

IUL School of Business

**EARNINGS MANAGEMENT AS A DETERMINANT OF  
CHOICE BETWEEN ALTERNATIVE INCOME  
TAXATION REGIMES OF SMALL PORTUGUESE  
COMPANIES**

**CLÁUDIA MARIA MARRAMAQUE AFECTO DIAS**

A thesis submitted for the Degree of Doctor in Management – Specialization in Accounting

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[May, 2019]

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## **RESUMO**

Desde 2014, as pequenas e médias empresas (PME) portuguesas podem, em alternativa ao regime geral, optar por um regime simplificado de tributação (RST) para determinar o resultado tributável. Contudo, e apesar da expectativa de que este regime simplifique e incentive o cumprimento das obrigações fiscais das PME, a maioria não adota o RST. De acordo com as estatísticas da Autoridade Tributária e Aduaneira portuguesa sobre as declarações fiscais de Imposto sobre o Rendimento das Pessoas Coletivas (IRC) para 2014-2016, mais de 70% das PME preenchem a condição relativa ao montante anual de rendimentos, mas pouco mais de 3% escolheram o RST. Com relação a estes números, e considerando que a maioria dos contabilistas certificados não recomendam o STR devido principalmente à economia do imposto a pagar, torna-se relevante entender a gestão de resultados das empresas que não optam por este regime, considerando que a tributação é identificada em muitos estudos como um importante incentivo para a gestão de resultados, e que no regime geral o resultado contabilístico é a base para determinar o resultado tributável.

Este estudo pretende deste modo examinar se a gestão dos resultados influencia a escolha pelo RST. Abordo esta lacuna na literatura fiscal, explorando o cenário português onde a maioria das PME que preenchem as condições para adotar este regime de tributação, continuam no regime geral. Pessoalmente coloco a hipótese de que as PME são mais propensas a optar pelo RST quando a gestão dos resultados, medida através de acréscimos discricionários, é menor. Depois de controlar várias variáveis, os meus resultados são consistentes com as previsões e, por conseguinte, sugerem que a gestão dos resultados, embora não seja o principal determinante, desempenha um papel importante na escolha entre os regimes de tributação.

Analiso igualmente se a opção pelo RST teve impacto na gestão dos resultados, esperando que, após essa opção, as PME apresentem uma menor gestão de resultados, atendendo a que, neste regime, a determinação do resultado tributável se afasta do resultado contabilístico. Os resultados confirmam que a gestão dos resultados diminui após a escolha pelo RST e confirmam que as PME que optam por este regime não têm os

mesmos incentivos para gerir os seus resultados como quando estão inseridas no regime geral.

Ao comparar as empresas no regime geral e as empresas no RST, também documento que, no regime geral, as empresas são mais propensas a gerir os resultados reduzindo-os, enquanto que no RST a gestão dos resultados é feita em alta.

Restringindo a amostra às empresas que estão no regime geral, divido ainda o total dos acréscimos fiscais e contabilísticos e acréscimos apenas contabilísticos e antecipo que estas empresas diminuem o resultado tributável utilizando acréscimos fiscais e contabilísticos com o intuito de reduzir a carga de imposto associada. Também espero que estas empresas aumentem o resultado contabilístico através de acréscimos apenas contabilísticos e, conseqüentemente, sem influenciar o resultado fiscal. Os resultados sugerem a utilização de acréscimos fiscais e contabilísticos para reduzir o resultado tributável e a utilização do acréscimos apenas contabilísticos que visam aumentar o resultado contabilístico sem influenciar o resultado tributável.

Estas conclusões contribuem para o debate atual dos decisores políticos portugueses sobre a definição de um RST eficiente e atrativo, considerando que a melhor forma de garantir uma mudança estrutural efetiva no sistema tributário, como a introdução de um RST, é avaliar como os contribuintes fazem as suas decisões.

***Palavras-chave:*** *Regime simplificado de tributação, gestão de resultados, determinantes, PME*

## **ABSTRACT**

Since 2014 Portuguese SMEs can opt for a Simplified Taxation Regime (STR) to determine their taxable income as an alternative to the general regime. However, and despite the expectation that this regime would simplify and encourage tax compliance of small and medium enterprises (SMEs), most of them have not adopted this regime. According with the Portuguese Tax Authority's statistics about Corporate Income Tax (CIT) returns for 2014-2016, the SMEs that fulfil the condition about the annual amount of revenue represent more than 70 percent of companies but just over 3 percent chose STR. With regard this numbers, and that the majority of certified accountants do not recommend STR due primarily to the saving of tax payable, it is relevant to understand the earnings management of companies that not choose STR considering that taxation is observed in many studies as an important incentive for earnings management, and that in general regime the book income is the basis for determining the taxable income.

Accordingly, this study examines whether earnings management influences the choice for the STR. I address this gap in the tax literature by exploiting the Portuguese setting in which the majority of SMEs that fulfil the conditions to adopt this taxation regime still report their taxable income in the general regime. I hypothesize that SMEs are more likely to choose STR when earnings management, measured by discretionary accruals, are lower. After controlling for several variables, my results are consistent with the predictions and thus suggest that earnings management, although it is not the main determinant, plays an important role in the choice between income taxation regimes.

I also analyse whether the option for STR had an impact on earnings management expecting that, after this option, SMEs present less earnings management attending that in this regime the determination of the taxable income departs from the book income. My results confirm that earnings management declines after the option for STR and confirm that SMEs in STR do not have the same incentives to manage their earnings as when they are in the general regime.

Comparing companies in general regime and companies in STR, I also document that in general regime companies are more likely to manage earnings downwards while in STR the earnings management is upwards.

Restricting the sample to the companies that are in general regime, I divide total accruals into book-tax accruals and book-only accruals and anticipate that these companies will decrease taxable income by recording book-tax accruals in order to reduce their tax liability. I expected also that these companies attempt to increase book income through book-only accruals. The results suggest increased use of book-tax accruals to decrease taxable income and increased use of book-only accruals to increase financial income.

These findings contribute to the current debate of Portuguese policy makers on the definition of an efficient and attractive STR considering that the best way to ensure an effective structural change to the tax system, such as the introduction of a STR, is assessing how taxpayers make their decisions.

***Key words:*** *Simplified taxation regime, earnings management, determinants, SMEs*

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## **ABBREVIATIONS**

BOA – Book-only accruals

BTA – Book-tax accruals

CEO – Chief executive officer

CIT – Corporate income tax

DBOA – Discretionary book-only accruals

DBTA – Discretionary book-tax accruals

ETR – Effective tax rate

EU – European Union

IAS – International Accounting Standards

IASB – International Accounting Standards Board

IFAC – International Federation of Accountants

IFRS – International Financial Reporting Standards

OECD - Organization for Economic Cooperation and Development

PIC – Personal income tax

SME – Small and Medium Enterprise

SPA – Special payment on account

STR – Simplified Taxation Regime

UK – United Kingdom

USA - United States of America

VAT – Value-added tax

## **1. INTRODUCTION**

Following the proposals of the “Comissão para a Reforma do IRC” (Corporate Income Tax Reform Commission), in 2014 the current Simplified Taxation Regime (STR) for determining taxable income of small and medium enterprises (SMEs) was introduced. However, and despite the expectation that this regime would simplify and encourage tax compliance of SMEs, most of Portuguese small companies that fulfil the conditions have not adopt this regime.

SMEs represent more than 95 percent of companies worldwide and account for more than 65 percent of employment (IASB, 2009; IFAC, 2010). SMEs make a great contribution to job creation, technological innovation, and economic output for both developed and developing countries (Chen, 2006). For instance, in Europe SMEs accounted for 67 percent of total employment in 2010 and in the period 2002 to 2010 SMEs created 85 percent of the new jobs in the European Union (EU) (European Commission, 2012). In addition, SMEs represent 99.8 percent of non-financial companies and generate 57.4 percent of value added (European Commission, 2016).

In view of the importance of SMEs and the significance that accounting decisions assumes in their taxation, the main objective of this study is to analyse, in the Portuguese context, the determinants of choice between the general regime and STR, focusing upon the earnings quality of financial reporting. Since STR for SMEs is not mandatory, the contribution of the determinants to its adoption is an important issue, especially when policy makers intend to create a new and more attractive STR. Currently, and with the purpose of simplifying the taxation of Portuguese SMEs, the Government is preparing the draft amendment to the STR to be provided to Parliament to the end of the first half of 2019.

As well as determining why SMEs do not adopt this regime, it is important to know the effects of the option for STR on the quality of financial reporting and to identify standard earnings management behaviours of SMEs in both regimes, particularly with the identification of specific accruals used in earnings management practices, as well as the direction (income-increasing or income-decreasing) of discretionary accruals.

In the last few years the Portuguese government has attempted to fight tax fraud and tax evasion through legislative measures to reduce abusive tax planning practices. Some of these measures are in line with Monem (2003), who demonstrates that tax avoidance and earnings management may increase when accounting numbers are used for tax calculation. One of these measures was the introduction, in 1998, of a “special payment on account” (SPA), which required entities to pay the income tax in advance, based on revenues of the previous year. Another measure to fight tax fraud and tax evasion applied exclusively to SMEs was the adoption, from 2001 to 2010 and after a suspension, since January 1, 2014, of the STR. It is a taxation regime in which the income tax is calculated by a coefficient on specific revenue. This tax measure is applied to resident companies that are not exempt from or subject to a special taxation regime and that develop mainly a commercial, industrial, or agricultural activity, with a gross annual amount of revenue not exceeding € 200,000, total assets not exceeding € 500,000, not having their accounts mandatorily audited, the respective share capital is not held in more than 20 percent, directly or indirectly, by companies that do not fulfil any of the above mentioned conditions, except when they are venture capital entities or venture capital investors, and adopt the accounting standard applicable to micro companies.

The introduction of a STR in any tax jurisdiction has to take into account that SMEs are considered hard-to-tax, that they are more likely to take advantage of the opportunities of tax non-compliance, and that they pay less than they would pay if their income tax were based on the real income from business operations (Bird & Zolt, 2003; Kamleitner, Korunka & Kirchler, 2012; Martins, 2010; Mirrlees et al., 2011; Marques, Rodrigues & Craig, 2011).

Besides, the evolution of tax systems has led to a significant increase in complexity, seen as an obstacle for companies’ development, and which justifies the introduction of simplification strategies (Smith, Martin & Kay, 2008; World Bank Group, 2007; Tran-Nam & Evans, 2014). In Portugal, the introduction of the STR also intended to simplify the tax system, which is classified by some Portuguese researchers as very complex and volatile (Soares, 2004; Martins, 2005; Lopes, 2003, 2008; Santos & Martins, 2009), with complex tax laws, often amended, resulting in excessive compliance costs and uncertainty for individuals and companies about their long-term incentives (Organization for Economic Cooperation and Development (OCDE), 2013)



However, it seems that there is no consensus among researchers about the importance and the consequences of tax simplification. Kaplow (1996) identifies some examples of simple tax system scenarios that may be unfair. Warskett, Winer, and Hettich (1998), in turn, develop an explanation for the complexity of a tax system as an equilibrium outcome within a political economy framework, and Kaplow (1998) considers that a complex tax system is important as it accurately measures the companies' income. Based on United States of America (USA) taxpayers' attitude, Forest and Sheffrin (2002) concluded that simplifying the tax system may not be an effective deterrent to income tax evasion. Conversely, Graetz (1997) suggests that simplifying the tax system may be the most effective way to increase taxpayers' compliance, and Santos and Rodrigues (2006) and Terkper (2003) considered that in the long term an operative and well accepted STR will lead to an increase in tax compliance and, consequently, to an increase in tax revenues, accompanied by a reduction in administrative costs for the Tax Authority.

Given that STR is applied to SMEs with a gross annual amount of revenue not exceeding € 200,000, and that according with the Portuguese Tax Authority's statistics about Corporate Income Tax returns for 2014-2016<sup>1</sup>, they represent more than 70 percent of companies, just over 3 percent chose STR. According to these numbers, it is important to understand the determinants for SMEs not to choose STR examining the external and the internal factors that could affect their decision. Prior research has shown that self-interest, perceived equity, tax knowledge, and certain demographic characteristics impact taxpayer attitudes toward tax systems (McGowan, 2000) and that taxpayer reporting of income levels will vary based on the tax scheme (Hite & McGill, 1992). I bridge these issues with reporting quality to determine if companies do not choose STR because in the general regime they could make use of earnings management to reduce their tax burden.

In relation to the previous simplified taxation regime, in force until 2010, it was assumed that it had not reached the initially defined objectives. In Law no. 53-A/2006, of December 29 (State Budget for 2007) the revocation of STR was justified as follows:

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1 Available at : [http://info.portaldasfinancas.gov.pt/pt/dgci/divulgacao/estatisticas/estatisticas\\_ir/Pages/Estatisticas\\_IRC.aspx](http://info.portaldasfinancas.gov.pt/pt/dgci/divulgacao/estatisticas/estatisticas_ir/Pages/Estatisticas_IRC.aspx)

*Although the current regime aims not only to simplify the taxation of small and medium-sized companies, which account for a significant proportion of taxpayers, but also to seek greater tax equity (...), it has been found some years after its implementation that this objective has not been achieved.*

About the current STR, in State Budget for 2017 the SPA was reduced from € 1,000 to € 850, and recently<sup>2</sup> the government established another (temporary) reduction of € 100 on this payment, “applied until the review of STR to include more companies”.

For this purpose, it is necessary to determine the best way to ensure an effective structural change to the tax system, such as the introduction of a STR, assessing how taxpayers make their decisions to participate in the system (Alm, Bahl & Murray, 1990; Alm, Jackson & McKee, 1992).

Article 3 of Law no. 10-A/2017, of March 29, established that the Government should submit to the Parliament:

*A proposal for a law to amend the simplified regime for the determination of corporate income tax, with a view to entering into force on January 1, 2019, in order to simplify the taxation of micro and small companies by reducing their tax-related duties and to define technical and economic coefficients in order to determine the taxable amount.*

Accordingly, the Secretary of State for Fiscal Affairs, through its Order No. 42/2018-XXI, of January 31, determined the establishment of a working group to develop the calculation of these technical-economic coefficients by sector and branch. However, considering the complexity in defining a well-accepted STR, the government has not been able to submit the proposal to change the STR within the deadline. In order to continue the work that is underway, the State Budget for 2019 provides that the presentation of this legislative proposal can be carried out until the end of the first half of 2019.

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<sup>2</sup> In the Communiqué of Ministers Council from 26<sup>th</sup> January of 2017 and Law No. 10-A/2017, March 29.

Nevertheless, since accruals are the primary tools for taxable income shifting in general regime and as SMEs' book-tax conformity is high, I believe that, more important than defining technical-economic coefficients, it is valuable to investigate the strategic accrual management behaviour of SMEs to resolve the trade-off between taxable and book income and its influence in the option for income taxation regimes. This is an important issue since Healy and Wahlen (1999) indicate that one of the policy makers' interests is in the magnitude and frequency of earnings management to show if their effects are widespread enough to warrant new or additional standards. Besides, and according to the same authors, evidence on which accruals and which standards are used to manage earnings, and on the motives for this management, should help policy makers to identify which standards are needed to be reviewed and consequently to better allocate scarce resources for enforcement of standards. Consequently, the efforts to find a consensual and attractive STR are hampered by a gap in our knowledge on what determines SMEs' choice for this regime or not. Therefore, this study addresses this gap in taxation literature by exploring the determinants for Portuguese SMEs' choice for STR, focusing upon the earnings quality of financial reporting and by using tax return data.

The earnings management definition used in this study is consistent with Calao and Jarne (2010), corresponding to the use of accounting practices within the limits available within a comprehensive basis of accounting by management in order to achieve a desired result, and is measured in terms of discretionary accruals. Other definitions of earnings management can be found in Schipper (1989), Apellániz and Labrador (1995), and Healy and Wahlen (1999). The earnings management definition could also include the management of real transactions in order to obtain the desired profit (Nelson, 2003; Ewert & Wagenhofer, 2005).

This study contributes to national and international tax research in several ways. The first contribution is at a theory level contributing, with the literature review, to a comprehensive and critical overview of tax choice, simplified taxation regimes, and their relationship with earnings management practices. Another contribution is related with the evidence of this study which provides an important step toward a better understanding about the determinants that influence tax options, especially with regard to the option for STR by Portuguese SMEs. The findings can be used by policy makers in order to incentive the option for this regime and, consequently, to minimize tax complexity of

SMEs taxation and its negative effects on tax revenues. Also, by comparing companies' behaviour in general regime and in STR, it is possible to define standard behaviours about companies' earnings management practices, which should be taken into account in the definition of a most efficient and attractive STR. This study also contributes for the small number of researches on tax-induced earnings management in Continental Europe, providing new empirical data about Portuguese SMEs. Much of the current literature consists of empirical data from Anglo-Saxon countries (such as Australia, Canada, United Kingdom, USA), where the determinants of earnings management are well understood, which is in contrast with Continental Europe.

This study is the first that relate tax choice with earnings management practices. In relation to Portugal, the previous studies about tax choice focused on perceptions about taxpayers, managers, or certified accountants to define their tax decisions (Borrego, Loo, Lopes & Ferreira, 2015; Alves, Portela & Sanches, 2012; and Dâmaso & Martins 2015). Regarding earnings management, the previous studies have explored the large Portuguese listed companies. Mendes and Rodrigues (2006) analysed earnings smoothing practices using the Eckel approach (1981); Morais and Curto (2008) investigated whether adopting IASB standards is associated with higher earnings quality and higher value relevance; Alves (2011, 2012) related discretionary accruals with board characteristics and ownership structure, respectively; Isidro and Gonçalves (2011) investigated CEOs' characteristics and their influence on earnings management practices; Alves and Vicente (2013) analysed whether the Latin model performs more poorly than other variants of the Continental and Anglo-Saxon models in terms of preventing earnings management; Pereira and Alves (2017) analysed how accounting standards and the mandatory adoption of IFRS/IAS affect earnings management in Portuguese listed companies; and Marques, Rodrigues, and Craig (2011) explored earnings management of Portuguese private companies motivated by the desire to minimize the SPA and adopt a graphical analysis to evaluate earnings management.

The remainder of this study is organized as follows. In Section 2 the theoretical framework of the Portuguese STR is made along with a brief comparison with the general regime. Section 3 develops the theoretical framework of this study and the definition of four hypotheses. Section 4 describes the research design and Section 5 analyses the research results. Finally, Section 6 presents the summary and concluding remarks.

