

## Article

# Misuse of Deferred Taxes in Portugal

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**Abstract:** Financial transparency is essential for stakeholders to make decisions, ensuring a correct amount of tax is paid to the state. Many companies have opted for the recognition of deferred tax assets to present a different result, but there is scant literature. This study investigates the impact of recognizing deferred tax assets and their contribution to earnings manipulation, together with the effect of the 2008 global financial crisis. Using data from 29 companies listed on the stock exchange and headquartered in Portugal between 2007 and 2012, formalize correlation tests and a linear regression model were used, concluding that more indebted companies tend to recognize more deferred tax assets, paying less tax to the state and that for the sample size and study period, it was not possible to conclude the impact of the 2008 financial crisis.

**Keywords:** taxes; deferred; manipulation; results

## 1. Introduction

In a business reality in which managers make decisions respecting the discretion of the accounting standards implemented in Portugal, there is a need to understand how the disclosure of financial statements and financial and economic ratios reflect the company's reality, which may have consequences on the opinions of users of the same because, in addition to economic and financial indicators, it is important to consider that there are other factors for decision making by users of financial statements. Decision making cannot be summarized only by analyzing some financial and economic ratios. There is the so-called «game theory», the branch of applied mathematics that studies strategic situations where players choose different actions to improve their winnings. In the game of internationalization, the objective of an individual company is to make the most of the reward. To maximize return, a company chooses alternative stocks and a particular strategy to achieve the maximum possible profit with several alternative strategies.

A study carried out in Thailand studied the investment decisions of technology companies in a foreign country in the period from 1988 to 2017, these being the variables: player resources and experience, host country uncertainty level, and investment payoff. All variables had a significant effect. Evidence supports that companies prefer to choose a game they are most familiar with (foreign countries with similar investments/regulations). They also concluded that larger companies with more experience tend to invest earlier in the foreign market (Bui and Lo 2022).

The decision taken together is called herd behavior. This is a process where investors imitate the actions of others. It is a tendency for investors to follow the same sources of information, interpreting signals sent to the market in an identical way and, consequently, making decisions. In a situation of civil unrest, agents participating in the market make individual decisions, probably questioning the decisions made by the most informed, and discriminating the information available to protect their assets (Espinosa-Méndez 2021).

A 2021 study investigated the field of entrepreneurship in the context of public sector governance in eight of the world's largest economies (the G7 countries and Russia). A work that aims to understand the relationships between public sector governance policies and



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attitudes toward entrepreneurship in terms of economic development for the period 2001–2018. It was concluded that there are strong correlations between GDP and cultural and social norms promoted in society's early-stage total entrepreneurial activity, infrastructure and services, and fiscal and bureaucracy. In contrast, fear of failure and entrepreneurial attitudes affect GDP. Fear of failure carries a negative effect on economic stability, being an obstacle to the business foundation (Vatavu et al. 2021). There are thus other factors that cause changes in investors' decision making and being pioneers in a business, being that the quality of accounting information may also play a decisive role in transparency and credibility for investors. A study has been made that examined the main effects of government R&D subsidies on firms' R&D inputs and innovation outputs and the positive moderating role of the quality of corporate accounting information, using data from 1561 sample firms listed on the stock markets of China and 11853 company observations between the years 2007 and 2015. This study argues that accounting information plays a role in governance function during the execution of the contract between the subsidy provider (government) and the beneficiaries (innovative companies), relieving the risk issues. The study concludes that the quality of accounting information plays a moderating role in the efficiency of government R&D (research and development) in the granting of subsidies. High-quality accounting information helps alleviate information asymmetries, restrict management opportunism, facilitate contract compliance, access to credit, reduce capital cost, and improve investment efficiency (Zuo and Lin 2022).

Although there is a range of factors that contribute to the investor's decision, this study is focused on the manipulation of financial statements and financial/economic indicators through deferred taxes and how in Portugal there are very few articles on this topic; this study aims to fill this research gap. Thus, this study arises to understand how deferred tax assets may handle a company's results, distorting economic and financial ratios and contributing to a wrong analysis of the users of financial statements when analyzing the disclosure. It is intended to study different pieces of the literature on the subject by other authors, ascertaining the reasons for manipulation and the explanatory factors for the recognition of deferred tax assets, correlating these two concepts.

