2478952; http://dx.doi.org/10.2139/ssrn.2478952

Hanlon, M. and Slemrod, J. (2009), "What does tax aggressiveness signal? Evidence from stock price reactions to news about tax shelter involvement", *Journal of Public Economics*, Vol. 93 No. 1, pp. 126-141.

Jacob, M., Rohlfing-Bastian, A. and Sandner, K. (2016), "Why do not all firms engage in tax avoidance?", FAccT Center Working Paper Nos 19/2014, available at: http://ssrn.com/abstract=2536268 (accessed October 23, 2017).

Jarque, C.M. and Bera, A.K. (1980), "Efficient tests for normality, homoscedasticity and serial independence of regression residuals", *Economics Letters*, Vol. 6 No. 3, pp. 255-259.

Jensen, M. and Meckling, W. (1976), "Theory of the firm: managerial behavior, agency costs and ownership structure", *Journal of Financial Economics*, Vol. 3 No. 4, pp. 305-360.

Khurana, I.K. and Moser, W.J. (2013), "Institutional shareholders' investment horizons and tax avoidance", *Journal of American Taxation Association*, Vol. 35 No. 1, pp. 111-134.

Lanis, R. and Richardson, G. (2011), "The effect of board of director composition on corporate tax aggressiveness", *Journal of Accounting and Public Policy*, Vol. 30 No. 1, pp. 50-70.

Lisowsky, P. (2010), "Empirically modeling tax shelters using financial statement information", *The Accounting Review*, Vol. 85 No. 5, pp. 1693-1720.

McGuire, S.T., Wang, D. and Wilson, R.J. (2014), "Dual class ownership and tax avoidance", *The Accounting Review*, Vol. 89 No. 4, pp. 1487-1516.

Manzon, G. and Plesko, G. (2002), "The relation between financial and tax reporting measures of income", *Tax Law Review*, Vol. 55 No. 2, pp. 175-214.

Martinez, A.L. and Ramalho, G.C. (2014), "Family firms and tax aggressiveness in Brazil", *International Business Research*, Vol. 7 No. 3, pp. 129-136.

Mills, L.F. (1998), "Book-tax differences and internal revenue service adjustments", *Journal of Accounting Research*, Vol. 36 No. 2, pp. 343-356.

Minnick, K. and Noga, T. (2010), "Do corporate governance characteristics influence tax management?", *Journal of Corporate Finance*, Vol. 16 No. 5, pp. 703-718.

Moore, J.A., Suh, S. and Werner, E.M. (2017), "Dual entrenchment and tax management: classified boards and family firms", *Journal of Business Research*, Vol. 79, October, pp. 161-172.

Receita Federal do Brasil (2015), "Carga Tributária do Brasil 2014", available at: https://idg.receita.fazenda.gov.br/dados/receitadata/estudos-e-tributarios-e-aduaneiros/estudos-e-estatisticas/carga-tributaria-no-brasil/29-10-2015-carga-tributaria-2014 (accessed March 15, 2017).

Rego, S.O. (2003), "Tax-avoidance activities of US multinational corporations", *Contemporary Accounting Research*, Vol. 20 No. 4, pp. 805-833.

Rego, S. and Wilson, R. (2012), "Executive compensation, equity risk incentives, and corporate tax aggressiveness", *Journal of Accounting Research*, Vol. 50 No. 3, pp. 775-809.

Richardson, G., Taylor, G. and Lanis, R. (2013), "The impact of board of director oversight characteristics on corporate tax aggressiveness: an empirical analysis", *Journal of Accounting and Public Policy*, Vol. 32 No. 3, pp. 68-88.

Williamson, O.E. (1985), *The Economic Institutions of Capitalism*, Free Press, New York, NY.

Wilson, R.J. (2009), "An examination of corporate tax shelter participants", *The Accounting Review*, Vol. 84 No. 3, pp. 969-999.

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