## **2. PORTUGUESE INCOME TAXATION REGIMES – LEGAL FRAMEWORK**

### **2.1. SIMPLIFIED TAXATION REGIME**

Even though it has not been used, Law No. 3-B/2000, of April 4 (State Budget for 2000), authorized the Government to establish a simplified special taxation regime, optional, applicable to taxpayers of Personal Income Tax (PIT), and CIT taxpayers who develop mainly a commercial, industrial or agricultural activity, with a total annual income of less than € 124,739.

The creation of simplified taxation regimes of PIT and CIT was therefore implemented through Law no. 30-G/2000, of December 29 (State Budget for 2001). The STR of CIT created by this law was applied to companies not exempt or subject to any special taxation regime, that in the previous year had a total annual income of less than € 124,739 and had not opted for the application of the general regime for the determination of taxable income. In this regime, the calculation of taxable income resulted from the application of technical-scientific indicators defined for the different sectors of economic activity, which should be used as they were approved. In the absence of technical-scientific indicators or until they were approved, the taxable profit was that resulting from the application of the coefficient of 0.20 to the value of sales of goods and products and the coefficient of 0.45 to the value of other income, excluding change in manufactured inventories and work for the company itself, with a minimum amount equal to the annual value of national minimum wage. The coefficient of 0.20 is also applied to accommodation, food, and beverage activities.

The working group established by the Order of the Minister of State and Finance Committee of April 20, 2005 (DGCI, 2007) considered that the STR of CIT is misunderstood and that there few companies that choose this regime since they are required to have organized accounting. It should be noted that this Working Group also argued that it is certainly advantageous to consider the possibility of establishing organized accounting regimes or simplified declaration regimes, to frame the determination of the CIT taxable income, since simplifying accounting or periodic reporting requirements may contribute to lower compliance costs and possibly to simplify

fiscal control. Consequently, the Working Group concluded that the STR of CIT did not appear to be sufficiently justified, recommending its abolition and its replacing with a simplified accounting regime or a simplified declaration applied to small companies.

Law no. 53-A/2006, of December 29 (State Budget for 2007) authorized than the Government to revoke the STR of CIT, replacing it with a regime that establishes simplified rules of taxable income determination on the basis of accounting, applied to companies that develop mainly a commercial, industrial, or agricultural activity whose annual turnover does not exceed € 250,000. Nonetheless, this authorization has not been used.

This regime was suspended by Law 64-A/2008, of December 31 (State budget for 2009), which prevented the option for the STR of CIT from January 1, 2009. The justification for this measure was that, although the current regime aims not only to simplify the taxation of SMEs, who represent a significant part of CIT taxpayers, it was found some years after its implementation that this objective was not reached.

The working group for the Study of Fiscal Policy, which was constituted by the Order of the Secretary of State for Fiscal Affairs, on January 8, 2009, recommended the definitive revocation of the STR of CIT, and to study the creation of a simplified accounting regime. Following these recommendations, Law no. 3-B / 2010, of April 28 (State Budget for 2010) revoked the simplified CIT tax regime.

The “Comissão para a Reforma do IRC” (Corporate Income Tax Reform Commission) proposed the introduction of a STR of CIT that would take into account the circumstances under which very small companies operate. At the same time, to encourage accession to this regime, it was proposed that its creation would be accompanied by an increase in the SPA for entities not covered by the STR. Following these proposals, Law no. 2/2014, of January 16, introduced the current STR of CIT.

The simplified regime for determining the taxable income currently set out in the CIT Code is an optional regime for the determination of the taxable income. It is an opting-in regime. Its application is therefore dependent on an expression of companies’ intention (and not as in the previous regime of mere companies’ omission), formalized in the declaration of the beginning of the activity or through the declaration of changes to be

presented by the end of the second month of the tax period in which they intend to start the application of the regime. This option may be exercised by resident companies that are not exempt or subject to a special tax regime, and that develop mainly a commercial, industrial, or agricultural activity, with a gross annual amount of revenues not exceeding € 200,000, total assets not exceeding € 500,000, not having their accounts mandatorily audited, the respective share capital is not held in more than 20 percent, directly or indirectly, by companies that do not fulfil any of the above mentioned conditions, except when they are venture capital entities or venture capital investors, adopt the accounting standard applicable to micro entities and have not waived application of simplified taxation regime in the previous three years.

The application of this regime ceases when the company no longer complies with these requirements (it should be noted that the company is free to waive the application of the regime and there is currently no minimum period of stay in this regime) or when the company does not comply with the obligations to issue and communicate the invoices provided in the VAT Code and in Article 3 of Decree-Law no. 198/2012, of August 24.

Under this scheme the taxable income is determined by applying the following coefficients to the yields obtained:

- i. 0.04 of the sales of goods and products, as well as of services rendered in connection with catering, beverages, and hotel activities, except for those that take place in the scope of the activity of local accommodation establishments in the modality of dwelling or apartment;
- ii. 0.75 of the income from professional activities specifically provided in the Table referred to in article 151 of the PIT Code;
- iii. 0.10 of the remaining income from services rendered and operating subsidies;
- iv. 0.30 of other subsidies which are not operating subsidies;
- v. 0.95 of income derived from contracts for the purpose of the transfer or temporary use of intellectual or industrial property or the supply of information relating to experience gained in the industrial, commercial, or scientific sector, other income

from capital, positive income from property income, the positive balance of gains and losses and other equity increases;

- vi. 1.00 of the purchase price of the equity increases obtained free of charge;
- vii. 0.35 of the income from the operation of local accommodation establishments in the form of dwelling or apartment;

The application of these coefficients cannot, however, result in less than 60 percent of the annual value of the minimum guaranteed monthly remuneration, in the amount of € 4,074 (€ 485 x 14 x 0.60) for 2014 and € 4,242 (€ 505 x 14 x 0.60) for 2015.

It should also be noted that the coefficients of 0.04 (i.) and 0.10 (iii.) referred above, as well as the minimum threshold, are reduced by 50 percent in the taxable period of the beginning of activity and by 25 percent in the period following the beginning of activity.

Finally, it should be noted that, during this taxation regime, losses are not deductible and that, unlike in the previous STR, the taxable income is taxed at the general tax rates laid down in CIT Code.

It is thus a regime in which the law presumes only the costs, accepting, in principle, as real the income calculated by the companies.

Briefly, and although this new STR's base is similar to the previous one, it contemplates some improvements: 1) the adaptation of the coefficients to the activities; 2) the non-compulsory stay in the regime; 3) the "opting in" as the option method; and 4) reduction of some coefficients and minimum of taxable income at the beginning of activity and in the next taxation period. In its introduction there was also the concern of maintaining some characteristics of the previous regime, such as the non-mandatory nature of SPA and the incidence of only some autonomous taxation in taxable income calculation (Faustino, 2004; DGCI, 2007; Ribeiro, 2009).

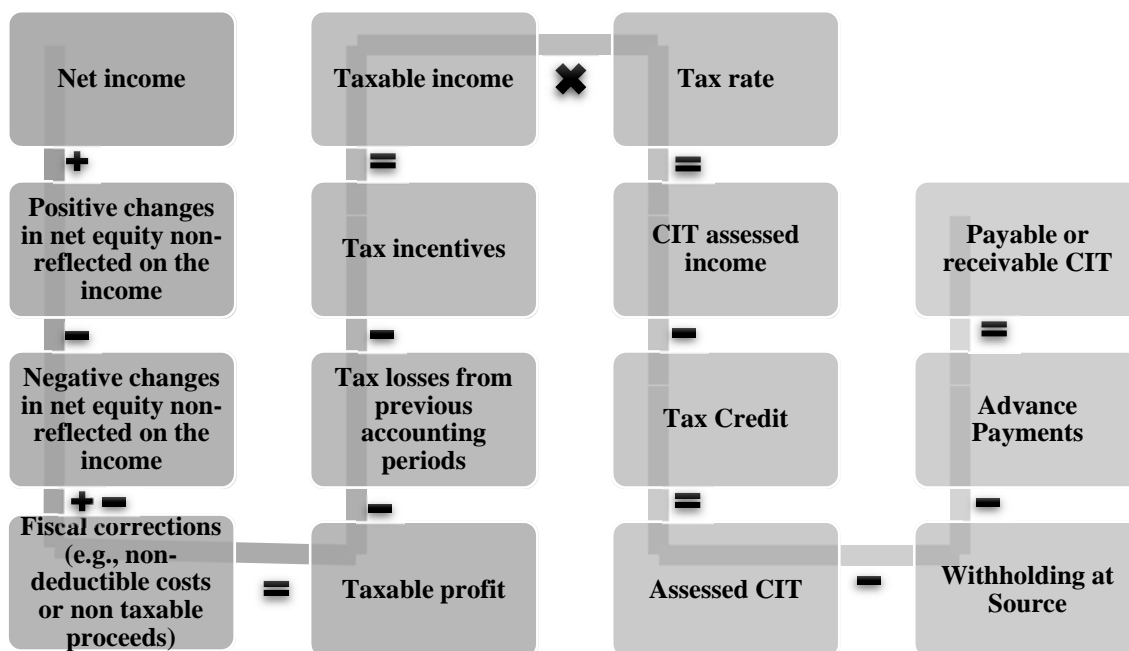
However, some characteristics considered less successful, such as the minimum of taxable payable and the obligation to have organized accounting (Faustino, 2004; Cupertino, 2005; Nabais, 2006; DGCI, 2007) continued in the new STR.



## 2.2. GENERAL REGIME FOR THE DETERMINATION OF THE TAXABLE INCOME

The determination of the taxable income on general regime is based on the amounts shown by the accounting records, representing the algebraic sum of the net income for that period (the difference between profits or gains and costs or losses) as well as positive or negative variations in net equity during the same period which are not reflected in the taxable income and fiscal corrections deriving, as a general rule, from nondeductible accounting costs or nontaxable accounting profits.

Figure 1 – CIT assessment scheme in general regime



## 2.3. CONCISE COMPARISON OF THE TWO ALTERNATIVE INCOME TAXATION REGIMES

The main differences between the two income taxation regimes, described below, are related with compliance and payment obligations. In STR taxpayers are not subjected to

the payment of municipal surcharge and they cannot deduct tax losses that are still within the carry over period.

Also, and as Dâmaso and Martins (2015) mentions, taxpayers that choose STR are subject to a lighter autonomous taxation of expenses. In the general regime many expenses are taxed, to discourage some costs that are deemed unrelated to business activity: travel, meals, recreational, non-documented, etc.

### **3. LITERATURE REVIEW**

The studies about tax choice between alternative income taxation regimes focused on perceptions about taxpayers, managers, or certified accountants to define their tax decisions. An example is Katz and Ott's (2006) study, which presented a model addressing the factors that affect taxpayer decision-making and tested their resulting hypotheses using an experimental design. Alm, Jackson, and McKee (1992) used laboratory experiments to estimate individual responses to tax, penalty, and audit rate changes, as well as to changes in government expenditures. However, and as Wartick, Madeo, and Vines (1999) suggested, the difference in how respondents view tax issues may be attributable to the context in which the data are gathered and, therefore, in differences of perceptions regarding how the tax issues affect respondents.

Data collected by Borrego et al. (2015) regarding Portuguese certified accountants' perceptions of the Portuguese tax system indicated that 49.6 percent considered it complex and 39.5 percent very complex. About tax choices, Alves et al. (2012) concluded that the option for STR was mostly intermediated by certified accountants' recommendations, and Dâmaso and Martins (2015) demonstrated that 68 percent of certified accountants do not recommend STR, due primarily to the saving of tax payable.

Nevertheless, considering that tax payable in CIT is calculated through accounting income, and that companies therefore face inherently conflicting interests in their reporting for financial and tax purposes (Plesko, 2007), it is important to relate the income taxation regime adopted with accounting choices. About this issue, Fields, Lys, and Vincent (2001) classified accounting choice into three categories: (1) accounting choice in relation to a firm's contractual arrangements; (2) accounting choice in relation to asset price; and (3) accounting choice in relation to external parties other than actual or potential companies' owners (e.g. policy makers, government regulators). This third category includes the relationship of earnings management with tax policy. On this subject, these authors also indicated that taxes are likely to be a "first order effect" on accounting choices to reduce their tax liability.

Even though Scott (2003) indicated that income taxation is the most obvious reason for earnings management, he asserts to the contrary that tax authorities usually impose their

own accounting rules for the calculations of taxable income, thereby reducing the companies' ability to manoeuvre.

However, many studies observed the incentives for earnings management that arise from taxation. Schipper (1989), Baralexis (2004), Blake and Salas (1996), Moreira (2006), and Othman and Zeghal (2006) identified tax expense as a condition for earnings management. Coppens and Peek (2005) studied tax-induced earnings management and found that private firms in countries with book-tax conformity engage in income-decreasing earnings management in order to reduce taxes. Other researchers, such as Dhaliwal and Wang (1992), Manzon (1992), Scholes, Wilson, and Wolfson (1992), and Calegari (2000), have examined companies' tax-motivated behaviours in periods of statutory tax rate reductions, as the tax-saving benefits in such years are expected to be far greater than those in other years. In that vein, Guenther (1994) and Lopez, Regier, and Lee (1998) reported also that companies decrease accruals and, as a consequence, book income, in anticipation of a tax rate reduction deferring taxable income to later years. Gramlich and Gordon (1991) found that firms most likely to be affected by the 1986 Tax Reform Act's alternative minimum tax made discretionary income-decreasing accruals in that year. Guenther, Maydew, and Nutter (1997) found that firms forced to switch for tax purposes from the cash method to the accrual method deferred income for financial statement income. Maydew (1997) reported that firms with tax-rate-based incentives shifted income in order to maximize current net operating losses. Roubi and Richardson (1998) found that discretionary accruals were managed by firms in Canada, Malaysia, and Singapore following a tax reform that lowered the corporate tax rate, and Adhikari, Derashid, and Zhang (2005) concluded that large Malaysian firms with low effective tax rates decreased book income prior to a reduction in corporate tax in order to influence tax policy. Choi and Lee (2013) divided discretionary accruals into two components and conclude about firms' opportunistic accrual management behaviour in response to statutory tax rate reduction. Furthermore, Hemmelgarn and Teichmann (2014) analysed several corporate tax reforms in which the tax rate was changed and how this affected bank financing decisions and earnings management and concluded that taxation influences leverage, dividend policies and earnings management of banks in the first three years after the reform.

Private firms also were shown to engage in earnings management (Burgstahler, Hail & Leuz, 2006) and, as their financial statements are not widely distributed to the public, are likely to be influenced by tax objectives (Ball & Shivakumar, 2005). Russian private firms have been examined in the context of corporate tax reforms in general and corporate instances of tax rate changes in particular by Goncharov and Zimmermann (2006). Moreover, Watrin, Pott and Ullman (2012), investigating the 2001 German corporate tax rate decrease, found that tax incentives influenced earnings management behaviour of private firms more than public firms. Lin, Mills, and Zhang (2014) provided evidence of material income shifting by private firms as a response to a tax rate reduction in China, and Sundvik (2017) shown that Swedish private firms primarily use accounts receivable for the purpose of income shifting between periods.

On European countries, previous studies, such as Baralexis (2004), Coppens and Peek (2005), and Othman and Zeghal (2006), shown the potential for the accounting basis of income tax liability to influence earnings management. Regarding Portugal, there are some studies on earnings management and its incentives. Moreira (2006) focused on the impact of the external financing needs of companies on accounting choices and concluded that companies with low financing needs tend to focus on the minimization of the tax bill; Mendes and Rodrigues (2006) examined earnings smoothing in a sample of listed Portuguese companies and found that the proportion of interest borne, the ownership structure, and the activity sector are the most important factors to explain the companies behaviour to engaged in accounting income smoothing practices; and Marques et al. (2011) assessed the extent to which the SPA, as a tax policy measure, encourages private Portuguese companies to manage earnings and concluded that the desire to minimize SPA could be a motivation for earnings management.

Most studies about earnings management have also been produced in well developed economies (e.g. Dechow, Sloan & Sweeney, 1995; Healy, 1985; Jones, 1991; Sweeney, 1994), which, in general, identified incentives for earnings management practices related with capital markets, contractual relationships, and political costs. These incentives are not extended to small developed countries, such as Portugal, where the SMEs assume an important role in the economy and whose management is mainly exercised by the capital owners (Moreira, 2006).

Although earnings management has been extensively investigated for a long time in the accounting and finance literature (e.g. Dechow & Skinner, 2000; Dechow, Ge & Schrand, 2010; Fields et al., 2001; Hall, Agrawal & Agrawal, 2013; Healy & Wahlen, 1999; McNichols, 2000; Schipper, 1989), there are still important aspects that remain little explored, such as the earnings management practices of SMEs (exceptions are, for example, Marques et al., 2011, and Mörec, 2012) and their impact on tax option.

According to Poli (2013), this could be due to two factors: 1) SMEs carry little weight in those countries (English-speaking ones) where most of the studies have explored earnings management practices; and 2) it is more problematic to have the necessary data for SMEs than for large companies.

Apart from the importance that SMEs assume in the Portuguese economy, it is widely believed that they are very likely to practise earnings management because they do not have the restrictions that limit the large companies. This could be related with the concentration of ownership and management of these companies in the hands of a single individual and/or main members of the founders' family (Chrisman, Chua & Litz, 2004; Martins, Cruz, Augusto, Silva & Gonçalves, 2009). In these cases the overlap between ownership and management can reduce capital agency costs by aligning the interests of principals with those of agents (Jensen & Meckling, 1976; Ang, Cole & Lin, 2000; and Fleming, Heaney & McCosker, 2005). However, this has not yet been demonstrated sufficiently.

Therefore, the exploration of earnings management practised by SMEs has great importance, especially since most of these companies prepare their financial statements for tax purposes. About this, Fontes, Rodrigues and Craig (2005) indicate that the banks and Government are the main users of financial statements of Portuguese companies.

The focus of earnings management research in relation to tax policy has been on the influence of tax on earnings management practices, with evidence suggesting that tax liability may explain it. Motivated by previous findings that firms, in general, use accounting choices to reduce tax cost and that the link between the choice about income taxation regime and earnings management has not been investigated, I examine whether accounting choice, particularly earnings management practices of Portuguese SMEs

influence income taxation regime choice, expecting that SMEs do not choose STR because in the general regime they can reduce their tax liability with earnings management practices.