Sometimes the current tax of an entity in each period is not accepted for tax purposes, but this tax deferral must be recognized during the period. Deferred taxes result from the recognition of the tax consequences that will occur in the future because of the entity's transactions and other events in the period. In other words, the tax is recognized following the accrual or economic periodization regime, which improves the relevance of the financial statements insofar as it discloses current tax and the future tax consequences of transactions and other events of the entities that occurred in the period.

Deferred taxes result from the fact that there are differences in a period between the amounts of taxable income and accounting income because the rules for determining income and expenses for accounting and tax purposes are not fully convergent. In situations where there are temporary deductible differences, we must recognize today the amounts of tax that we will pay less in the future (deferred tax assets); in turn, regarding temporary taxable differences, we recognize deferred tax liabilities (having more to pay in the future). Differences between the accounting result and the tax result, which result from less tax payable in the future when the asset's value is realized, or the value of the liability is settled, are called temporary deductible differences and give rise to possible deferred tax assets (e.g., depreciation exceeding the tax ceiling, tax-deductible provisions, and impairments that are not tax-deductible). If the accounting asset is greater than the tax asset, we are in a situation of deferred tax liability; if less, deferred tax asset. In the same way, if the accounting liability is greater than the tax liability, it is a situation of deferred tax asset and if there is lesser, deferred tax liability.

In a business valuation, stakeholders often use financial-economic indicators in their analysis, the most common being the equity-to-assets ratio which measures a company's financial leverage and is calculated by dividing total equity by total assets (the higher the equity-to-asset ratio, the less debt the company has and the less risky it is. A low

equity-to-asset ratio means the company has more debt and is riskier), debt-to-asset ratio (type of leverage ratio that compares to a company's debt obligations), return on equity ratio (a profitability ratio that measures the ability of a firm to generate profits from its shareholder's investments in the company), and the size of the entity. In this regard, to assess what may contribute to the recognition of deferred tax assets, a multiple regression model is prepared with the explanatory variable's equity-to-assets ratio, debt-to-asset ratio, return on equity ratio, and the size of the entity. A dichotomous variable is introduced to the previous model to assess the impact of the 2008 financial crisis on the recognition of deferred taxes.

## 2. Literature Review

In this section, we intend to study some essential concepts underlying the subject. The theories that triggered the definition of the concept of «results manipulation» and what are the motivations that promote its execution are also discussed. Subsequently, it is intended to define what «deferred taxes» means and analyze some studies that test the correlation of deferred tax with earnings manipulation. In the literature review, there is an immensity of definitions for earnings management, with concepts that came from two definitions, one that emerged in 1989 by Schipper and another that emerged later, in 1999, by Healy and Wahlen.

### 2.1. Definition of Earnings Management

At an early stage, earnings manipulation was understood as a purposeful interposition, in other words, without a neutral character, in preparing and reporting financial statements. So, there is a return of own benefit through decisions and choices of accounting criteria/policies, improving the result and approaching what is intended for the company (Schipper 1989). On the other hand, they defined the concept of earnings manipulation directly, «Earnings manipulation occurs when managers use professional judgment in financial reporting and in the structure of transactions to alter financial reporting to mislead some stakeholders about the underlying economic performance of the company, or to influence the results of contracts that depend on reported accounting numbers» (Healy and Wahlen 1999). Later, an article is published that calls for the manipulation of artificial inflation of income or deflation of expenses. An empirical study concluded that the choice of accounting criterion is decided according to the intended disclosure by the users of the financial statements (Beneish 1999).

For Carmo (2013), these current definitions of manipulation act as a practice that reflects the application of the manager's discretion, within the flexibility provided by accounting standards but with an opportunistic nature, obtaining a benefit for the manager or the company. In fact, this author also states that manipulation is a practice that reduces the quality of financial information. According to Amat et al. (2003), it is possible to understand the concept of earnings manipulation when a company chooses the most favorable treatment among the permitted approaches or for an area where its regulation is not well-defined and acts without «evading» accounting standards. The manipulation of results has a negative connotation associated with it being a fraudulent act (Moreira 2008). This same author emphasizes that there are fraudulent situations within the concept of earnings manipulation. In turn, some cases derive from the flexibility allowed by accounting standards. In short, earnings manipulation is understood as a selection of criteria for preparing financial statements for benefit. This opportunistic management derives from the flexibility of accounting standards or fraudulent action.

### 2.2. Theories for Manipulation

In the 1960s, there were no studies with empirical evidence and hypotheses tests on manipulating results. The first studies on earnings manipulation began to appear in the mid-1970s with the introduction of concepts such as «Agency Theory» and «Positive Accounting Theory». Later in 1976, the issue of existing conflicts between shareholders

and managers of an entity was introduced, as they have different visions and objectives toward work. To minimize this issue, the «Agency Theory» was formalized. This theory advocates contracts based on behavior and results for the manager to share the same interests as the shareholder (Jensen and Meckling 1976). Subsequently, an article was published in which they created a theory called «Positive Accounting Theory», which refers to accounting choices to benefit the manager and the company. There is also an introduction to the topic of contractual incentives (compensatory contracts), which affect the criteria for their accounting, making decisions with a view to the bonus for managers (Watts and Zimmerman 1978). In 1994, a study was also prepared that concluded that accountants change accounting policies to circumvent restrictions found in debt contracts to improve the company's results (Sweeney 1994). These theories share something in common, as they indicate that there are still conflicts of interest and factors that influence accounting decisions.

### *2.3. Incentives and Motivations for Manipulation*

In most cases, earnings manipulation is explained by the benefit of serving the manager's interest. The benefit in question may result from its "good" performance. Through a literary review, it is deduced that several references address this topic. However, all of these are in line with the three primary motivations for manipulating results that are cited by Healy and Wahlen (1999), namely: incentives related to the capital market: manipulation is intended to influence investors (misrepresenting their valuation) who hold a high percentage of shares invested in the company, generating greater expectations, attracting investment and influencing market expectations; contractual incentives: in the sense of regulating and controlling contracts between the company and those interested in the financial statements. Given the relationship between the managers' remuneration contract and the results presented by the company, the objectives of the interested parties are thus adjusted. It may also be an instrument of breach of debt contract clauses; legal, political, and regulatory incentives: the legal environment can influence their manipulation. As financial information is of interest to the regulatory body, it provides an incentive to manage the variables that make up the financial statements.

In the Portuguese context, earnings manipulation derives from its legal and economic context. As in Portugal, there is an excellent dominance of small- and medium-sized companies, and the competencies between management and ownership have doubts in their definition. On the other hand, accounting and taxation are intertwined and based on the financial statements, the amount of income tax is calculated. Moreira (2008) states that banks obtain debt capital almost exclusively.

### *2.4. Use of Deferred Taxes in Manipulation*

With the progress of the literature review about earnings manipulation through deferred taxes, several studies correlate these same concepts. Some studies prove the existence of managers who, through opportunistic management, use deferred taxes to improve leverage indicators, influencing debt ratios and manipulating the accounting balance of companies (Gordon and Joos 2004). In addition, other studies confirm the use of deferred taxes for income smoothing, in which the variable «capital gearing ratio» explains the increased use of deferred taxes (see: Holland and Jackson 2004). For Kumar and Visvanathan (2003), recognizing deferred tax assets is a way of transmitting profit expectations to shareholders, which may not be realized. Furthermore, a study was carried out in the United States, where it was found that using deferred tax liabilities helped avoid a revenue decline. A study was carried out in Malaysia, which analyzes whether public companies use deferred taxes to avoid the drop in earnings. It was concluded that there is evidence of the use of deferred taxes to reduce the loss of earnings, with the deferral of their tax obligations for future years (Kasipillai and Mahenthiran 2013). Likewise, in 2013, evidence was obtained of the negative correlation between deferred tax assets and the financial equity-to-assets ratio; the lower the equity-to-assets ratio, the greater the use of deferred tax assets. This