I define the following hypothesis:

*H1: Earnings management is a determinant of choice between the general regime and STR for Portuguese small companies.*

As seen before, when accounting numbers are used for tax calculation, the incentive for earnings management may increase (Monem, 2003). Seen in these terms, and in the context of Portuguese small companies taxation, earnings management could occur if companies are in the general regime, in which taxable income is calculated through tax adjustments based on book income. In STR, in turn, the taxable income does not attend to book income, and is computed using coefficients applied, in general, to gross revenues considering its nature, and therefore book income is irrelevant for this income taxation regime.

As such, I expect earnings management to be lower after the choice for STR, extending the motives for these differences grounded in agency theory<sup>3</sup> to explain why companies in general regime and companies in STR have different incentives to engage in earnings management. However, when shifting my focus to small companies, I expect the agency problem between controlling and noncontrolling shareholders to be less overriding (Ali, Chen & Radhakrishnan, 2007; Jiraporn & Dadalt, 2009; Setia-Atmaja, Tanewski & Skully, 2009; Wang, 2006) considering that, in general, Portuguese SMEs are companies whose managers own 100 percent of the company and, consequently, without agency

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<sup>3</sup> Advanced by Jensen and Meckling (1976), which is derived from the conflict between corporate managers, outside stockholders, and bondholders.

costs by definition (Ang et al., 2000).

In this field, the greater the costs associated with taxes, the more incentives companies have to make income-decreasing accounting choices to reduce their amount (e.g., Adhikari, Derashid, & Zhang, 2005; Watts & Zimmerman, 1978).

I anticipate that when SMEs choose STR they do not have incentives to manage accruals in order to reduce their tax liabilities, and so present a better reporting quality. To evaluate the difference of reporting quality before and after opting for STR, the following second hypothesis is formulated:

*H2. The STR improves earnings quality.*

Still regarding earnings management, Healy and Wahlen (1999) indicate that there is remarkably little evidence on earnings management using specific accruals, and that such evidence could be valuable for policy makers of areas in which standards work well and in which there may be room for improvement.

While tax saving plays an important role in the accounting practices, it is necessary to attend to other factors that could motivate the management of earnings, such as window dressing financial reports prior to public offerings, avoiding violating debt contracts, meeting bonus targets in order to increase management compensation or to increase regulatory benefits (Healy and Wahlen, 1999), conceal their private control benefits from outsiders (Leuz, Nanda & Wysocki, 2003), and meet the demands of their investors and creditors (Amidu & Yorke, 2017).

In the context of Portuguese SMEs, banks and Government are the main users of their financial statements (Fontes et al., 2005) and consequently taxation and debt contracts are likely to be a “first order effect” on accounting choices, although with substantial differences in their purpose.



Concerning taxation, prior research considered that taxpayer reporting of income levels will vary based on the tax scheme (Hite & McGill, 1992). Then, in general regime where taxable income attends to accounting earnings, the best strategy for managers is to report a high book income and a low taxable income (Ryu & Chae, 2014). To do so, managers tend to maximize tax savings by deferring revenues and accelerating expenses. In STR, in turn, the income taxation is independent from accounting earnings and, consequently, debt contracts may assume greater preponderance in earnings management practices. Regarding debt contracts, and according to previous research, firms that have a higher likelihood of violating debt agreements are more likely to have an incentive to engage in earnings management to increase earnings (Rusmin, 2010). About this subject, Scott (2003) asserts that management will manage earnings to mask true firm performance in order to meet debt contract conditions and to avoid debt covenant violations, and Beatty and Weber (2003) concluded, by examining provisions of a firm's bank debt contracts, that borrowers whose bank debt contracts allow accounting method changes to affect contract calculations are more likely to make income-increasing rather than income-decreasing changes. In summary, when the calculation of taxable income is based on accounting earnings (as occurs in general regime), companies have an incentive to engage in earnings management to decrease earnings. In STR, in turn, there be other factors, such as (or mainly, as occur in Portuguese SMEs) debt contracts, that encourage companies to engage in earnings management in order to increase earnings.

In this line, I formulate hypothesis 3:

*H3. SMEs in general regime are more likely to manage earnings downwards while SMEs in STR are more likely to manage earnings upwards.*

Accruals, used primarily for financial reporting purposes, can be decomposed into book-tax accruals (BTA) and book-only accruals (BOA) depending on whether they affect taxable income (Calegari, 2000). As defined by Choi and Lee (2013), BTA include revenues and expenses that are recognized in the same period for both tax and financial reports, and, on the other hand, BOA include estimation accounts that are recognized

differently in tax and financial reports. In this field, DeAngelo, DeAngelo, and Skinner (1994), and Arcas and Vidal (2004), shown that earnings management does not affect all such adjustments equally. Ryu and Chae (2014) indicated that managers prefer to use accounting strategies to modify their reporting of taxable income rather than adjusting taxable income directly because accounting principles allow more discretion than tax regulations.

Although reporting lower book income could reduce the tax burden, it creates financial reporting costs. About this, Cho, Wong and Wong (2006) considers that entities may be less willing to reduce book income if financial reporting benefits outweigh the tax costs implicit in an audit to income tax from Tax Authority. One of the examples of these reporting benefits, and as seen before, is related with debt contracts, as an incentive to increase book income to avoid breaching accounting-based covenants (Dhaliwal, 1980; Bowen, Noreen & Lacey, 1981; Holthausen, 1981; and Beneish & Press, 1993). In fact, the tension between tax savings and financial reporting incentives indicates that book-tax differences provide a measure of how aggressive a firm is in its tax reporting to Tax Authority (Cho, Wong & Wong, 2006).

Prior research concluded that in situations in which tax income and book income are similar due to revenues and expenses recognized within the same period (Calegari, 2000), managers may choose BTA to reduce book income and minimize tax payments (Guenther, 1994; Guenther et al. 1997; Northcut & Vines, 1998).

Previous studies have also regarded discretionary accruals as a mean to manage tax income for tax planning when tax decisions take priority over financial accounting decisions. However, a large body of these studies had documented discretionary accruals primarily as a mean to manage book income for financial reporting purposes. Although accruals can be used to manage book and tax income, very few studies, with the exception of Calegari (2000), and Ryu and Chae (2014), have explored the simultaneous management of accruals.

Calegari (2000) suggests that entities adjust discretionary accruals with relatively high tax conformity (BTA) to achieve tax planning goals and use discretionary accruals with relatively low tax conformity (BOA) to accomplish financial reporting objectives.

In this context, it is considered that Portuguese SMEs in general regime decrease tax income by recording BTA and, consequently, increase book income through BOA. So, the follow hypothesis is formulated:

*H4. The use of book-tax accruals by companies in the general regime will be offset by the use of book-only accruals.*

## **4. METHODOLOGY**

### **4.1. METHODOLOGICAL APPROACH**

Taking into account the research questions and the objectives of this study, it is important to define an appropriate methodology to the type of questions to be answered take into account that the research process is conditioned by three main factors (Chua, 1986): 1) Researcher's assumptions, which influence the systematization of the problem under study and its interest; 2) Belief in the way to acquire knowledge, which influences what data may be needed; and 3) Methodology suitable for the collection of data, which has direct consequences on data analysis and on the results.

As such, positivism seems to be the approach most suitable for conducting this research. Watts and Zimmerman (1990) who contributed much to the positive theory of accounting, affirm the importance of predicting and explaining accounting phenomena based on empirical realities, providing an explanation for these realities from the collection and analysis of empirical data (Watts & Zimmerman, 1986). Hempel (1965) argues that a scientific explanation must be based on three elements: an universal law, from which one can deduce; hypotheses; and later obtain a conclusion/explanation. Thus, it is necessary to observe facts that support a theory (Hempel, 1966). Chua (1986) refers to the existence of a world with objective realities (object) and independent investigator (subject), and when the investigator discovers that reality, then reaches knowledge, and that this requires empirical testing.

This theory has been predominant in accounting research and essentially seeks to analyse the factors that influence management behaviours and decisions that are affected by the accounting regulations applied in companies and affect the companies' results (Watts & Zimmerman, 1978). According to Chua (1986), positivism based on the assumption that "empirical reality is objective and external to the subject" and it can be studied through objective categories, and verified by empirical scientific methods. Agency theory is mostly used in this approach. Through this approach the first step is the problem definition, followed by literature review and hypotheses formulation. In this corollary, the population is defined along with samples, data collection and their analysis ending with results, limitations and

future research (Chua, 1986). Though subject to some criticism, its advantage is to permit a clear and objective perspective of the problem at hand.

## **4.2. SAMPLE**

This analysis relies on data of tax returns (Model 22) and from the “*Informação Empresarial Simplificada*” (Simplified Business Information) of companies that fulfil some of the conditions for choosing STR, for a period of five years, between 2011 and 2015.

From the population of 2,927,682 firm-year observations in the five year period of this study, some observations are lost due to missing data on some of the years (690,323 firm-years observations), has no submitted “*Informação Empresarial Simplificada*” (234,167 firm-years observations), present invalid/default statements (411,145 firm-years observations), and are inactive (495,547 firm-years observations). Attending to the conditions for opting to STR, it is exclude companies that during this period present a total revenue above € 200,000 and total assets above € 500,000 (629,268 firm-years observations), companies with special tax periods (10,309 firm-years observations), and that are parent companies (3,213 firm-years observations).

These procedures resulted in the final sample comprising 453,710 firm-year observations for the period of 2011-2015, and include companies that chose STR (47,070) and those that did not choose STR, and use the general taxation regime to calculate tax income (406,640). In terms of the number of companies, the sample is composed of 90,742 companies in the period of 2011-2015, and of those, 9,414 opted for STR in 2014-2015.

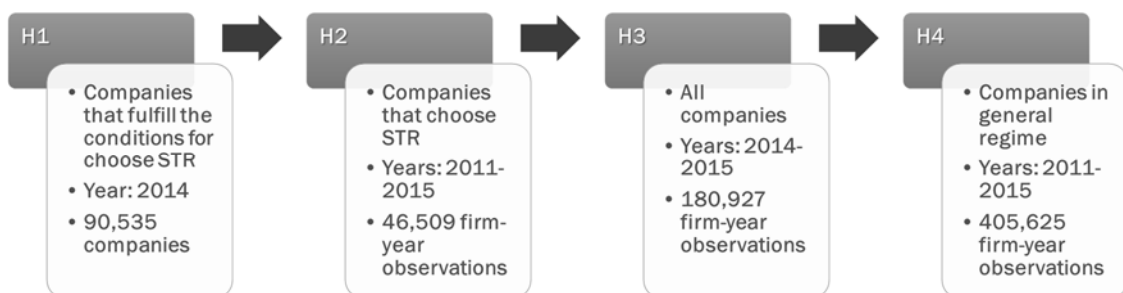
Details of the sample are in Table 1.

**Table 1 - Sample definition**

	Observations	
	No.	%
<b>Initial sample</b>	<b>2,927,682</b>	<b>100%</b>
Observations		
Invalid/defaulting statements	-411,145	<b>-14.0%</b>
Parent companies	-3,213	<b>-0.1%</b>
Special tax period	-10,309	<b>-0.4%</b>
Returns greater than € 200,000 and total assets greater than € 500,000	-629,268	<b>-21.5%</b>
Without IES	-234,167	<b>-8.0%</b>
Inactive companies	-495,547	<b>-16.9%</b>
Without information in one or more years	-690,323	<b>-23.6%</b>
<b>Final sample</b>	<b>453,710</b>	<b>15.5%</b>

This sample will be divided into subsamples applicable to each of the hypotheses formulated (Figure 2).

**Figure 2 – Composition of subsamples by hypotheses**



If I consider the total revenues and the income taxation regime (see Table 2), the weight of companies that choose STR decreases as the total revenues increases. Then, more than 13 percent of companies with total revenues lower than € 50,000 choose STR while only 5.5 percent present total revenues between € 150,000 and € 200,000 choose this regime.

*Table 2 - Number of companies by total revenues and income taxation regime*

TOTAL REVENUES	General Regime		STR		Total
	n	%	n	%	
[0; 50,000[	185,529	86.6%	28,678	13.4%	214,207
[50,000; 100,000[	136,308	91.5%	12,742	8.5%	149,050
[100,000; 150,000[	65,196	93,5%	4,505	6.5%	69,701
[150,000; 200,000]	19,607	94.5%	1,145	5.5%	20,752
<b>Total</b>	406,640		47,070		453,710

As shown in Table 3, the most frequent CAEs' first two digits of the sample are related with retail trade, food and beverage service activities, and land transport, representing 13.1 percent, 10.1 percent, and 8.6 percent, respectively, of total companies that comprise the sample.

**Table 3 - Samples' decomposition related with companies' industry**

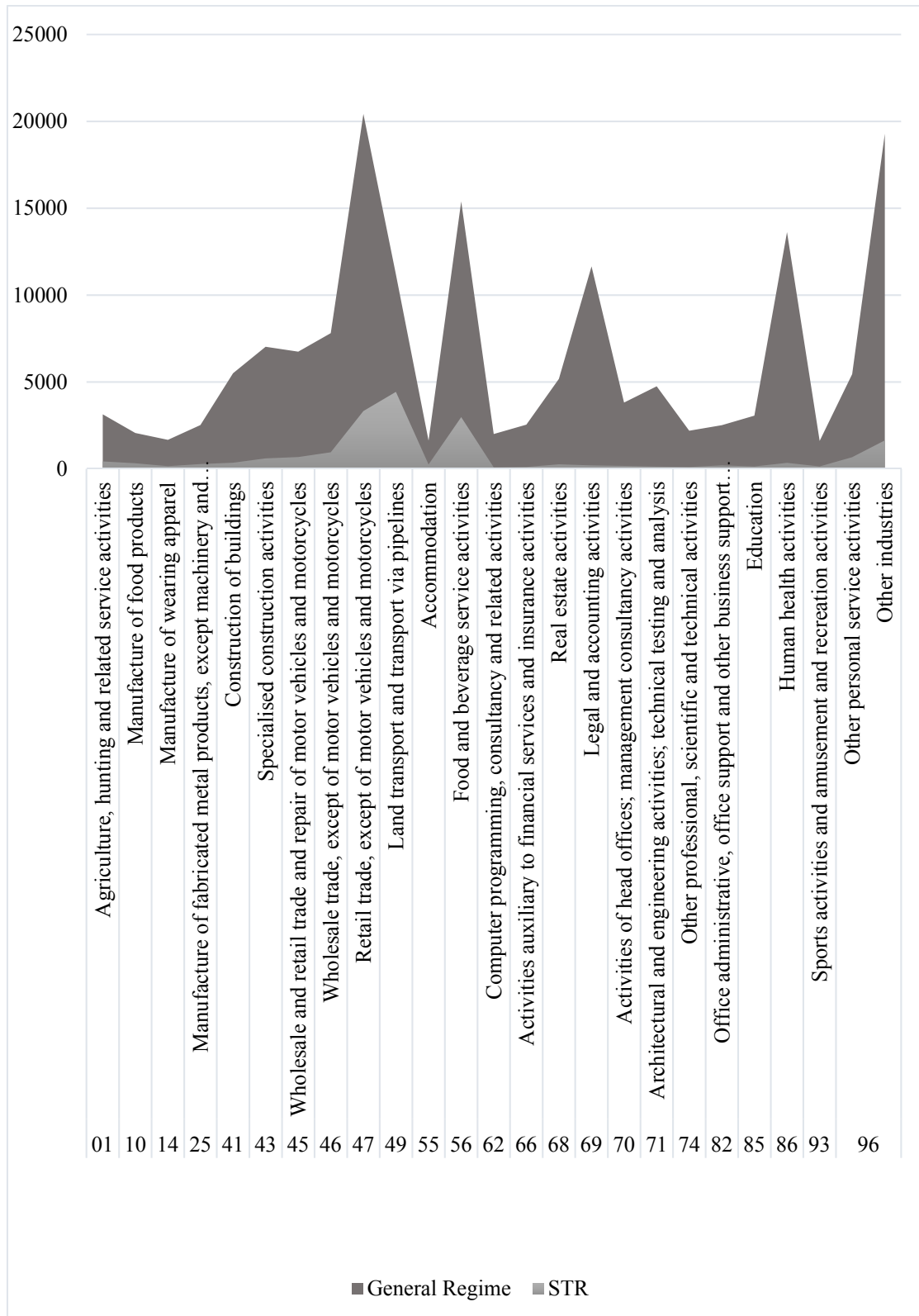
CAE	Description	2011	2012	2013	2014	2015	TOTAL	
							n	%
01	Agriculture, hunting, and related service activities	1,766	1,762	1,765	1,775	1,781	8,849	2.0%
10	Manufacture of food products	1,214	1,204	1,189	1,191	1,184	5,982	1.3%
14	Manufacture of wearing apparel	899	900	899	905	905	4,508	1.0%
25	Manufacture of fabricated metal products, except machinery and equipment	1,387	1,387	1,387	1,391	1,394	6,946	1.5%
41	Construction of buildings	2,941	2,921	2,922	2,927	2,918	14,629	3.2%
43	Specialized construction activities	3,780	3,787	3,794	3,800	3,817	18,978	4.2%
45	Wholesale and retail trade and repair of motor vehicles and motorcycles	3,705	3,710	3,722	3,706	3,703	18,546	4.1%
46	Wholesale trade, except of motor vehicles and motorcycles	4,438	4,436	4,417	4,388	4,360	22,039	4.9%
<b>47</b>	<b>Retail trade, except of motor vehicles and motorcycles</b>	<b>11,851</b>	<b>11,871</b>	<b>11,876</b>	<b>11,869</b>	<b>11,879</b>	<b>59,346</b>	<b>13.1%</b>
<b>49</b>	<b>Land transport and transport via pipelines</b>	<b>7,817</b>	<b>7,825</b>	<b>7,814</b>	<b>7,807</b>	<b>7,806</b>	<b>39,069</b>	<b>8.6%</b>
55	Accommodation	909	911	914	927	938	4,599	1.0%
<b>56</b>	<b>Food and beverage service activities</b>	<b>9,106</b>	<b>9,121</b>	<b>9,158</b>	<b>9,170</b>	<b>9,186</b>	<b>45,741</b>	<b>10.1%</b>
62	Computer programming, consultancy, and related activities	1,030	1,030	1,041	1,041	1,039	5,181	1.1%
66	Activities auxiliary to financial services and insurance activities	1,322	1,317	1,322	1,323	1,323	6,607	1.5%
68	Real estate activities	2,687	2,706	2,701	2,712	2,713	13,519	3.0%
69	Legal and accounting activities	5,943	5,922	5,933	5,922	5,923	29,643	6.5%



CAE	Description	2011	2012	2013	2014	2015	TOTAL	
							n	%
70	Activities of head offices; management consultancy activities	1,996	2,001	1,989	1,991	1,988	9,965	2.2%
71	Architectural and engineering activities; technical testing and analysis	2,436	2,435	2,443	2,441	2,432	12,187	2.7%
74	Other professional, scientific, and technical activities	1,141	1,147	1,139	1,138	1,151	5,716	1.3%
82	Office administrative, office support, and other business support activities	1,371	1,369	1,358	1,354	1,346	6,798	1.5%
85	Education	1,606	1,600	1,593	1,591	1,596	7,986	1.8%
86	Human health activities	6,971	6,979	6,967	6,977	6,987	34,881	7.7%
93	Sports activities and amusement and recreation activities	865	864	859	868	867	4,323	1.0%
96	Other personal service activities	3,069	3,064	3,068	3,060	3,059	15,320	3.4%
	Other Industries	10,492	10,473	10,472	10,468	10,447	52,352	11.5%
		<b>90,742</b>	<b>90,742</b>	<b>90,742</b>	<b>90,742</b>	<b>90,742</b>	<b>453,710</b>	<b>100.0%</b>

If I consider only the period 2014-2015 and compare the companies that opt for STR and companies in general regime (Graphic 1), I can conclude that the activity sector that presents the highest relative weight of option for STR is “land transport and transport via pipelines”, and is related with the option for STR that is common on “taxis sector”.

Graphic 1 – Number of sample's companies by income taxation regime and activity sector



Taking into account, not the CAEs' two first digits, but the coefficient applied in STR to the majority of the activities that comprise each CAEs' two first digits, I classify each one into the follow values: (1) if the activity is related with sales of goods and products, as well as with catering, beverages, and hotel activities, to which the coefficient applied in STR is 0.04; (2) for remaining income not covered by the following value, to which the coefficient in STR is 0.10; (3) if it is a professional activity specifically provided in the Table referred to in article 151 of the PIT Code to which the coefficient applied in STR is 0.75; (4) Unknown (see Appendice 1 – Definition of ID variable).

Table 4 reports that, considering companies' activity, the coefficient of 0.04 is the most frequent, representing 47 percent of the total sample.

*Table 4 - Samples' composition considering STR's coefficients for 2011-2015*

		YEAR					Total	%
		2011	2012	2013	2014	2015		
<b>Industry's coefficient</b>	<b>0.04</b>	42,638	42,645	42,656	42,649	42,647	213,235	47.0%
	<b>0.10</b>	24,499	24,510	24,504	24,529	24,519	122,561	27.0%
	<b>0.75</b>	23,604	23,587	23,582	23,564	23,576	117,913	26.0%
	<b>Unknown</b>	1	0	0	0	0	1	0.0%
<b>Total</b>		90,742	90,742	90,742	90,742	90,742	453,710	

If I look only at the period 2014-2015 (Table 5) and compare companies' income taxation regimes, I can conclude that there are more companies choosing STR when the coefficient applied is 0.10, which is consistent with the previous conclusions about activity sector, in particular with regard to taxis services. However, companies engaged in trade activity also have a significant percentage in STR which is consistent with Dâmaso and Martins' (2015) conclusions, namely that certified accountants mainly advised STR to companies with this activity, deducing that they did so in order to obtain a greater tax advantage.

**Table 5 - Samples' composition considering STR's coefficients and income taxation regime for 2014-2015**

Industry's coefficient	General Regime		STR		Total
	n	%	n	%	
<b>0.04</b>	74,702	87.6%	10,594	12.4%	85,296
<b>0.10</b>	42,168	86.0%	6,880	14.0%	49,048
<b>0.75</b>	45,786	97.1%	1,354	2.9%	47,140
<b>Total</b>	162,656		18,828		181,484

To relate the option for STR and regional development of companies' headquarters location, I use the National Statistical Institute classification in highly developed or less developed regions, considering as more developed Lisbon and the Autonomous Region of Madeira, Algarve as a region in transition from less developed to more developed region, and the other regions as less developed. Analyzing Table 6, I can conclude that STR have a higher relative weight in more developed regions, representing about 13 percent of the total companies, while in the other regions its relative value is not even 10 percent.

**Table 6 - Location of companies' headquarters by regional development classification and income taxation regime – 2014 and 2015**

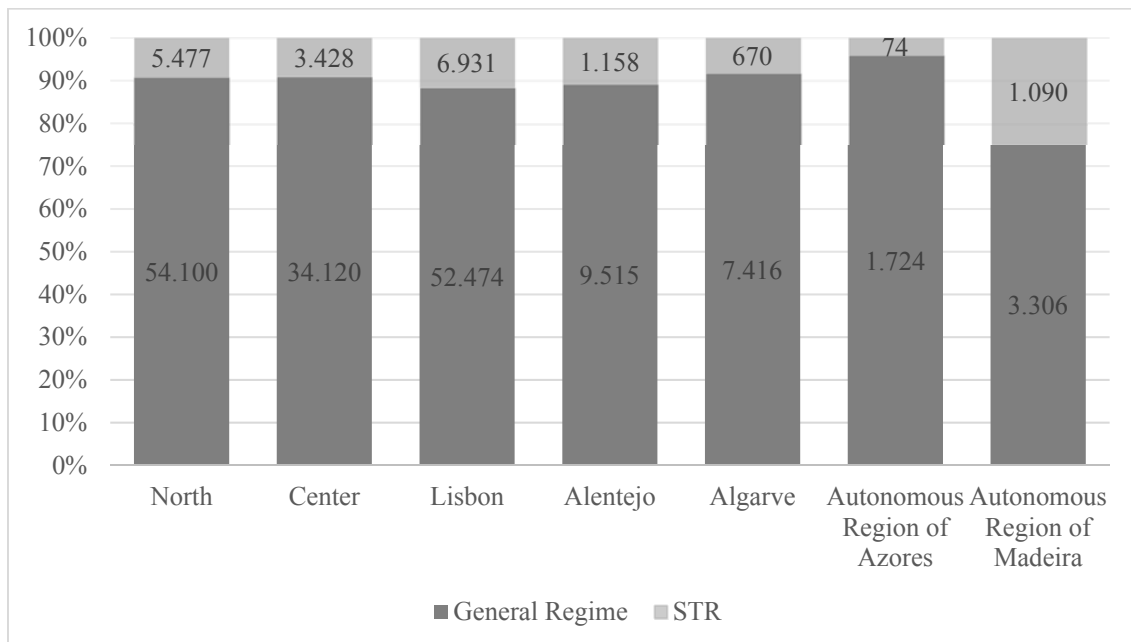
	General Regime		STR		Total
	n	%	n	%	
<b>Less developed</b>	99,459	90,8%	10,137	9,2%	109,596
<b>More developed</b>	55,781	87.4%	8,021	12,6%	63,802
<b>Transition region</b>	7,416	91.7%	670	8,3%	8,086
<b>Total</b>	162,656		18,828		181,484

I then classify the companies considering the National Statistical Institute classification of NUTS II – Nomenclature of Territorial Units for Statistics, and dividing them into

North, Centre, Lisbon, Alentejo, Algarve, Autonomous Region of Azores and Autonomous Region of Madeira considering Finance Service Code<sup>4</sup>.

Looking for Graphic 2, the region where the option for STR assumes a higher relative weight is the Autonomous Region of Madeira, with about 25 percent of the total of entities with this taxation regime. On the contrary, the Autonomous Region of Azores is the region where the STR assumes the lowest weight, representing only 4 percent of the total of companies.

**Graphic 2 –Location of companies’ headquarters by NUTS and income taxation regime – 2014 and 2015**



<sup>4</sup> *North* is composed of the districts of Viana do Castelo, Braga, Vila Real, Porto, Viseu, and Bragança; *Center* includes the districts of Aveiro, Coimbra, Leiria, Castelo Branco, Guarda and Santarém, *Lisbon* includes also Setúbal’s district, *Alentejo* is composed of the districts of Portalegre, Beja, Évora, and half of Setúbal’s southern district (Alcácer do Sal, Grândola, Santiago do Cacém, and Sines); *Algarve* includes all the district of Faro; *Autonomous Region of Azores*, and *Autonomous Region of Madeira*.

### **4.3. HYPOTHESIS SUMMARY**

In the literature review I establish four hypotheses related with the study about determinants of choice between the general regime and STR and its implication on reporting quality. In Section 4, considering that STR was reintroduced into the Portuguese tax system in 2014 as an alternative to the general regime and that there was a low adherence to this regime, I seek to know if the earnings management, measured by discretionary accruals, is one of the main determinants for companies do not choose STR.

This objective leads to the formulation of the following hypothesis:

*H1: Earnings management is a determinant of choice between the general regime and STR for Portuguese SMEs.*

After discussing the possible impact of income taxation regimes on earnings quality, I formulate my second objective: to investigate whether the option for STR positively affects earnings quality, measured by discretionary accruals. This objective leads to the formulation of the following hypothesis:

*H2. The STR improves earnings quality.*

After presenting the literature review on the effects of income taxation regimes in the direction of discretionary accruals, I formulate the following hypothesis:

*H3. SMEs in the general regime are more likely to manage earnings downwards while companies in STR are more likely to manage earnings upwards.*

The distinction of book-tax accruals and book-only accruals is presented and I establish my fourth objective: study how companies in general regime made use of these accruals

to achieve tax planning goals and to accomplish financial reporting objectives. This objective leads me to the formulation of the following hypothesis:

*H4. The use of book-tax accruals by companies in the general regime will be offset by the use of book-only accruals.*

The following sub-sections develop the four objectives and their hypotheses in models. Sub-section 4.4.1. presents the measuring of discretionary accruals, a common variable for all of the four hypotheses. Sub-section 4.4.2. describes the model used to seek the determinants of choice between the general regime and STR. Sub-section 4.4.3. presents the magnitude of the absolute discretionary accruals for STR companies, comparing before and after the option for this regime. Sub-section 4.4.4. describes the model used to examine the different effects of taxation regime on income-increasing and income-decreasing in terms of earnings management. Finally, Sub-section 4.4.5. analyses how companies in the general regime made use of book-tax accruals and book-only accruals for tax purposes.

## **4.4. RESEARCH DESIGN**

### ***4.4.1. Measuring discretionary accruals***

Earlier studies suggest that measuring discretionary accruals can be used as a way to detect earnings management. Of all variables used to detect possible manipulation of a firm's financial statements, including accounting-based variables (accrual quality, persistence, predictability, and smoothness), and market-based variables (value relevance, timeliness, and conservatism) (Francis, LaFond & Olsson, 2004), I use the magnitude of absolute abnormal or discretionary accrual models based on the Jones (1991) cross-sectional model modified by Kothary, Leone and Wasley (2005).

Accruals are defined as the part of income and expenses that do not imply receipts and payments and are indirectly calculated as the difference between profit and operating cash

flows. Although the calculation of accruals based on cash flow estimates leads to fewer errors, as stated by Hribar and Collins (2002), I have to use the balance sheet to estimate accruals, considering that the statements of cash flows are not available for SMEs.

Total accruals has a discretionary component (DA), also called abnormal accruals, and a nondiscretionary component (NDA). Thus the equation (1):

$$TA_{i,t} = DA_{i,t} + NDA_{i,t} \quad (1)$$

According to earlier research, a large discretionary component implies low quality of earnings. Also, the estimated value of discretionary accruals can be positive or negative (Tilden & Jane, 2012) because the manipulation of financial statements can be directed toward achieving the desired management objectives.

As such, I attempt to isolate the discretionary portion of total accruals because, by manipulating discretionary accruals, management is able to make adjustments to cash flows and thereby shift earnings between reporting periods.

The following expression (equation (2)) is used to calculate total accruals to firm  $i$  in year  $t$  ( $TA_{i,t}$ ):

$$TA_{i,t} = (\Delta CA_{i,t} - \Delta Cash_{i,t}) - (\Delta CL_{i,t} - \Delta STDEBT_{i,t}) - DEP_{i,t} \quad (2)$$

Where  $\Delta CA$  is the change in current assets for firm  $i$  between years  $t-1$  and  $t$ . Similarly,  $\Delta Cash$  is the change in cash and cash equivalent,  $\Delta CL$  is the change in current liabilities,  $\Delta STDEBT$  is the change in the current portion of long-term debt, and  $DEP$  represents depreciation and amortization expenses. All variables are deflated by total assets at the beginning of the year.



Since the discretionary and non-discretionary components of accruals are not directly observable, there are models that are generally based on the computation of discretionary accruals which, using balance sheet elements, seek to estimate the value of accruals considered normal, and whereby deviations are considered as earnings management.

From the existing models I use the Jones (1991) model modified by Kothary et al. (2005), which examines properties of discretionary accruals adjusted for a firm's discretionary accrual, in which matching is based on the firm's industry and return on assets (ROA) for the current year. Also, and as used by Callao and Jarne (2010), the original model is augmented with ROA as a performance control due to the non-availability of operating cash flows for SMEs. Thus:

$$\frac{TA_{i,t}}{A_{i,t-1}} = c + \delta_1 \left( \frac{1}{A_{i,t-1}} \right) + \delta_2 \frac{\Delta REV_{i,t}}{A_{i,t-1}} + \delta_3 \frac{PPE_{i,t}}{A_{i,t-1}} + \delta_4 \frac{ROA_{i,t}}{A_{i,t-1}} + \varepsilon_{i,t} \quad (3)$$

where  $\Delta REV_{i,t}$  is the change in sales for enterprise  $i$  between years  $t-1$  and  $t$ ;  $A_{i,t-1}$  corresponds to assets for enterprise  $i$  in the year  $t-1$ ;  $PPE_{i,t}$  is the gross property, plant and equipment for enterprise  $i$  in the year  $t$ ;  $ROA_{i,t}$  is the returns on assets for enterprise  $i$  in the year  $t$ ;  $\delta_1$ ,  $\delta_2$ ,  $\delta_3$ , and  $\delta_4$  are the estimated parameters or regression coefficients; and  $\varepsilon$  the residual variable or earnings management. All the variables are lagged by total assets, intending to mitigate heteroskedasticity in residuals (White, 1980). Then, the prediction error from equation (3) is interpreted as the discretionary part of total accruals.

As in Kothary et al. (2005), this model has a constant in the estimation because it provides an additional control for heteroskedasticity not alleviated by using assets as the deflator, and because it mitigates problems stemming from an omitted size variable.

Then, to predict discretionary accruals I estimate separately for each industry, the specific regression coefficients for selected variables for the period 2011-2015 using ordinary least squares (OLS).

#### **4.4.2. Determinants of choice between the general regime and STR for Portuguese SMEs**

In Section 3, I express as my first hypothesis (H1) that *Earnings management is a determinant of choice between the general regime and STR for Portuguese SMEs.*

The analysis of this hypothesis relies on companies that fulfil the conditions for choosing STR, in 2014, as the first year when they can choose this income taxation regime.

Therefore, and following the methodology used by Lourenço and Curto (2010), I estimate the logistic model defined in equation (4) to test the hypothesis 1 and, consequently, to assess which determinants influence the choice between the general regime and STR, since the dependent variable is dichotomous:

$$\begin{aligned} STR_i = & \beta_0 + \beta_1|DA|_i + \beta_2TB\_Position_i + \beta_3SIZE_i + \beta_4SIZE\_Position_i \\ & + \beta_5CHSALES_i + \beta_6CHSALES\_Position_i + \beta_7ROA_i \\ & + \beta_8ROA\_Position_i + \beta_9LEV_i + \beta_{10}LEV\_Position_i \\ & + \beta_{11}OTHER\_REV\_Position_i + \beta_{12}LOSS\_PY_i + \beta_{13}ST_i + \beta_{14}ID_i \\ & + \varepsilon_i \end{aligned} \quad (4)$$

Where:

STR	1 if the company chooses STR to calculate its taxable income and 0 if the company's taxable income is calculated through general regime
DA	Absolute value of discretionary accruals computed by Jones (1991) model modified by Kothary et al. (2005) for each firm over the five years period
TB_Position	0 if taxable income is above the STR's minimum taxable income and 1 if taxable income is below the STR's minimum taxable income
SIZE	Natural logarithm of total assets

SIZE_Position	0 if the company's total assets is above the industry median, and 1 if the company's total assets is below the industry median
CHSALES	Net sales and services in period $t$ less net sales and services in period $t-1$ deflated by net sales and services in period $t-1$
CHSALES_Position	0 if the company's change on sales is above the industry median, and 1 if the company's change on sales is below the industry median
ROA	Operating income scaled by lagged assets
ROA_Position	0 if the company's ROA is above the industry median, and 1 if the company's ROA is below the industry median
LEV	Company's total debt scaled by lagged assets
LEV_Position	0 if the company's leverage is above the industry median, and 1 if the company's leverage is below the industry median
OTHER_REV	Company's other income
OTHER_REV_Position	0 if the company's other incomes is above the industry median, and 1 if the company's other incomes is below the industry median
LOSS_PY	1 if the sum of taxable income from 2011-2013 is negative and 0 otherwise

With this econometric model, conclusions can be drawn about the interrelations between the independent variables and their impact on the probability of choosing STR instead of the general regime.

The dependent variable is the income taxation regime used by companies (STR). This variable assumes just two values: 1 if the company chooses STR to calculate its taxable income and 0 if the company's taxable income is calculated through the general regime.