same study confirmed the existence of a positive correlation between company size and deferred tax assets. The total financial debt and the variable results before tax also showed a negative relationship (Almeida 2013). In Egypt, with a sample of 127 companies between 2012 and 2018, a study was carried out that relates the effect of deferred tax with income tax and tax planning for earnings manipulation. With variables such as entity size, leverage with the debt-to-equity ratio, liquidity ratio, and earnings per share. He concluded that tax planning and net deferred tax on financing are used to manipulate earnings, supporting agency theory and positive accounting, in which managers can use practices to affect earnings (Salah 2019). A study in Brazil was carried out on explanatory factors for the recognition of deferred tax assets, in which financial statements of companies listed on the stock exchange on the "BMF&BOVESPA" in the agribusiness sector for the period from 2001 to 2010 were analyzed, using explanatory variables: company size, profitability ratios, debt level, liquidity ratio, and the effect of the leverage. This study concluded that profitability and debt were not determinants of recognition but the entity's size (Anceles 2012). In another study in the same country, Kronbauer et al. (2011) analyzed companies listed on BOVESPA in the agribusiness sector in the same way and for the period between 2005 and 2009, concluding that companies with lower liquidity, lower return on equity, and invoicing recognize more deferred tax assets. In another analysis composed of 61 companies in Brazil belonging to the BM & FBOVESPA, for the period from 2009 to 2014, it was concluded that the companies' debt presented a positive correlation with deferred tax assets. The financial return is equally positive, contrary to the previous revisions made by the authors. The dimension (natural logarithm of total assets) showed a negative relationship, stating that smaller companies are more likely to recognize a higher value of deferred tax assets, seeking to increase their assets (Schuh et al. 2016).

About the European Union, they carried out a study with a sample of 844 entities located in 15 countries in Europe, which consisted of analyzing the impact of earnings manipulation in companies with the 2008 financial crisis. While it was expected that there were more motivations to originate the manipulation, the distortion of the financial information decreased. This fact is justified by the increase in the quality of financial reports and audit quality. Therefore, with the impact of the 2008 crisis, earnings manipulation was reduced (Cimini 2015). Rojas et al. (2010) conducted an empirical study based on 124 companies listed on the Spanish stock exchange from 1999 to 2001, concluding that companies with higher debt and less liquidity tend to recognize deferred tax assets. They also concluded that companies with higher profitability indicators were more likely to recognize deferred tax liabilities.

In Portugal, there is evidence that companies without listed securities use deferred taxes to manipulate the net income for the period in an upward direction and that companies more dependent on bank financing sought to reduce their deferred tax; thus, improving their net income (Santos 2016). In Malic's (2015) masters thesis, he concluded that there is a positive association between the amount recognized in deferred tax assets and the return on equity. A study by Fonseca (2011), which tests ten companies with accounting headquartered in Portugal for the period 2010, concludes that the recognition of deferred tax assets has a positive impact on the financial structure, improving the company's ability to meet commitments and thus, improving financial autonomy, that is, the ability to finance its assets through equity. In this second chapter, it appears that several studies point toward a positive correlation between the manipulation of results and the use of deferred taxes to improve ratios and the smoothing of results.

### 3. Methodology

Based on what was possible to ascertain in the theoretical framework, this chapter intends to present and discuss the method of analysis to be adopted in this study and demonstrate the basis used for the empirical study, namely: descriptive statistics, the Spearman correlation model, and linear regression. This study investigates the manipulation of



results using deferred taxes in companies listed on the stock exchange with consolidated accounts based in Portugal.