The most important independent variables are the absolute value of discretionary accruals (|DA|) computed by the Jones (1991) model modified by Kothary et al. (2005) (Equation (3)) and the position of the company's tax burden in relation to the minimum of taxable

income in STR (TB\_Position). I use the absolute value of DA in line with Becker, DeFond, Jiambalvo, and Subramanyam (1998), who claimed that this value is effective in capturing both income-increasing and income-decreasing effects in earnings management. Reynolds and Francis (2000) also considered that the extent to which companies use accruals to manage earnings is best measured by unsigned value of accruals. There are numerous studies that use unsigned measures of earnings management to test for overall differences in earnings quality or the general propensity to manage earnings (e.g. Dechow & Dichev, 2002; Frankel, Johnson & Nelson, 2002; Klein, 2002; Chung & Philippon, 2003; Myers, Myers & Omer, 2003; Leuz et al., 2003, Bergstresser & Philippon, 2006). The variable TB\_Position in turn assumes the values 0 and 1 if taxable income is above or below the STR's minimum taxable income, and intends to meet the conclusions of Portela (2010), Marsden, Sadiq, and Wilkins (2012), and Dâmaso and Martins (2015) who concluded that, on the one hand, the option for STR is made for a tax saving issue and, on the other hand, the non-choice for STR is due to the tax payable increase when compared with the general regime.

The other independent variables are the company's total assets (SIZE), the position of the company's total assets in relation to the industry median (SIZE\_Position), the change in company's sales (CHSALES), the position of the company's change on sales in relation to the industry median (CHSALES\_Position), the company's return on assets (ROA), the position of the company's return on assets in relation to the industry median (ROA\_Position), the company's leverage (LEV), the position of the company's leverage in relation to the industry median (LEV\_Position), the company's other incomes (OTHER\_REV), and the position of the company's other incomes in relation to the industry median (OTHER\_REV\_Position), and company's losses (LOSS).

The SIZE\_Position, the CHSALES\_Position, the ROA\_Position, the LEV\_Position, and the OTHER\_REV\_Position are all binary variables and are include expecting that a positive relation between companies that SIZE, CHSALES, ROA and LEV are below the industry median and the option for STR. These variables assume the values 0 and 1 if the company's position is above or below the industry median, respectively. Losses in previous years (LOSS\_PY) assume the value 1 if the sum of taxable income from 2011-2013 is negative and 0 otherwise.

SIZE, CHSALES, ROA, LEV, and OTHER\_REV are all continuous variables and are used because accounting research has identified a number of factors that could influence earnings management. SIZE corresponds to the natural logarithm of total assets and is intended to control the "dimension" effect. This variable has been used as a control variable in several other studies, namely, among others, Klein (2002), Bédard, Chtourou, and Courteau (2004), Piot and Janin (2007), García, Barbadillo, and Pérez (2012) and is included because smaller firms have been noted to be less opportunistic tax planners (Scholes et al., 1992); CHSALES and ROA are included to control differences in performance. CHSALES corresponds to change in turnover and is computed by net sales and services in period  $t$  less net sales and services in period  $t-1$  deflated by net sales and services in period  $t-1$ , and is included considering that Aussenegg, Inwinkl, and Schneider (2008) show that growing companies have higher levels of earnings management.; ROA is measured as operating income also scaled by lagged assets and is comprised since Kothari et al. (2005) showed that discretionary accruals correlate with firm performance. About this variable, Tendeloo and Vanstraelen (2008) provide evidence of a negative and significant relationship between the level of results management and the ROA; LEV is the company's total debt scaled by lagged assets and is included due to a proposed debt association with earnings management (DeFond & Jiambalvo, 1994) and with the belief that higher leverage is indicative of a firm that is closer to a debt covenant restriction. Highly levered companies could be taking action to boost income or manage the financial statements so as to avoid violating a covenant (Watts and Zimmerman, 1986); and OTHER\_REV corresponds to company's other income.

Finally, I also considered an independent dummy variable (ID) related with the first two digits of the company's Portuguese Exercised Activity Code (CAE) and regarding the coefficient applied to the majority of the activities that comprise each of the CAEs' first two digits. This variable is included to control its fixed effects. Because the computation of the tax income in STR is based on coefficients, the activity sector could influence the taxable income and, consequently, the choice for STR. Even so, this distinction must take into account, not the CAEs' first two digits, but the coefficient applied to the majority of the activities that comprise each CAEs' first two digits. Then, this variable is defined through SMEs' CAE using the following coefficients: (1) if the activity is related with sales of goods and products, as well as with catering, beverages, and hotel activities, to

which the coefficient applied in STR is 0.04; (2) for remaining income not covered by the following value, to which the coefficient in STR is 0.10; (3) if it is a professional activity specifically provided in the Table referred to in article 151 of the PIT Code to which the coefficient applied in STR is 0,75; (4) Unknown (see Appendix 1 – Definition of ID variable). I expect companies whose main activity corresponds to a lower coefficient to have greater probability of choosing STR.

To control for the effect of the company's headquarters location, I also considered as an independent variable the state (ST) of the company's headquarters. This variable is also included to control its fixed effects. It relates to the location of the companies' headquarters and is consistent with the National Statistical Institute classification in highly developed or less developed regions, considering also the NUTS II classification – Nomenclature of Territorial Units for Statistics<sup>5</sup>. First I classify the companies into North, Centre, Lisbon, Alentejo, Algarve, Autonomous Region of Azores, and Autonomous Region of Madeira according to the Finance Service Code and then recode into (1) if its region is considered less developed, (2) if more developed (such as Lisbon and Autonomous Region of Madeira), and (3) if it is a region in transition from less developed to more developed (as Algarve). With this variable I intend to examine the effect of firm location on DA values, believing that companies in more developed regions present greater extents of earnings management than companies located in less developed regions and is in line with Firth, Oliver, and Wenfeng (2011) who finds that companies located in highly developed regions suffer more severe consequences when they manage their accounts.

The variables are summarized in Table 7:

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<sup>5</sup> The Nomenclature of Territorial Units for Statistics (NUTS), established for the European Union, divided the national territory into statistical regions and considers three levels of division: NUTS I, NUTS II, and NUTS III.

**Table 7 - Hypothesis 1 - Variables definition and measurement of determinants regression**

<b>Panel A: Dependente variables</b>			
<b>Variable name</b>	<b>Variable label</b>	<b>Variable measurement</b>	
STR	Income taxation regime	1 if the company chooses STR to calculate its taxable income and 0 if the company's taxable income is calculated through general regime	
<b>Panel B: Independent variables</b>			
<b>Variable name</b>	<b>Variable label</b>	<b>Variable measurement</b>	<b>Exp. Sign</b>
<b>Binary Variables</b>			
TB_Position	Position of the company's tax burden in relation to the minimum of taxable income in STR	0 if taxable income is above the STR's minimum taxable income and 1 if taxable income is below the STR's minimum taxable income	-
SIZE_Position	Position of the company's total assets in relation to the industry median	0 if the company's total assets is above the industry median, and 1 if the company's total assets is below the industry median	+
CHSALES_Position	Position of the company's change on sales in relation to the industry median	0 if the company's change on sales is above the industry median, and 1 if the company's change on sales is below the industry median	+
ROA_Position	Position of the company's return on assets in relation to the industry median	0 if the company's ROA is above the industry median, and 1 if the company's ROA is below the industry median	+
LEV_Position	Position of the company's leverage in relation to the industry median	0 if the company's leverage is above the industry median, and 1 if the company's leverage is below the industry median	+
OTHER_REV_Position	Position of the company's other incomes in relation to the industry median	0 if the company's other incomes is above the industry median, and 1 if the company's other incomes is below the industry median	+
LOSS_PY	Company's losses in previous years	1 if the sum of taxable income from 2011-2013 is negative and 0 otherwise	-

<i>Continuous Variables</i>			
DA	Absolute value of discretionary accruals	of Absolute value of discretionary accruals ( DA ) computed by Jones (1991) model modified by Kothary et al. (2005) for each firm over the five years period	-
SIZE	Company's total assets	Natural logarithm of total assets	-
CHSALES	Change on company's sales	Net sales and services in period t less net sales and services in period t-1 deflated by net sales and services in period t-1	-
ROA	Company's return on assets	Operating income scaled by lagged assets	-
LEV	Company's leverage	Company's total debt scaled by lagged assets	-
OTHER_REV	Company's other incomes	Company's other income	-

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The estimation of the logistic regression is preceded by an univariate comparisons based on descriptive statistics and tests of equality for the central tendency measures in the case of continuous variables, and tests of equality of proportions in case of binary variables described in Table 7.

Dividing firms into two groups according to their taxation regime – STR and general regime – I compute for each group the frequencies for each binary variable and the mean and median of the continuous variables. Then I apply the equality of means parametric t-test to compare the resulting groups in terms of the continuous variables. For the binary variables, I compute the Pearsons' chi-square test.

#### ***4.4.3. The STR improves earnings quality***

To test Hypothesis 2 (H2), I estimate the regression as in Equation (5), connecting the magnitude of the absolute discretionary accruals with the variable of interest, which is a dummy variable of the choice for STR, and with other variables, some of them as control



variables. This equation is applied to a sample composed only of companies that chose STR in 2014 and 2015.

$$\begin{aligned} |DA|_{i,t} = & \alpha_0 + \alpha_1 POST_{i,t} + \alpha_2 TB_{i,t} + \alpha_3 SIZE_{i,t} + \alpha_4 CHSALES_{i,t} + \alpha_5 ROA_{i,t} \\ & + \alpha_6 LEV_{i,t} + \alpha_7 OTHER\_REV_{i,t} + \alpha_8 LOSS_{i,t} + \alpha_9 ID_{i,t} \\ & + \alpha_{10} ST_{i,t} \quad (5) \end{aligned}$$

Where:

DA	Absolute value of discretionary accruals computed by Jones (1991) model modified by Kothary et al. (2005) for each firm over the five years period
POST	1 corresponds a post-STR period and 0 if corresponds a pre-STR period
TB	Ratio of tax expense over profit before interest and tax
SIZE	Natural logarithm of total assets
CHSALES	Net sales and services in period $t$ less net sales and services in period $t-1$ deflated by net sales and services in period $t-1$
ROA	Operating income scaled by lagged assets
LEV	Company's total debt scaled by lagged assets
OTHER_REV	Company's other income
LOSS	1 if company report a negative taxable income and 0 otherwise

As a result of this hypothesis, I expect that after SMEs choose STR, earnings management is lower and, consequently, earnings quality measures present higher values. Pre-STR, SMEs are in the general regime and so, as the starting point for determining taxable income is accounting earnings, it is expected that SMEs make accounting choices to

minimize the taxable income and then present a lower reporting quality. I also seek to determine which firm features may explain the accounting discretion observed before and after the option for STR considering as control variables tax burden, other revenues, size, growth, leverage, and companies' industry and location.

Discretionary accruals (|DA|) is the absolute value of discretionary accruals computed by the Jones (1991) model modified by Kothary et al. (2005) (Equation (3)) for each firm over the five year period (2011-2015).

The independent variable is Post-STR (POST), which is a dummy variable that equals 1 if corresponds to a post-STR period and 0 if corresponds to a pre-STR period. This is my variable of interest since I want to verify whether the choice for STR increases earnings quality or not, expecting that its signal is negative and, consequently, after opting for STR, SMEs present lower discretionary accruals.

All the other variables included in Equation (5) are control variables, known to affect the value of discretionary accruals. Tax burden (TB) is a variable defined in accordance with Katz and Ott (2006), who has pointed out the taxpayers' self-interest for paying less. It is measured using effective tax rate (ETR), a common proxy for the corporate tax burden (Porcano 1986; Shevlin & Porter, 1992; Gupta & Newberry, 1997) and is defined as the ratio of tax expense, calculated using the data in Table 10 of the CIT income tax return (Model 22), over profit before interest and tax (Porcano, 1986). In line with Katz and Ott (2006), I expect that companies choosing STR can potentially minimize their tax liabilities under this regime. In Portugal, Dâmaso and Martins (2015) mention that the option for STR depends on whether accountants view the STR as a tax saving mechanism, or if they see it in an unfavourable light regarding this topic.

Logarithm of total assets (SIZE) is included to control the enterprise size effect on accruals quality (Young, 1999; Dechow & Dichev, 2002) and corresponds to the natural logarithm of total assets. It is an important variable to explain cross-sectional variation in corporate tax burdens since the close alignment of tax reporting with financial reporting in Continental Europe (Burgstahler et al., 2006). Besides, Becker et al. (1998) include the variable size in their multivariate analysis considering that it may be a surrogate for numerous omitted variables. However, there are conflicting results, especially when tax

burden is measured by the ETR value. While Zimmerman (1983) concluded about a positive association between ETR and enterprise size using a cash flows-based ETR proxy, Porcano (1986) observes a negative association using an income-based ETR proxy. As Holland (1998) shows that firm size has an effect on earnings management with the aim of decreasing the tax burden, I consider that enterprise size may influence the SME's choice for STR, and that smaller firms are less opportunistic tax planners (Scholes et al., 1992).

The variables change on sales (CHSALES) and returns on assets (ROA) are included for controlling enterprise growth, i.e., company performance (Dechow et al., 1995; Young, 1999). According to Skinner and Sloan (2002), growth companies are involved more in earnings management. It corresponds to the change in turnover (net sales and services in period  $t$  less net sales and services in period  $t-1$  deflated by net sales and services in period  $t-1$ ). ROA, in turn, is considered as a control variable in previous studies finding a negative association between earnings management and ROA (Young, 1999; Dechow et al., 1995). It corresponds to the return on assets measured as operating income also scaled by lagged assets.

Leverage (LEV) is also a control variable since Van Caneghem and Van Campenhout (2012) considers that leverage is positively related to proxies for the financial reporting quality of SMEs. Defond and Jiambalvo (1994), Callao and Jarne (2010), Vander, Willekens, and Gaeremynck (2003), and Jelinek (2007) provide evidence that higher leverage causes greater extents of earnings management. It is measured as total debt scaled by lagged assets.

Other revenues (OTHER\_REV) is another control variable. It is a variable that has not been included in previous studies but that has relevance in this since in the STR it has influence in the income tax considering that the coefficients applied to other income values are different from those applied to sales and services. Generally, these coefficients are higher and consequently the income tax is higher. I expect that companies in STR that have other revenues present higher discretionary accruals as a way to reduce their tax income.

Losses (LOSS) is a dummy variable that equals 1 if SMEs reported a negative taxable income and 0 otherwise and is used as a control variable, considering that Francia and Yu (2009) find that companies reporting a loss are less likely to manage earnings than companies with positive profits.

The variables industry (ID) and state (ST) are included to control its fixed effects. On the first variable, I expect that companies whose main activity corresponds to a lower coefficient to have less likely to manage earnings. In regard to variable ST, I intend to examine the effect of firm location on DA values, believing that companies in more developed regions present greater extents of earnings management than companies located in less developed regions.

In summary, the variables are presented in Table 8:

**Table 8 - Hypothesis 2 - Variables definition and measurement of determinants regression**

<b>Panel A: Dependent Variable</b>			
<b>Variable name</b>	<b>Variable label</b>	<b>Variable measurement</b>	
DA	Absolute value of discretionary accruals	Absolute value of discretionary accruals (  DA  ) computed by Jones (1991) model modified by Kothary et al. (2005) for each firm over the five years period	
<b>Panel B: Independent Variables</b>			
<b>Variable name</b>	<b>Variable label</b>	<b>Variable measurement</b>	<b>Exp. Sign</b>
<b>Binary variables</b>			
POST	POST-STR	1 if corresponds a post-STR period and 0 if corresponds a pre-STR period	-
LOSS	Company's losses	1 if company report a negative taxable income and 0 otherwise	-
<b>Continuous variables</b>			
TB	Tax burden	Ratio of tax expense over profit before interest and tax	+/-
SIZE	Company's total assets	Natural logarithm of total assets	+/-
CHSALES	Change in company's sales	Net sales and services in period t less net sales and services in period t-1 deflated by net sales and services in period t-1	+
ROA	Company's return on assets	Operating income scaled by lagged assets	-
LEV	Company's leverage	Company's total debt scaled by lagged assets	+
OTHER_REV	Company's other incomes	Company's other income	+

#### **4.4.4. Comparison of discretionary accruals' signal by income taxation regime**

To test the third hypothesis (H3), I estimate the following regression (6), connecting the dimension of discretionary accruals with the variable of interest, STR, and with control variables.

In this equation, the sample is composed of all companies (those that opt for STR and those that are in general regime) in the years 2014 and 2015.

$$\begin{aligned} |DA|_{i,t} = & \alpha_0 + \alpha_1 STR_{i,t} \\ & + \alpha_2 SIGNAL_{i,t} + \alpha_3 STR_{i,t} * SIGNAL_{i,t} + \alpha_4 TB_{i,t} + \alpha_5 SIZE_{i,t} \\ & + \alpha_6 CHSALES_{i,t} + \alpha_7 ROA_{i,t} + \alpha_8 LEV_{i,t} + \alpha_9 OTHER\_REV_{i,t} \\ & + \alpha_{10} LOSS_{i,t} + \alpha_{11} ID_{i,t} + \alpha_{12} ST_{i,t} \quad (6) \end{aligned}$$

Where:

DA	Absolute value of discretionary accruals computed by Jones (1991) model modified by Kothary et al. (2005) for each firm over the five years period
STR	1 if the company choose STR and 0 if the company is in the general regime
SIGNAL	1 if DA has a positive value and 0 otherwise
TB	Ratio of tax expense over profit before interest and tax
SIZE	Natural logarithm of total assets
CHSALES	Net sales and services in period $t$ less net sales and services in period $t-1$ deflated by net sales and services in period $t-1$
ROA	Operating income scaled by lagged assets
LEV	Company's total debt scaled by lagged assets
OTHER_REV	Company's other income
LOSS	1 if company report a negative taxable income and 0 otherwise

Given that effects of taxation regime on earnings management differ in the direction of discretionary accruals (Teoh, Welch & Wong, 1998; Ashbaugh, LaFond & Mayhew,

2003), I use its absolute value and a dummy variable about the signal of discretionary accruals to examine the different effects of taxation regime option on income-increasing and income-decreasing discretionary accruals.

DA being the model of earnings quality, I include in Equation (6) the variable STR (simplified taxation regime), which is a dummy variable that equals 1 for SMEs that choose STR and 0 otherwise. The choice for STR is the variable that I want to test and it is a dummy variable, since I want to verify whether the choice for STR increases earnings quality or not, compared with general regime.

Also, as I intend to examine the different effects of taxation regime option on income-increasing and income-decreasing, I use the absolute value but including another variable (SIGN) which relates the taxation regime with the signal of DA. It assumes the value 1 if DA is positive and 0 otherwise. Considering the third hypothesis, I expect that the coefficient of the interaction variable (STR\*SIGNAL) is positive which means that when DA is positive, companies in STR present a higher DA.

In summary, the variables are presented in Table 9:

**Table 9 - Hypothesis 3 - Variables definition and measurement of determinants regression**

<b>Panel A: Dependent Variable</b>			
<b>Variable name</b>	<b>Variable label</b>	<b>Variable measurement</b>	
DA	Absolute value of discretionary accruals	Absolute value of discretionary accruals ( DA ) computed by Jones (1991) model modified by Kothary et al. (2005) for each firm over the five years period	
<b>Panel B: Independent Variables</b>			
<b>Variable name</b>	<b>Variable label</b>	<b>Variable measurement</b>	<b>Exp. Sign</b>
<i>Binary variables</i>			
STR	Income taxation regime	1 if the company choose STR to calculate its taxable income and 0 if the company's taxable income is calculated through general regime	-
SIGNAL	Signal of DA	1 if DA has a positive value and 0 otherwise	-
LOSS	Company's losses	1 if company report a negative taxable income and 0 otherwise	-
<i>Continuous variables</i>			
TB	Tax burden	Ratio of tax expense over profit before interest and tax	+/-
SIZE	Company's total assets	Natural logarithm of total assets	+/-
CHSALES	Change in company's sales	Net sales and services in period t less net sales and services in period t-1 deflated by net sales and services in period t-1	+
ROA	Company's return on assets	Operating income scaled by lagged assets	-
LEV	Company's leverage	Company's total debt scaled by lagged assets	+
OTHER_REV	Company's other incomes	Company's other income	+



#### ***4.4.5. Accruals components management by income taxation regimes***

To test the fourth hypothesis (H4) I analyse BTA and BOA of Portuguese SMEs in general regime using Portuguese SMEs' data of their tax return (Model 22) and from "Informação Empresarial Simplificada". This data provides the exact variables' amounts of Portuguese SMEs, thus avoiding measurement errors with a proxy variable (Shackelford & Shevlin, 2001), thereby increasing the internal validity of this study that links tax choice with earnings management. This analysis should reveal the accruals in which these entities made the most intensive use of discretionary practices and is different from prior studies in that it decomposes accruals into two components and examines how these components are managed differently in a setting in which accruals are the primary tools for tax income shifting and book-tax conformity is high.

According to Calegari (2000), BTA refers to accruals with higher tax circumstances in which the tax code allows similar or equal treatment when computing the corporation's taxable income, and then, it affects both taxable income and reported earnings. On the other hand, BOA is associated with relatively low tax conformity, affecting reported earnings and has no effect on the corporation's taxable income.

This author also suggested that entities adjust discretionary accruals with relatively high tax conformity (BTA) to achieve tax-planning goals, namely through reducing taxes, and use discretionary accruals with relatively low tax conformity (BOA) to accomplish financial reporting objectives, i.e., to increase reported earnings.

Tax savings are generally maximized by deferring revenues and accelerating expenses. Thus, tax conformity may impose significant non-tax costs on companies by making them appear to be relatively worse to external parties than they would be without conformity. Tax conformity may also increase the probability of firm violation of debt covenants or reduce managers' compensation associated with book income (Cloyd, Pratt & Stock, 1996).

Since total accruals (TA) are the sum of BTA and BOA, Choi and Lee (2013) calculated its values using expressions (7) and (8), where BTA is estimated by removing from TA certain accrual items with low tax conformity.

$$BTA_{i,t} = TA_{i,t} - BOA_{i,t} \quad (7)$$

$$BOA_{i,t} = TAXREC_{i,t} - TAXPAY_{i,t} - ALLOW_{i,t} - DEP_{i,t} \quad (8)$$

TAXREC corresponds to income taxes receivable and TAXPAY to income taxes payable. TAXREC and TAXPAY are eliminated because these accruals represent income taxes receivable or due from the government and therefore are not part of the companies' taxable income. ALLOW correspond to allowances to bad debts and inventory valuation and are removed from BOA because, when they do not meet certain requirements, they cannot be deductible for income tax purposes. DEP is the depreciation for firm  $i$  that is excluded because there are some differences between tax rules and accounting standards. All these variables are scaled by total assets at the beginning of the year.

Following Calegari (2000), I use the Jones (1991) model modified by Kothary et al. (2005) to disentangle the discretionary portion of BTA and BOA. Discretionary book-tax accruals (DBTA) and discretionary book-only accruals (DBOA) are defined as the residuals of the following equations:

$$BOA_{i,t} = \delta_1 \left( \frac{1}{A_{i,t-1}} \right) + \delta_2 \frac{\Delta REV_{i,t}}{A_{i,t-1}} + \delta_3 \frac{PPE_{i,t}}{A_{i,t-1}} + \delta_4 \frac{ROA_{i,t}}{A_{i,t-1}} + \varepsilon_{i,t} \quad (9)$$

$$BTA_{i,t} = \delta_1 \left( \frac{1}{A_{i,t-1}} \right) + \delta_2 \frac{\Delta REV_{i,t}}{A_{i,t-1}} + \delta_3 \frac{ROA_{i,t}}{A_{i,t-1}} + \varepsilon_{i,t} \quad (10)$$

As Defond & Jiambalvo (1994) and Subramanyam (1996) researches, the coefficients in equations (9) and (10) are estimated separately for each ID and calendar year.

Equation (11) is used to test hypothesis 4. The dependent variable for testing is DBOA and the coefficient of interest is  $\alpha_1$ , the coefficient of DBTA.

$$DBOA_{i,t} = \alpha_0 + \alpha_1 DBTA_{i,t} + \alpha_2 TB_{i,t} + \alpha_3 SIZE_{i,t} + \alpha_4 CHSALES_{i,t} + \alpha_5 ROA_{i,t} \\ + \alpha_6 LEV_{i,t} + \alpha_7 LOSS_{i,t} + \alpha_8 ID_{i,t} + \alpha_9 ST_{i,t} \quad (11)$$

Where:

DBOA	Discretionary book-only accruals
DBTA	Discretionary book-tax accruals
TB	Ratio of tax expense over profit before interest and tax
SIZE	Natural logarithm of total assets
CHSALES	Net sales and services in period $t$ less net sales and services in period $t-1$ deflated by net sales and services in period $t-1$
ROA	Operating income scaled by lagged assets
LEV	Company's total debt scaled by lagged assets
LOSS	1 if company report a negative taxable income and 0 otherwise

If the signal of  $\alpha_1$  in the previous equation (11) is negative, the result can be interpreted to coincide with hypothesis 4, i.e., that entities tend to decrease earnings to avoid tax payment by using DBTA. On the other hand, if the result of DBOA is positive, then entities tend to manage earnings upward to mask their tax avoidance by using DBOA.

In summary, the variables are presented in Table 10:

**Table 10 - Hypothesis 4 - Variables definition and measurement of determinants regression**

<b>Panel A: Dependent Variable</b>			
<b>Variable name</b>	<b>Variable label</b>	<b>Variable measurement</b>	
DBOA	Discretionary book-only accruals	Discretionary portion of BOA computed by Jones (1991) model modified by Kothary et al. (2005) for each firm over the five years period	
<b>Panel B: Independent Variables</b>			
<b>Variable name</b>	<b>Variable label</b>	<b>Variable measurement</b>	<b>Exp. Sign</b>
<b>Binary variables</b>			
LOSS	Company's losses	1 if company report a negative taxable income and 0 otherwise	-
<b>Continuous variables</b>			
DBTA	Discretionary book-tax accruals	Discretionary portion of BTA computed by Jones (1991) model modified by Kothary et al. (2005) for each firm over the five year period	
TB	Tax burden	Ratio of tax expense over profit before interest and tax	+/-
SIZE	Company's total assets	Natural logarithm of total assets	+/-
CHSALES	Change in company's sales	Net sales and services in period t less net sales and services in period t-1 deflated by net sales and services in period t-1	+
ROA	Company's return on assets	Operating income scaled by lagged assets	-
LEV	Company's leverage	Company's total debt scaled by lagged assets	+

## **5. RESULTS**

### **5.1. DETERMINANTS OF CHOICE BETWEEN THE GENERAL REGIME AND STR FOR PORTUGUESE SMES**

#### **5.1.1. DESCRIPTIVE STATISTICS**

Panel A of Table 11 presents the empirical results for the binary variables. Note that as the sample's size is greater than 30 observations, there is no need for a normal distribution of the variables under study, since by the central limit theorem, the t-tests distribution approaches a normal distribution.

According to the TB\_Position's result of Pearsons' chi-square test (6418.460) and its associated significance (p-value=0.000), income taxation regime is related with TB\_Position. The percentage of companies that are in the general regime and whose taxable income is below the STR's minimum taxable income is about 68 percent of total companies in this regime and is statistically higher than companies in the STR. Based on this, I conclude that companies in the general regime that present a taxable income below the minimum if they choose STR, do not opt for this regime, and thus, the tax burden could influence the companies' choices about income taxation regimes. These conclusions are consistent with Dâmaso and Martins (2015), who demonstrate that the majority of certified accountants do not recommend STR, due primarily to the saving of tax payable.

However, the percentage of companies in STR that present a taxable income above the minimum defined for STR (73.9 percent) is still considerable. This highlights the need to make another type of analysis, and that other variables could influence the choice between alternative income taxation regimes.

In relation to SIZE\_Position, this is also another significant variable that presents differences between companies in the general regime and companies that opt for STR, since more than 61 percent of STR's companies are below the industry median, when only 48 percent of companies in the general regime have their size below the industry median. The result of Pearsons' chi-square test (551.706) and its associated significance

(p-value=0.000), also indicate that companies' size, measured by the logarithm of total assets, could be related with the choice about the income taxation regime.

About the variable LOSS\_PY, only 9.7 percent of companies that opt for STR present a negative sum of taxable income from 2011-2013 (prior to the introduction of STR) while in the general regime the percentage of companies with a negative sum of taxable income is 46.4 percent. The result of Pearsons' chi-square test (4657.906) and its associated significance (p-value=0.000) also indicate that losses from previous years could influence the option for STR. Even companies that have opted for the STR and that have a negative sum of the taxable income of previous years could be related to the exemption of the STA in the STR and to the fact that the value of this payment (mandatory in the general regime) is higher than the minimum taxable income under the STR.

For the other four variables, CH\_SALES\_Position, ROA\_Position, LEV\_Position, and OTHER\_REV\_Position, Table 11 shows that the percentage of companies that opt for STR is relatively higher (more than 50 percent) in the case of companies whose change on sales, return on assets, leverage, and other revenue values are below the industry median. However, while the results of the Pearsons' chi-square tests show that the differences between companies in the general regime and companies in STR are statistically significant, there are no significant differences between these two groups of companies.

Panel B of Table 11 presents the empirical results for the continuous variables (except |DA|). It shows the mean and standard deviation for the variables SIZE, CH\_SALES, ROA, LEV, and OTHER\_REV. It also shows the results for t-test of all these variables, considering that the equality of variances of all variables is assumed by the Levene's test for equality of variances. Also, all these variables present a statistically significant difference in the means of companies in the general regime and companies in STR.

Table 11 – Hypothesis 1 - Descriptive statistics of variables

<i>Panel A - Descriptive statistics for binary variables</i>					
Year	2014				
Tax Regime	STR=0		STR=1		TOTAL
	n	%	n	%	
<b>TB_Position</b>					
TB_Position = 0	25,877	31.9%	6,943	73.9%	32,820
TB_Position = 1	55,257	68.1%	2,458	26.1%	57,715
	<i>Comparison test<sup>1</sup></i>				6418.460***
<b>SIZE_Position</b>					
SIZE_Position = 0	41,737	51.4%	3,632	38.6%	45,369
SIZE_Position = 1	39,425	48.6%	5,770	61.4%	45,195
	<i>Comparison test<sup>1</sup></i>				551.706***
<b>CH_SALES_Position</b>					
CH_SALES_Position=0	40,946	50.4%	4,643	49.4%	45,589
CH_SALES_Position=1	40,216	49.6%	4,759	50.6%	44,975
	<i>Comparison test</i>				3.834**
<b>ROA_Position</b>					
ROA_Position=0	40,934	50.4%	4,400	46.8%	45,334
ROA_Position=1	40,228	49.6%	5,002	53.2%	45,230
	<i>Comparison test<sup>1</sup></i>				44.567***
<b>LEV_Position</b>					
LEV_Position=0	40,734	50.2%	4,465	47.5%	45,199
LEV_Position=1	40,428	49.8%	4,937	52.5%	45,365
	<i>Comparison test<sup>1</sup></i>				24.545***
<b>OTHER_REV_Position</b>					
OTHER_REV_Position=0	40,892	50.4%	4,422	47.0%	45,314
OTHER_REV_Position=1	40,270	49.6%	4,980	53.0%	45,250
	<i>Comparison test<sup>1</sup></i>				37.838***
<b>LOSS_PY</b>					
LOSS_PY=0	43,483	53.6%	8,494	90.3%	51,977
LOSS_PY=1	37,679	46.4%	908	9.7%	38,587
	<i>Comparison test<sup>1</sup></i>				4657.906***

<b>Panel B - Descriptive Statistics for continuous variables</b>			
Year	2014		
Tax Regime	STR=0	STR=1	TOTAL
n	81,328	9,414	90,742
<b>SIZE</b>			
Mean	4.760	4.632	4.747
Standard Deviation	0.445	0.451	0.447
		<i>Comparison test</i> <sup>2</sup>	26.062 <sup>***3</sup>
<b>CH_SALES</b>			
Mean	0.267	0.112	0.251
Standard Deviation	11.354	1.613	10.762
		<i>Comparison test</i> <sup>2</sup>	3.601 <sup>***3</sup>
<b>ROA</b>			
Mean	-0.123	-0.213	-0.133
Standard Deviation	0.820	0.972	0.837
		<i>Comparison test</i> <sup>2</sup>	8.623 <sup>***3</sup>
<b>LEV</b>			
Mean	1.428	1.597	1.446
Standard Deviation	3.637	3.776	3.652
		<i>Comparison test</i> <sup>2</sup>	-4.128 <sup>***3</sup>
<b>OTHER_REV</b>			
Mean	0.045	0.031	0.044
Standard Deviation	0.192	0.159	0.189
		<i>Comparison test</i> <sup>2</sup>	8.286 <sup>***3</sup>

<sup>1</sup> Pearson X<sup>2</sup>. \*\*\*, \*\*, and \* indicate significant at the 0.01, 0.05, and 0.10 levels respectively

<sup>2</sup> t-test. \*\*\*, \*\*, and \* indicate significant at the 0.01, 0.05, and 0.10 levels respectively.

<sup>3</sup> By the Levene's test for equality of variances, equal variances are not assumed.

Notes: CHSALES is the change on company's sales and is measured by net sales and services in period t less net sales and services in period t-1 deflated by net sales and services in period t-1. CHSALES\_Position is a dummy variable which is 0 company's change on sales is above the industry median and 1 if below. |DA| is the absolute value of discretionary accruals. LEV corresponds to company's leverage and is measured by company's total debt scaled by lagged assets. LEV\_Position is a dummy variable which is 0 company's leverage is above the industry median and 1 if below. LOSS\_PY is a dummy variable which is 1 if the sum of taxable income from 2011-2013 is negative and 0 otherwise. OTHER\_REV is company's other incomes. OTHER\_REV\_Position is a dummy variable which is 0 company's other income is above the industry median and 1 if below. ROA is company's return on assets and is measured with operating income scaled by lagged assets. ROA\_Position is a dummy variable which is 0 company's return on assets is above the industry median and 1 if below. SIZE corresponds to natural logarithm of company's total assets. SIZE\_Position is a dummy variable which is 0 company's total assets is above the industry median and 1 if below. TB is a dummy variable which is 0 if taxable income is above the STR's minimum taxable income and 1 if below.

Table 12 provides the mean and standard deviation for discretionary accruals variable, both signed and absolute.



The mean of the signed DA is close to zero, while the mean of the unsigned discretionary accruals is positive. According to Hribar and Nichols (2007) the mean of absolute discretionary accruals varies with the standard deviation of signed discretionary accruals.

In terms of variance, and by the result of Levene's test (0.390) with a significance level of 0.532, the homogeneity of variances of both companies' groups is confirmed. Intending to confirm if the difference between the mean values of absolute discretionary accruals of companies in the general regime (0.402) and companies in STR (0.415) is statistically significant, I use the t-test. With an error of  $p=0.05$ , the results of t-test considering the variances' homogeneity indicate that I accept the equality of the mean of absolute discretionary accruals of companies in the general regime and companies in STR.

Looking at the signed discretionary accruals, the results are similar to the absolute value of discretionary accruals. By the Levene's test for equality of variances (2.573 with a significance level of 0.109), the variance's homogeneity of companies in the general regime and companies in STR is confirmed. With regard to the differences between the mean values of signed discretionary accruals of companies in the general regime (0.033) and companies in STR (0.042) and considering the results of t-test, I accept the equality of the mean absolute discretionary accruals of companies in the general regime and companies in STR.

*Table 12 – Descriptive Statistics of DA variable*

Variable	Period	Mean	Std. Deviation	Levene's Test for Equality of Variances		t-test for Equality of Means		
				F	Sig.	t	Sig.	
DA	STR=0	0.402	0.833	0.390	0.532	Homogeneity of variances	-1.465	0.143
	STR=1	0.415	0.773					
DA	STR=0	0.033	0.925	2.573	0.109	Homogeneity of variances	-0.927	0.354
	STR=1	0.042	0.876					

Notes: DA corresponds to discretionary accruals and |DA| is the absolute value of discretionary accruals.

Based on the univariate comparisons I can infer the following. First, the univariate comparisons do not provide support to my initial prediction that earnings management could influence the option for the income taxation regime. From the results of these univariate comparisons, there is some support that tax burden, companies' losses from previous years, and companies' size could be important variables in the companies' choice about income taxation regimes.

### **5.1.2. MULTIVARIATE ANALYSES**

The Pearsons' chi-square tests used for each binary variable as well as the central tendency equality tests reported in Tables 11 and 12 may be relatively weak tests of the income taxation regimes choice. To obtain potentially more powerful statistical support about the determinants of choice between the general regime and STR, I incorporate the variables `|DA|`, `TB_Position`, `CHSALES` and `CHSALES_Position`, `LEV` and `LEV_Position`, `OTHER_REV` and `OTHER_REV_Position`, `ROA` and `ROA_Position`, `SIZE` and `SIZE_Position`, and `LOSS_PY` into several binary logistic regression models.