In the above section, several studies are explained that support the idea that it is possible to manipulate results using deferred tax assets or liabilities. It should be remembered that [Gordon and Joos \(2004\)](#) provided evidence that deferred taxes were used to improve leverage indicators and debt ratios, thus improving the balance sheet in the financial statements. In this sense, and reinforcing the idea, [Almeida \(2013\)](#) similarly states that there is a negative correlation between deferred taxes and the equity-to-assets ratio. This same author stated that companies with significant economic difficulties recognized more deferred tax assets.

As previously mentioned, [Cimini \(2015\)](#) concluded that although the effect of the 2008 crisis could theoretically be a reason to manipulate results, in fact, there is a decrease in financial distortions. [Malic \(2015\)](#) concluded that there is a positive correlation between the amount recognized in deferred tax assets and the return on equity. In Portugal, [Santos \(2016\)](#) concluded through his analysis that companies without listed securities use deferred taxes to manipulate the net income for the period in an upward direction and that companies more dependent on bank financing sought to reduce their net income for the period deferred tax.

To reach an answer, the following hypotheses are elaborated:

**H0.** *There is a manipulation of results using deferred taxes.*

**H1.** *There is no evidence of the existence of earnings manipulation using deferred taxes.*

$$AID = a + b \times AF + c \times END + d \times RCP \quad (1)$$

Based on the research hypothesis formulated, the following variables are listed. The dependent variable: the deferred tax assets (AID) accounted for in the year, resulting from the quotient between the item in the balance sheet of the deferred tax asset and the total assets for the same period. The weight of the deferred tax assets item in the entity's total assets can be quantified through this ratio.

We have three explanatory variables: The equity-to-assets ratio (AF)—this indicator is obtained through the quotient between equity and net assets, reflecting the percentage of equity that serves to finance the activity of a company. This ratio makes it possible to verify the financial soundness. The lower the ratio, the greater the risk and greater dependence on debt and, conversely, the higher the ratio, the greater the financial stability; the debt-to-assets ratio (END)—ratio is obtained through the quotient between total liabilities and the total value of assets, to measure the proportion of debts about assets that third parties did not finance, that is, the percentage of debt used in the entity funding. This indebtedness ratio is an indicator to assess the risk of default on debt service by the company; the return on equity ratio (RCP)—economic indicator that measures the ability of the company's equity to generate a financial return. In other words, it evaluates the efficiency and capacity of the investments of the company's capital holders in terms of financial results. The calculation is based on the period's net income and equity ratio.

For the control variable, a homologous comparison is made for the years 2007 to 2012 to understand the impact of the financial crisis on the use of deferred taxes in a previous and subsequent period, analyzing its variance and, thus, concluding on its contribution (ANO). This selected period is based on the study by [Cimini \(2015\)](#), who, in his assessment of the impact of the 2008 crisis, used a period between 2006 and 2012; the Entity dimension (LNAT). To determine the company's size, the most used indicator in the literature review is the total assets. The natural logarithm of the companies' total assets is used to obtain a percentage analysis. Thus, it is possible to accurately assess the impact on the dependent variable in the event of a 1% variation in the entity's assets.

Based on the literature review, it is expected that the indebtedness variables and the entity's size have a positive relationship with the dependent variable (deferred tax assets).

Contrary to what was mentioned above, a negative relationship is expected between the variables: profitability indicator, equity-to-assets ratio, and the period.

#### 4. Research Results and Discussion

The sample is collected through Refinitiv Datastream and complies with specific selection criteria. In an initial phase, it is restricted to the currency of the European Union and only companies listed on the Lisbon Stock Exchange (Euronext Lisbon) based in Portugal. This restriction is related to the fact that corporate governance practices are mandatory for this entity, while in unlisted companies, there is no mandatory disclosure. These listed companies must report annually and disclose their reports and accounts, which facilitates obtaining data for analysis. Then, only companies with available data for the years 2007 to 2012 are selected. Regarding the analyzed period, this is justified so that it is possible to analyze the effect before and after the 2008 financial crisis. Data extraction is obtained from companies from different sectors of activity: energy, basic materials, industry, cyclical consumers, finance, health, technology, public utilities, real estate, institutions, associations and organizations, and, finally, government activities. From these same companies, those belonging to the financial, insurance, and similar sectors are excluded due to their regulation being different from those in the sample. Football clubs are also withdrawn as their economic period is different from other companies. Companies with negative equity are also excluded since the recoverability criterion underlying the recording of deferred tax assets is threatened in these companies, as the going concern principle indicates. Data on assets, liabilities, equity, pre/after-tax results, and deferred tax assets are collected for each company. Additionally, data are collected on the ratios of equity-to-assets, debt-to-assets, and return on equity for each entity. The sample consists of 29 Portuguese companies based in Portugal, listed on the stock exchange, with deferred tax assets.