Before, I present in Table 13 the correlations among the variables used in this regression analysis. This correlation matrix is to examine whether multicollinearity is a potential issue. All the correlations are below 0.80.

Table 13 – Correlation coefficients among first hypothesis' variables

	CHSALES	CHSALES_ Position	DA	LEV	LEV_ Position	LOSS_PY	OTHER_ REV	OTHER_ REV_Position	ROA	ROA_Positi on	SIZE	SIZE_ Position	TB_ Position
CHSALES	<b>1.000</b> -----												
CHSALES_ Position	<b>-0.041</b> (0.000)	<b>1.000</b> -----											
DA	<b>-0.014</b> (0.000)	<b>0.093</b> (0.000)	<b>1.000</b> -----										
LEV	<b>0.004</b> (0.178)	<b>0.022</b> (0.000)	<b>-0.178</b> (0.000)	<b>1.000</b> -----									
LEV_ Position	<b>-0.003</b> (0.380)	<b>-0.001</b> (0.853)	<b>0.085</b> (0.000)	<b>-0.307</b> (0.000)	<b>1.000</b> -----								
LOSS_PY	<b>0.008</b> (0.017)	<b>-0.038</b> (0.000)	<b>-0.087</b> (0.000)	<b>0.256</b> (0.000)	<b>-0.422</b> (0.000)	<b>1.000</b> -----							
OTHER_ REV	<b>-0.001</b> (0.867)	<b>0.014</b> (0.000)	<b>0.013</b> (0.000)	<b>0.081</b> (0.000)	<b>-0.049</b> (0.000)	<b>0.032</b> (0.000)	<b>1.000</b> -----						
OTHER_REV_ Position	<b>-0.005</b> (0.121)	<b>0.002</b> (0.641)	<b>-0.029</b> (0.000)	<b>0.039</b> (0.000)	<b>-0.016</b> (0.000)	<b>0.049</b> (0.000)	<b>-0.231</b> (0.000)	<b>1.000</b> -----					
ROA	<b>0.004</b> (0.194)	<b>-0.087</b> (0.000)	<b>0.201</b> (0.000)	<b>-0.584</b> (0.000)	<b>0.219</b> (0.000)	<b>-0.231</b> (0.000)	<b>-0.015</b> (0.000)	<b>-0.028</b> (0.000)	<b>1.000</b> -----				
ROA_Position	<b>-0.009</b> (0.005)	<b>0.174</b> (0.000)	<b>-0.079</b> (0.000)	<b>0.196</b> (0.000)	<b>-0.342</b> (0.000)	<b>0.341</b> (0.000)	<b>-0.024</b> (0.000)	<b>0.052</b> (0.000)	<b>-0.340</b> (0.000)	<b>1.000</b> -----			
SIZE	<b>0.004</b> (0.207)	<b>-0.033</b> (0.000)	<b>0.154</b> (0.000)	<b>-0.387</b> (0.000)	<b>0.204</b> (0.000)	<b>-0.216</b> (0.000)	<b>-0.127</b> (0.000)	<b>-0.096</b> (0.000)	<b>0.326</b> (0.000)	<b>-0.153</b> (0.000)	<b>1.000</b> -----		
SIZE_Position	<b>-0.002</b> (0.493)	<b>0.024</b> (0.000)	<b>-0.095</b> (0.000)	<b>0.206</b> (0.000)	<b>-0.152</b> (0.000)	<b>0.173</b> (0.000)	<b>0.084</b> (0.000)	<b>0.077</b> (0.000)	<b>-0.176</b> (0.000)	<b>0.117</b> (0.000)	<b>-0.792</b> (0.000)	<b>1.000</b> -----	
TB_Position	<b>-0.007</b> (0.050)	<b>0.085</b> (0.000)	<b>-0.058</b> (0.000)	<b>0.135</b> (0.000)	<b>-0.240</b> (0.000)	<b>0.351</b> (0.000)	<b>0.018</b> (0.000)	<b>0.068</b> (0.000)	<b>-0.181</b> (0.000)	<b>0.377</b> (0.000)	<b>-0.212</b> (0.000)	<b>0.182</b> (0.000)	<b>1.000</b> -----

Notes: CHSALES is the change on company's sales and is measured by net sales and services in period t less net sales and services in period t-1 deflated by net sales and services in period t-1. CHSALES\_Position is a dummy variable which is 0 company's change on sales is above the industry median and 1 if below. |DA| is the absolute value of discretionary accruals. LEV corresponds to company's leverage and is measured by company's total debt scaled by lagged assets. LEV\_Position is a dummy variable which is 0 company's leverage is above the industry median and 1 if below. LOSS\_PY is a dummy variable which is 1 if the sum of taxable income from 2011-2013 is negative and 0 otherwise. OTHER\_REV is company's other incomes. OTHER\_REV\_Position is a dummy variable which is 0 company's other income is above the industry median and 1 if below. ROA is company's return on assets and is measured with operating income scaled by lagged assets. ROA\_Position is a dummy variable which is 0 company's return on assets is above the industry median and 1 if below. SIZE corresponds to natural logarithm of company's total assets. SIZE\_Position is a dummy variable which is 0 company's total assets is above the industry median and 1 if below. TB is a dummy variable which is 0 if taxable income is above the STR's minimum taxable income and 1 if below.

Table 14 reports the parameter estimates from the logistic regressions in which the dependent variable is STR. The logistic regression's results in column C1 include all covariates; The logistic regressions in columns C2-C9 drop individually<sup>6</sup> from C1 the covariates with p-value lower than 0.1 to check if there are interaction effects within the explanatory variables in the probability of choosing STR. Before running these regressions I tested the collinearity of the variables and confirmed that the variables defined for this model are not collinear.

The estimated coefficient on |DA|, my variable of interest, is always negative, as predicted, and significant at the 1 percent significance level (except in regression C8 without SIZE variables). Based on this value I conclude that earnings management is one determinant of choice between alternative income taxation regimes, even if, compared with the other coefficients, it is not the main one. Also, and because |DA| coefficient is negative, I also conclude that the estimated probability of choosing STR decreases with higher |DA|.

However, the estimated coefficient on TB\_Position is always the most reliable and also negative, regardless of the other covariates included, and has the lowest probability associated with the significance t-test result (p-value = 0.000). Based on the absolute value and its corresponding sign, I can corroborate the previous conclusions on univariate comparisons, i.e, that taxable income is the most important covariate to explain the probability of companies' choice about the income taxation regime. Consequently, the probability of companies choosing STR decreases when companies present a taxation income lower than the minimum defined for STR.

Another relevant covariate is losses from previous years, which also presents a negative and very reliable estimated coefficient regardless of the other covariates included. Based on its value, I conclude that the estimated probability of choosing STR decreases when companies present a negative sum of taxable income from 2011-2013. This result is

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<sup>6</sup> The variables about companies' position in relation to the industry median are used in conjunction with the respective continuous variable.

consistent with my initial prediction considering that companies in STR cannot deduct the negative taxable income ascertained in previous years.

The variables SIZE and OTHER\_REV also have important roles in the choice between income taxation regimes. Results support the expectation of a negative relationship between a company's SIZE and OTHER\_REV and its choice about the income taxation regime. There is some support that the probability of companies choosing STR decreases when its size is greater and when it reports higher amounts of other incomes.

With regard to the covariates that may positively influence the STR option, ROA\_Position has a significant weight when compared to the others. It presents the positive and most reliable coefficient regardless of the other covariates, and supports the probability of companies choosing STR increasing when companies present a return on assets (ROA) below the industry median.

**Table 14 – Determinants of choice between the general regime and STR**

Variable	Exp Sign	C1		C2		C3	
		Coefficient (z-Statistic- Wald)	Prob.	Coefficient (z-Statistic- Wald)	Prob.	Coefficient (z-Statistic- Wald)	Prob.
<b>Intercept</b>		<b>0.993</b> (12.543)	***	<b>0.820</b> (8.776)	***	<b>-1.253</b> (26.518)	***
<b> DA </b>	-	<b>-0.080</b> (18.055)	***			<b>-0.060</b> (13.772)	***
<b>TB_POSITION</b>	-	<b>-2.796</b> (7390.127)	***	<b>-2.795</b> (7387.205)	***		
<b>CHSALES</b>	-	<b>-0.014</b> (2.915)	*	<b>-0.016</b> (3.599)	*	<b>-0.010</b> (1.802)	
<b>CHSALES_POSITION</b>	+	<b>0.064</b> (5.727)	**	<b>0.064</b> (5.767)	**	<b>0.000</b> (0.000)	
<b>LEV</b>	-	<b>-0.025</b> (26.970)	***	<b>-0.031</b> (40.183)	***	<b>-0.016</b> (13.683)	***
<b>LEV_POSITION</b>	+	<b>0.025</b> (0.675)		<b>0.030</b> (1.039)		<b>0.254</b> (94.462)	***
<b>OTHER_REV</b>	-	<b>-0.635</b> (34.550)	***	<b>-0.647</b> (35.464)	***	<b>-0.795</b> (51.901)	***
<b>OTHER_REV_ POSITION</b>	+	<b>0.146</b> (29.566)	***	<b>0.145</b> (29.143)	***	<b>0.012</b> (0.255)	
<b>ROA</b>	-	<b>-0.004</b> (0.062)		<b>-0.001</b> (0.004)		<b>0.000</b> (0.000)	
<b>ROA_POSITION</b>	+	<b>1.100</b> (1122.569)	***	<b>1.107</b> (1136.307)	***	<b>0.153</b> (33.838)	***
<b>SIZE</b>	-	<b>-0.908</b> (304.931)	***	<b>-0.878</b> (292.428)	***	<b>-0.498</b> (123.069)	***
<b>SIZE_POSITION</b>	+	<b>0.281</b> (44.598)	***	<b>0.288</b> (46.946)	***	<b>0.200</b> (28.498)	***
<b>LOSS_PY</b>	-	<b>-2.009</b> (2878.074)	***	<b>-2.009</b> (2878.646)	***	<b>-2.103</b> (3428.801)	***
<b>ST ID</b>		<b>INCLUDED INCLUDED</b>		<b>INCLUDED INCLUDED</b>		<b>INCLUDED INCLUDED</b>	
N		90,535		90,535		90,535	
Nagelkerke R-squared		0.381		0.381		0.194	
Prob(LR statistic)		0.000		0.000		0.000	

Variable	Exp Sign	C4		C5		C6	
		Coefficient (z-Statistic- Wald)	Prob.	Coefficient (z-Statistic- Wald)	Prob.	Coefficient (z-Statistic- Wald)	Prob.
Intercept		<b>1.020</b> (13.236)	***	<b>0.646</b> (5.660)	**	<b>0.976</b> (12.449)	***
DA	-	<b>-0.082</b> (19.248)	***	<b>-0.108</b> (34.746)	***	<b>-0.083</b> (19.377)	***
TB_POSITION	-	<b>-2.793</b> (7382.579)	***	<b>-2.798</b> (7444.112)	***	<b>-2.784</b> (7388.442)	***
CHSALES	-			<b>-0.014</b> (3.089)	*	<b>-0.014</b> (3.002)	*
CHSALES_POSITION	+			<b>0.070</b> (6.906)	***	<b>0.056</b> (4.434)	**
LEV	-	<b>-0.026</b> (27.728)	***			<b>-0.027</b> (29.749)	***
LEV_POSITION	+	<b>0.030</b> (1.002)				<b>0.033</b> (1.200)	
OTHER_REV	-	<b>-0.628</b> (33.929)	***	<b>-0.661</b> (37.428)	***		
OTHER_REV_POSITION	+	<b>0.146</b> (29.554)	***	<b>0.144</b> (28.634)	***		
ROA	-	<b>-0.007</b> (0.164)		<b>0.040</b> (6.744)	***	<b>-0.007</b> (0.155)	
ROA_POSITION	+	<b>1.115</b> (1179.636)	***	<b>1.089</b> (1212.892)	***	<b>1.117</b> (1165.212)	***
SIZE	-	<b>-0.910</b> (306.447)	***	<b>-0.838</b> (278.197)	***	<b>-0.895</b> (302.310)	***
SIZE_POSITION	+	<b>0.280</b> (44.308)	***	<b>0.311</b> (55.759)	***	<b>0.286</b> (46.415)	***
LOSS_PY	-	<b>-2.009</b> (2877.816)	***	<b>-2.009</b> (2880.704)	***	<b>-2.012</b> (2888.604)	***
ST ID		<b>INCLUDED INCLUDED</b>		<b>INCLUDED INCLUDED</b>		<b>INCLUDED INCLUDED</b>	
N		90,535		90,535		90,535	
Nagelkerke R-squared		0.381		0.381		0.379	
Prob(LR statistic)		0.000		0.000		0.000	



Variable	Exp Sign	C7		C8		C9		VIF
		Coefficient (z-Statistic- Wald)	Prob	Coefficient (z-Statistic- Wald)	Prob	Coefficient (z-Statistic- Wald)	Prob	
<b>Intercept</b>		<b>1.711</b> *** (38.673)		<b>-3.370</b> ** (1658.921)		<b>0.658</b> ** (5.821)		
<b> DA </b>	-	<b>-0.099</b> *** (28.634)		<b>0.012</b> (0.543)		<b>-0.079</b> *** (18.751)		<b>1.248</b>
<b>TB_POSITION</b>	-	<b>-2.433</b> *** (6817.689)		<b>-2.637</b> *** (7055.102)		<b>-2.891</b> *** (8383.006)		<b>1.315</b>
<b>CHSALES</b>	-	<b>-0.022</b> ** (4.803)		<b>-0.018</b> ** (4.160)		<b>-0.014</b> * (2.851)		<b>1.002</b>
<b>CHSALES_POSITION</b>	+	<b>0.211</b> *** (66.070)		<b>0.062</b> ** (5.600)		<b>0.058</b> ** (5.099)		<b>1.052</b>
<b>LEV</b>	-	<b>-0.014</b> *** (11.772)		<b>-0.001</b> (0.020)		<b>-0.027</b> *** (32.342)		<b>1.845</b>
<b>LEV_POSITION</b>	+	<b>-0.293</b> *** (111.346)		<b>-0.043</b> (2.259)		<b>0.002</b> (0.004)		<b>1.375</b>
<b>OTHER_REV</b>	-	<b>-0.872</b> *** (57.999)		<b>-0.310</b> *** (9.625)		<b>-0.680</b> *** (40.286)		<b>1.092</b>
<b>OTHER_REV_POSITION</b>	+	<b>0.146</b> *** (30.301)		<b>0.229</b> *** (76.493)		<b>0.150</b> *** (33.838)		<b>1.082</b>
<b>ROA</b>	-			<b>-0.064</b> *** (16.069)		<b>-0.006</b> (0.155)		<b>1.720</b>
<b>ROA_POSITION</b>	+			<b>1.128</b> *** (1243.522)		<b>1.156</b> *** (1339.668)		<b>1.464</b>
<b>SIZE</b>	-	<b>-0.949</b> *** (346.251)				<b>-0.943</b> *** (348.146)		<b>3.401</b>
<b>SIZE_POSITION</b>	+	<b>0.304</b> *** (53.936)				<b>0.288</b> *** (50.208)		<b>2.836</b>
<b>LOSS_PY</b>	-	<b>-2.037</b> *** (3004.435)		<b>-2.027</b> *** (2984.411)				<b>1.498</b>
<b>ST ID</b>		<b>INCLUDED INCLUDED</b>		<b>INCLUDED INCLUDED</b>		<b>INCLUDED INCLUDED</b>		
N		90,535		90,535		90,535		
Nagelkerke R-squared		0.358		0.358		0.303		
Prob(LR statistic)		0.000		0.000		0.000		

Notes: CHSALES is the change on company's sales and is measured by net sales and services in period t less net sales and services in period t-1 deflated by net sales and services in period t-1. CHSALES\_Position is a dummy variable which is 0 company's change on sales is above the industry median and 1 if below. |DA| is the absolute value of discretionary accruals. LEV corresponds to company's leverage and is measured by company's total debt scaled by lagged assets. LEV\_Position is a dummy variable which is 0 company's leverage is above the industry median and 1 if below. LOSS\_PY is a dummy variable which is 1 if the sum of taxable income from 2011-2013 is negative and 0 otherwise. OTHER\_REV is company's other incomes. OTHER\_REV\_Position is a dummy variable which is 0 company's other income is above the industry median and 1 if below. ROA is company's return on assets and is measured with operating

income scaled by lagged assets. ROA\_Position is a dummy variable which is 0 company's return on assets is above the industry median and 1 if below. SIZE corresponds to natural logarithm of company's total assets. SIZE\_Position is a dummy variable which is 0 company's total assets is above the industry median and 1 if below. TB\_Position is a dummy variable which is 0 if taxable income is above the STR's minimum taxable income and 1 if below.

As Hand and Skantz (1998) indicate, the odds-ratio for a covariate in a logistic regression is the exponential of that covariate's  $\beta$  estimate, and measures the change in the odds that the dependent variable takes the higher of its two values when the covariate increases by 1. The results in Table 15 show that the exponential is substantially lower for the TB\_Position estimated coefficient ( $\text{Exp}=0.061$ ) and for LOSS\_PY (0.134). As a binary variable, it is convenient to consider the probability of companies choosing STR, which is obtained by dividing the  $\text{Exp}(\text{CE})$  by  $1+\text{Exp}(\text{CE})$ . For TB\_Position, the probability of companies with a taxable income below the minimum defined for STR choosing this regime is 5.7 percent, while the probability of companies that present a negative sum of taxable income from 2011-2013 choosing STR is 11.8 percent.