Table 1 presents the descriptive statistics relating to the accounting variables in the sample taken from the balance sheet and income statement.

**Table 1.** Descriptive statistics.

Variables	Average	Median	Maximum	Minimum	Standard Deviation
AF	0.26391	0.27242	0.60400	−1.44100	0.23673
END	0.73663	0.72758	2.44100	0.39600	0.23715
RCP	0.01945	0.01155	0.35120	−0.02287	0.04038
LNAT	20.69089	20.70429	24.47580	17.33100	1.61127
AID	0.02416	0.01448	0.10130	0.00000	0.02241

For the elaboration of this study, the calculation tool IMB statistics SPSS version 2.0, provided by the University of the Azores located in Ponta Delgada (Portugal) is used. According to the procedure carried out by [Vieira \(2017\)](#), the first instance must carry out a test for the normality of the data to understand whether the tests used are parametric since it will dictate the selection of the tests to be used in the study. Therefore, to test the adherence to the normality of the variables, the Kolmogorov–Smirnov tests with the Lilliefors correction and the Shapiro–Wilk test are performed, as shown in Table 2.

The results in Table 2 demonstrate that none of the variables follows the normal distribution because the *p*-value is less than 0.05 for each variable. Thus, it is necessary to resort to non-parametric tests to conclude this study. Table 3 reinforces what was mentioned in the literature review, in which deferred tax assets negatively correlate with the equity-to-assets ratio. This is the same conclusion shared by [Almeida \(2013\)](#). Similar to the above, this justifies the phenomenon by the fact that companies that presented more significant economic difficulties were those that recognized more deferred tax assets.

**Table 2.** Normality adherence test.

	Kolmogorov–Smirnov			Shapiro–Wilk		
	Statistic	df	p-Value	Statistic	df	p-Value
AF	0.096	162	0.0010	0.996	162	0.0010
END	0.096	162	0.0010	0.996	162	0.0010
RCP	0.27	162	0.0000	0.437	162	0.0000
LNAT	0.086	162	0.0060	0.961	162	0.0060
AID	0.212	162	0.0000	0.813	162	0.0000

**Table 3.** Pearson’s Correlation.

		AF	END	RCP	LNAT	AID
AF	Pearson’s Correlation	1.000	−1.000	−0.824	−0.028	−0.259
	Meaningfulness		0.000	0.000	0.713	0.001
END	Pearson’s Correlation	−1.000	1.000	0.823	0.026	0.258
	Meaningfulness	0.000		0.000	0.735	0.001
RCP	Pearson’s Correlation	−0.824	0.823	1.000	0.173	0.125
	Meaningfulness	0.000	0.000		0.028	0.113
LNAT	Pearson’s Correlation	−0.028	0.026	0.173	1.000	0.150
	Meaningfulness	0.713	0.735	0.028		0.050
AID	Pearson’s Correlation	−0.259	0.258	0.125	0.150	1.000
	Meaningfulness	0.001	0.001	0.113	0.050	

As expected from the literature review, deferred tax assets positively correlate with the debt-to-assets ratio; this conclusion is also mentioned in the study by [Salah \(2019\)](#). An identical conclusion was made by [Malic \(2015\)](#), in which he refers to a positive correlation between the amount recognized in deferred tax assets and the return on equity, thus reaching the same conclusion shown in [Table 3](#). Regarding the entity’s size, the positive correlation with the use of deferred tax assets is proven. Thus, it can be said that the larger the size, the greater the recognition of deferred tax assets. [Anceles \(2012\)](#) and [Almeida \(2013\)](#) indicate that the entity’s size positively correlates with deferred taxes. All correlation trends corresponded to expectations, demonstrated in the literature review, following the same conclusions as in previous studies. A study is then carried out to understand the impact on the dependent variable (deferred tax assets) when there are changes in the independent variables: ratios of equity-to-assets, debt-to-assets, return on equity, and the natural logarithm of the asset. The test used is the multiple linear regression that reasonably describes relationships between the various explanatory variables. As we are dealing with a model in which two or more variables are analyzed, multiple linear regression or multiple least squares regression is used.

The decision to use this test was based on the study by [Costa \(2018\)](#), in which this procedure was used to assess the existing influence between corporate governance and earnings manipulation. As the sample comprises panel data with several entities with six annual observations, we are dealing with a panel regression. For this purpose, it is necessary to use the “Stata” software, version 16. In the first instance, the Hausman test is used to decide whether the model is composed of random effects (H0) or fixed models (H1). Obtaining a value of  $H = 16.65$ , with  $p\text{-value} = \text{prob}(\text{chi-square}(4) > 16.65) = 0.0023$ , where a low  $p\text{-value}$  contradicts the null hypothesis that the random effects model is consistent, validating the alternative hypothesis regarding the existence of the fixed effects model. As the database is composed of different sectors for each company, identification as a cluster is used. Statistical cluster analysis is a technique for grouping data into groups so that data



within the same cluster are identical. Thus, using linear regression, with panel data, using the year as a time dimension, with fixed effects per cluster, identifying the type of company (Table 4).

**Table 4.** Linear regression.

AID	Coef.	t	Sig
AF	−0.315204	−2.99	0.006
END	−0.316773	−2.64	0.014
RCP	−0.000479	−3.62	0.001
LNAT	−0.014980	−3.48	0.002
F(9.27) = 19.41			
R-Square Within = 0.1998 (fixed-effects)			

Through Table 4, it is possible to conclude that all variables have explanatory power in terms of significance, with the debt-to-asset ratio being the most prominent variable, obtaining a higher coefficient value. Again, the negative correlation between the equity-to-assets ratio and the recognition of deferred tax assets is highlighted, following Fonseca's conclusion (2011). This author states that the recognition of deferred tax assets has a positive impact on the financial structure, improving the company's ability to meet commitments, that is, the ability of companies to finance their assets through equity. Regarding the debt-to-assets ratio variable, this presents a negative correlation when combined with the effect of the other variables, reaching the same conclusion as Almeida (2013), who mentions that it is a situation that contradicts expectations. For example, Rojas et al. (2010), using the Spanish capital market, concluded that companies with higher indebtedness and less liquidity are more likely to recognize deferred tax assets. About the return on equity ratio, its coefficient has a negative value. This conclusion contradicts the study by Malic (2015). However, it is in line with the statement by Kronbauer et al. (2011), who states that companies tend to recognize more deferred tax assets when the return on equity is lower. Regarding the results obtained about the size of entities having a positive correlation with the recognition of deferred tax assets, the results obtained contradict initial expectations based on studies by other authors.

However, the results of this study follow those achieved by Schuh et al. (2016), obtaining a similar negative correlation, in which it is concluded that smaller companies are more likely to recognize a higher value of deferred tax assets. Contrary to what has already been concluded in the literature, for example, in the studies by Anceles (2012) and Almeida (2013), in which the entity size factor is one of the explanatory variables of the power of recognition of deferred tax assets, this study does not find this relationship in the period studied. This may be because the size factor in the Portuguese case is not directly comparable to other countries' average size. Many studies have a database with non-listed companies. To draw conclusions about the impact of the 2008 crisis on the recognition of deferred tax assets, a dichotomous variable is added to the previous model. The period between 2007 and 2008 is assigned the value of (0), thus being classified as the time interval prior to the crisis. The period from 2009 to 2012 is designated as the interval after the financial crisis, being assigned the value (1). This new variable, which distinguishes the periods of observations through the financial crisis, is called "CEFFECT." The regression results with the new dichotomous variable are shown in Table 5.

With the introduction of the new variable, as reflected in Table 5, the result of the statistical test is inconclusive. There is no statistical evidence of changes in the use of deferred tax between the pre-crisis and post-crisis periods, concerning 2007 to 2008, most likely influenced by the small sample size, given the number of companies listed on the stock exchange in Portugal.

**Table 5.** Linear regression with dichotomous variable.

AID	Coef.	t	Sig.
AF	−0.315204	−2.99	0.006
END	−0.316773	−2.64	0.014
RCP	−0.000479	−3.62	0.001
LNAT	−0.014980	−3.48	0.002
CEFFECT	0.001685	0.60	0.551
F(9.27) = 19.41			
R-Square Within = 0.1998 (fixed-effects)			

## 5. Conclusions

The study presented aims to consolidate the existing literature regarding the attribution of assets through deferred taxes and to understand its contribution to a manipulation of the results of companies listed on the stock exchange based in Portugal, in conjunction with its impact on the global financial crisis in 2008. Several authors in Portugal have already studied this issue of earnings manipulation through deferred taxes. However, most of these studies were carried out with companies not listed on the stock exchange and using deferred tax liabilities. With this work, it appears that several studies point to a positive correlation between earnings manipulation and deferred tax assets. They also understand how the recognition of deferred tax assets could modify the financial statements and financial and economic ratios through the discretion of accounting standards. To carry out the empirical study, a statistical sample is used, which, after some exclusions, resulted in 29 companies listed on the stock exchange based in Portugal for the period between 2007 and 2012, a period in which Portugal was strongly affected by a global crisis. This study is relevant because it correlates earnings manipulation with the recognition of deferred tax assets, thus targeting the reality of Portugal.

Through statistical tests, it is possible to conclude that deferred tax assets have a negative relationship with the equity-to-assets ratio. Companies justify this phenomenon with more significant economic difficulties recognizing deferred tax assets. Deferred tax assets show a positive correlation with the debt ratio and the return on equity ratio. Regarding the entity's size, the positive correlation with the use of deferred tax assets is proven. Thus, it can be said that the larger the size, the greater the recognition of deferred tax assets. Through multiple linear regression, it is possible to verify that all variables have explanatory power in terms of significance. The debt-to-assets ratio is the most prominent variable, obtaining a higher coefficient value. The existence of a negative correlation between the equity-to-assets ratio and the recognition of deferred tax assets is proven again, following the same conclusion obtained by [Fonseca \(2011\)](#), in which he states that the recognition of deferred tax assets has a positive impact on the structure financial, improving the company's ability to meet commitments, that is, the ability of companies to finance their assets through equity. The debt-to-assets ratio variable presents a negative correlation when combined with the effect of the other variables. Thus, it can be affirmed that companies with more outstanding indebtedness and less liquidity tended to recognize deferred tax assets for this sample and the period defined under study. About the return on equity, its coefficient has a negative value, concluding that companies tend to recognize more deferred tax assets when the return on equity is lower. Contrary to expectations based on the literature review, it is concluded that smaller companies are more likely to recognize a higher value of deferred tax assets. This may be because the size factor in the Portuguese case is not directly comparable to other countries' average size. Many studies have a database with non-listed companies. Regarding the last analysis, which refers to the impact of the financial crisis on the recognition of deferred tax assets, there is no statistical evidence of changes in the use of deferred tax between the pre-crisis

and post-crisis moments from 2007 to 2008, which was most likely influenced by the small sample size, given the number of companies listed on the stock exchange in Portugal.

Given the fact that Portugal is a country with few listed companies, it would be interesting to be able to replicate this study in an Iberian context (adding Spain to the Portugal sample). Another suggestion would be to analyze deferred taxes through another prism, seeking to answer the question: “How much money does the Portuguese State lose with the recognition of deferred taxes?”

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