**Table 15 - Relative importance of different covariates in the logistic regression**

	<b>Coefficient estimates (CE)</b>	<b>Exp(CE)</b>
<b>Intercept</b>	0.993	2.700
<b> DA </b>	-0.080	0.923
<b>TB_Position</b>	-2.796	0.061
<b>CHSALES</b>	-0.014	0.986
<b>CHSALES_Position</b>	0.064	1.066
<b>LEV</b>	-0.025	0.975
<b>LEV_Position</b>	0.025	1.025
<b>OTHER_REV</b>	-0.635	0.530
<b>OTHER_REV_Position</b>	0.146	1.158
<b>ROA</b>	-0.004	0.996
<b>ROA_Position</b>	1.100	3.005
<b>SIZE</b>	-0.908	0.404
<b>SIZE_Position</b>	0.281	1.325
<b>LOSS_PY</b>	-2.009	0.134

Notes: CHSALES is the change on company's sales and is measured by net sales and services in period t less net sales and services in period t-1 deflated by net sales and services in period t-1. CHSALES\_Position is a dummy variable which is 0 company's change on sales is above the industry median and 1 if below. |DA| is the absolute value of discretionary accruals. LEV corresponds to company's leverage and is measured by company's total debt scaled by lagged assets. LEV\_Position is a dummy variable which is 0 company's leverage is above the industry median and 1 if below. LOSS\_PY is a dummy variable which is 1 if the sum of taxable income from 2011-2013 is negative and 0 otherwise. OTHER\_REV is company's other incomes. OTHER\_REV\_Position is a dummy variable which is 0 company's other income is above the industry median and 1 if below. ROA is company's return on assets and is measured with operating income scaled by lagged assets. ROA\_Position is a dummy variable which is 0 company's return on assets is above the industry median and 1 if below. SIZE corresponds to natural logarithm of company's total assets. SIZE\_Position is a dummy variable which is 0 company's total assets is above the industry median and 1 if below. TB\_Position is a dummy variable which is 0 if taxable income is above the STR's minimum taxable income and 1 if below.

## **5.2. THE IMPACT OF STR'S CHOICE IN DISCRETIONARY ACCRUALS**

### **5.2.1. DESCRIPTIVE STATISTICS**

As the main objective of this hypothesis is the comparison of absolute discretionary accruals and the other control variables before (PRE) and after (POST) the choice for STR, I compare its means values by using the paired samples t-test.

Panel A of Table 16 presents the mean value of signed and absolute discretionary accruals by pre-STR and post-STR periods, with the results of paired samples t-test, the results of this test for the other continuous variables, and the results of the univariate comparisons for the binary variable LOSS. To rule out the effects of outliers, I excluded the observations greater than three times the standard deviation from the mean.

Results in Table 16 indicate that the mean of the absolute discretionary accruals is lower in pre-STR periods and that the difference between pre-STR and post-STR periods is statistically significant. Therefore, the difference of means of pre-STR and post-STR periods indicates that before STR companies report mean absolute discretionary accruals of 36.1 percent of total assets and after the option for STR the mean of absolute discretionary accruals represents 39.1 percent of total assets. Then, after opting for STR, companies report an absolute discretionary accruals that is, on average, 3 percent of assets higher than before this option. This difference is statistically significant, thus leading to the conclusion, with an error  $p \leq 0.01$ , that the mean of absolute discretionary accruals in the post-STR period is higher than in the pre-STR period. Then, after opting for STR, companies tend to present greater flexibility in discretionary accruals practices than before this option. Given that it is an absolute measure and making the necessary correspondence with the standard deviation, I can see that after opting for STR and even though the mean of absolute value is higher, there is a greater variability of data compared with pre-STR periods.

If I look at the signed discretionary accruals, the mean is, on average, 3.3 percent of total assets lower after the option for STR and is statistically significant. In pre-STR periods the mean of signed discretionary accruals is 0.058 and the minimum is -8.726, while in

post-STR periods the mean is 0.025 and the minimum is -8.480, indicating that companies in pre-STR periods use more income-decreasing methods than in post-STR periods. In its turn, the maximum of pre-STR and post-STR periods is 8.693 and 8.661, respectively, indicating that companies before opting for STR also use more income-increasing methods than after this choice. Consequently, there is some support that there is a greater flexibility in discretionary accruals before the option for STR than after.

In general, the results in Table 16 suggest that after the option for STR, companies tend to be substantially less profitable (ROA), to be smaller (SIZE) but with a relative growth on sales (CHSALES), to have less other incomes (OTHER\_REV), and to increase their leverage (LEV). Specifically, return on assets, total assets, and other incomes are significantly lower after the option for STR, while leverage and change on sales are higher after this option. Statistically, the mean of change on tax burden is not significantly different.

From the analysis of the results of LOSS variable, 53.2 percent of companies present a negative taxable income before the option for STR, while after this option the percentage of companies with a negative taxable income is 50.1 percent. The result of Pearsons' chi-square test (42.207) and its associated significance (p-value=0.000) indicate that differences between the losses in pre-STR and post-STR periods are statistically significant.

Table 16 – Hypothesis 2 - Descriptive statistics of variables

<i>Panel A – Continuous variables</i>						
		Mean	Maximum	Minimum	Std. Deviation	t
DA	PRE	0.361	8.726	0.000	0.597	-5.215***
	POST	0.391	8.661	0.000	0.641	
DA	PRE	0.058	8.693	-8.726	0.695	4.830***
	POST	0.025	8.661	-8.480	0.751	
CHSALES	PRE	-0.014	5.495	-0.993	0.442	-15.250***
	POST	0.049	5.471	-1.000	0.435	
ROA	PRE	-0.122	3.774	-14.290	0.537	11.988***
	POST	-0.197	8.704	-13.896	0.810	
OTHER_REV	PRE	0.028	0.966	0.000	0.080	3.799***
	POST	0.026	0.961	0.000	0.077	
SIZE	PRE	4.661	5.699	2.616	0.429	7.203***
	POST	4.630	5.698	-2.000	0.459	
TB	PRE	0.149	100.081	-80.796	1.610	-0.057
	POST	0.150	121.445	5.698	2.567	
LEV	PRE	1.128	69.305	0.000	2.318	-18.543***
	POST	1.647	70.103	-0.022	3.724	
<i>Panel B – Binary variables</i>						
		LOSS=0		LOSS=1		t
		n	%	n	%	
LOSS	PRE	14,862	53.2%	13,066	46.8%	42.207***
	POST	9,317	50.1%	9,264	49.9%	

Notes: |DA| is the absolute value of discretionary accruals and DA to the sign discretionary accruals. CHSALES is the change on company's sales and is measured by net sales and services in period t less net sales and services in period t-1 deflated by net sales and services in period t-1. ROA is company's return on assets and is measured with operating income scaled by lagged assets. OTHER\_REV is company's other incomes. SIZE corresponds to natural logarithm of company's total assets. TB is company's tax burden and corresponds to the ratio of tax expense over profit before interest and tax. LEV corresponds to company's leverage and is measured by company's total debt scaled by lagged assets. LOSS is a dummy variable which is 1 if company report a negative taxable income and 0 otherwise.

### **5.2.2. MULTIVARIATE ANALYSIS**

Table 17 presents the multiple regression results defined for hypothesis 2 with the control variables discussed in the methodology section.

The results show that the adjusted R-square of the model is 18.8 percent and significant at the 1 percent level.

The first coefficient of the regression's results (POST) relates to a dummy variable representing the pre-STR and post-STR periods. The coefficient is significant at less than the 1 percent level. The value of the coefficient is -0.016 and is not consistent with the univariate comparison presented before. In Table 16, mean of absolute discretionary accruals after the option for STR exceeded those of the pre-STR by 3 percent. In Table 17, the coefficient of POST variable reports absolute discretionary accruals are lower after the option for STR by an average of 1.6 percent of assets. Thus, the inclusion of control variables in the regression implies that the results support my second hypothesis.

Several of the control variables in the regression model in Table 17 are significantly associated with discretionary accruals. All of these variables are consistent with initial predictions and are statistically significant at a 1 percent level, except tax burden (TB), which presents a negative coefficient (-0.002) that is statistically significant at the 10 percent significance level. The positive coefficient on the change on sales (0.101) is consistent with the Skinner and Sloan (2002) finding that growth companies involve more earnings management practices, while the negative coefficient on return on assets (-0.110) is consistent with the Young (1999) and Dechow et al. (1995) findings. The positive coefficient of other incomes' variable (OTHER\_REV) is in line with my initial prediction that the coefficient applied in STR to the other income values is higher and companies then present higher discretionary accruals as a way to reduce their income tax. The coefficient of SIZE measured by the natural logarithm of total assets is negative, giving support that firm size has a negative effect on earnings management with the aim of decreasing the tax burden (Holland, 1998). Leverage (LEV) is also positively (0.052) associated with discretionary accruals, which is in line with the findings of Defond and Jiambalvo (1994), Callao and Jarne (2010), Vander et al. (2003), and Jelinek (2007). Finally, about the variable LOSS and corroborating Francia and Yu's (2009) findings, the

companies that report a loss are less likely to manage earnings than companies with positive profits.

*Table 17 – The improvement in earnings quality from STR’s option*

Variables	Prediction	Coefficient (t-statistics)	Prob.
<b>Intercept</b>		<b>1.431</b> (37.896) ***	
<b>POST</b>	-	<b>-0.016</b> (-3.067) ***	
<b>CHSALES</b>	+	<b>0.101</b> (17.014) ***	
<b>ROA</b>	-	<b>-0.110</b> (-20.775) ***	
<b>OTHER_REV</b>	+	<b>0.255</b> (7.762) ***	
<b>SIZE</b>	+/-	<b>-0.231</b> (-33.363) ***	
<b>TB</b>		<b>-0.002</b> (-1.791) *	
<b>LEV</b>	+	<b>0.052</b> (47.190) ***	
<b>LOSS</b>	-	<b>-0.037</b> (-6.256) ***	
<b>ID</b>	<b>INCLUDED</b>		
<b>ST</b>	<b>INCLUDED</b>		
N		46,509	
Adjusted R <sup>2</sup>		0.188	
F-value		894.664 ***	

Notes: POST is a dummy variable which is 1 if corresponds a post-STR period and 0 if corresponds a pre-STR period. CHSALES is the change on company’s sales and is measured by net sales and services in period t less net sales and services in period t-1 deflated by net sales and services in period t-1. ROA is company’s return on assets and is measured with operating income scaled by lagged assets. OTHER\_REV is company’s other incomes. SIZE corresponds to natural logarithm of company’s total assets. TB is company’s tax burden and corresponds to the ratio of tax expense over profit before interest and tax. LEV corresponds to company’s leverage and is measured by company’s total debt scaled by lagged assets. LOSS is a dummy variable which is 1 if company report a negative taxable income and 0 otherwise.



### 5.3. COMPARISON OF DISCRETIONARY ACCRUALS' SIGNAL BY INCOME TAXATION REGIME

#### 5.3.1. DESCRIPTIVE STATISTICS

Table 18 shows frequencies for the variable SIGNAL used to test the third hypothesis. To rule out the effects of outliers I excluded the observations greater than three times the standard deviation from the mean.

The results show that 37.6 percent of companies in the general regime reported negative discretionary accruals, while in STR this percentage is 40.7 percent. With regard to positive discretionary accruals, 59.3 percent of companies in STR present positive discretionary accruals while in general regime this percentage is 62.4 percent. Looking at Pearson's Chi-square result (70.642) and its associated significance (p-value=0.000), this difference between companies in general regime and companies in STR is statistically significant.

*Table 18 - Frequencies of signal variable*

		General Regime		STR		Total		<i>Pearsons' Qui-Square Test</i>
		n	%	n	%	n	%	
<b>SIGNAL</b>	<b>DA&lt;0</b>	60,936	37.6%	7,630	40.7%	68,566	37.9%	(70.642)***
	<b>DA&gt;0</b>	101,252	62.4%	11,109	59.3%	112,361	62.1%	
<b>Total</b>		162,188	100%	18739	100%	180,927	100%	

Notes: DA corresponds to the sign discretionary accruals.

Even though, it is relevant to relate the number of companies that report negative or positive discretionary accruals with the magnitude of its value. So, table 19 presents the univariate analysis of absolute value of discretionary accruals pooled by income taxation regime for 2014-2015.

Mean and median of positive and negative discretionary accruals are presented in Table 19 for companies that choose STR and for companies in general regime. The table also

presents the differences from subtracting the means and medians of positive and negative discretionary accruals reported by income taxation regime and also by signal of discretionary accruals, along with the results of t-tests and Wilcoxon/Mann-Whitney tests of the differences between the two samples.

Comparing by income taxation regime, companies that choose STR present a mean (median) of positive discretionary accruals of 38.1 percent (19.3 percent) of total assets while the mean (median) of companies in general regime is 33.9 percent (18.5 percent) of total assets. About the differences between these two samples, companies in general regime report a positive discretionary accruals that is, on average, 4.2 percent of total assets lower than the positive discretionary accruals reported by companies in STR. The difference in median of positive discretionary accruals between the two samples is -0.8 percent of total assets. Differences in the mean and the medians are statistically significant. If I look at negative discretionary accruals, only the differences between the means of companies in general regime and companies in STR are statistically significant. Then, the mean of negative discretionary accruals of companies in general regime exceeded those of companies in STR by 3.4 percent of total assets.

**Table 19 – Mean and median of positive and negative discretionary accruals by income taxation regime**

	Positive DA		Negative DA	
	Mean	Median	Mean	Median
<b>STR</b>	0.381	0.193	0.483	0.220
<b>General Regime</b>	0.339	0.185	0.517	0.215
<b>Differences<sup>1</sup></b>	-0.042 (-5.652)***	-0.008 (4.612)***	0.034 (2.538)**	-0.005 (0.829)

<sup>1</sup> p-values for means are from t-tests and p-values for medians are from Wilcoxon /Mann-Whitney tests

Based on this I conclude that companies in general regime are more likely to manage earnings downwards while companies in STR are more likely to manage earnings upwards.

However, the mean of positive discretionary accruals of companies in general regime and the mean of negative discretionary accruals of companies in STR is still considerable. This highlights that other variables could influence the way that companies made use of discretionary accruals to increase or decrease earnings.

### **5.3.2. MULTIVARIATE ANALYSIS**

Table 20 shows the Pearson correlations below the diagonal and the Spearman correlations above the diagonal. This correlation matrix is to examine whether multicollinearity is a potential issue. With the exception of correlation between the variables LOSS with ROA and LOSS with TB, all the other correlations are below 0.80.

Table 20 - Pearson and Spearman correlations

	DA	CHSALES	LEV	LOSS	OTHER_REV	ROA	SIGNAL	SIZE	STR	TB
DA	<b>1.000</b>	<b>-0.028</b>	<b>0.155</b>	<b>0.043</b>	<b>-0.012</b>	<b>-0.034</b>	<b>-0.060</b>	<b>-0.272</b>	<b>0.011</b>	<b>-0.047</b>
	-----	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
CHSALES	<b>0.016</b>	<b>1.000</b>	<b>-0.005</b>	<b>0.043</b>	<b>-0.003</b>	<b>0.247</b>	<b>-0.199</b>	<b>0.056</b>	<b>-0.008</b>	<b>0.142</b>
	(0.000)	-----	(0.050)	(0.000)	(0.221)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
LEV	<b>0.238</b>	<b>0.000</b>	<b>1.000</b>	<b>0.443</b>	<b>0.019</b>	<b>-0.477</b>	<b>-0.245</b>	<b>-0.278</b>	<b>-0.003</b>	<b>-0.374</b>
	(0.000)	(0.872)	-----	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.274)	(0.000)
LOSS	<b>0.106</b>	<b>-0.010</b>	<b>0.121</b>	<b>1.000</b>	<b>-0.069</b>	<b>-0.848</b>	<b>-0.196</b>	<b>-0.221</b>	<b>0.060</b>	<b>-0.806</b>
	(0.000)	(0.000)	(0.000)	-----	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
OTHER_REV	<b>0.063</b>	<b>-0.002</b>	<b>0.134</b>	<b>0.000</b>	<b>1.000</b>	<b>0.051</b>	<b>0.033</b>	<b>0.082</b>	<b>-0.033</b>	<b>0.065</b>
	(0.000)	(0.447)	(0.000)	(0.861)	-----	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
ROA	<b>-0.163</b>	<b>0.003</b>	<b>-0.468</b>	<b>-0.179</b>	<b>-0.138</b>	<b>1.000</b>	<b>0.186</b>	<b>0.194</b>	<b>-0.039</b>	<b>0.639</b>
	(0.000)	(0.149)	(0.000)	(0.000)	(0.000)	-----	(0.000)	(0.000)	(0.000)	(0.000)
SIGNAL	<b>-0.092</b>	<b>-0.018</b>	<b>-0.072</b>	<b>-0.196</b>	<b>-0.011</b>	<b>0.077</b>	<b>1.000</b>	<b>0.291</b>	<b>-0.020</b>	<b>0.160</b>
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	-----	(0.000)	(0.000)	(0.000)
SIZE	<b>-0.310</b>	<b>0.006</b>	<b>-0.277</b>	<b>-0.233</b>	<b>-0.147</b>	<b>0.236</b>	<b>0.284</b>	<b>1.000</b>	<b>-0.091</b>	<b>0.160</b>
	(0.000)	(0.008)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	-----	(0.000)	(0.000)
STR	<b>0.006</b>	<b>-0.004</b>	<b>0.005</b>	<b>0.060</b>	<b>-0.014</b>	<b>-0.017</b>	<b>-0.020</b>	<b>-0.086</b>	<b>1.000</b>	<b>-0.124</b>
	(0.016)	(0.064)	(0.025)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	-----	(0.000)
TB	<b>-0.023</b>	<b>0.000</b>	<b>-0.022</b>	<b>-0.251</b>	<b>-0.007</b>	<b>0.025</b>	<b>0.038</b>	<b>0.045</b>	<b>-0.014</b>	<b>1.000</b>
	(0.000)	(0.936)	(0.000)	(0.000)	(0.006)	(0.000)	(0.000)	(0.000)	(0.000)	-----

Notes: Pearson correlation coefficients are shown below the diagonal and the Spearman correlation coefficients are shown above the diagonal. |DA| is the absolute value of discretionary accruals. CHSALES is the change on company's sales and is measured by net sales and services in period t less net sales and services in period t-1 deflated by net sales and services in period t-1. LEV corresponds to company's leverage and is measured by company's total debt scaled by lagged assets. LOSS is 1 if company reports a negative taxable income and 0 otherwise. OTHER\_REV is company's other incomes. ROA is company's return on assets and is measured with operating income scaled by lagged assets. SIGNAL correspond to signal of discretionary accruals and assumes the value 1 if discretionary accruals is positive and 0 otherwise. SIZE corresponds to natural logarithm of company's total assets. STR is a dummy variable which is 1 if company chooses STR and 0 if company income taxation regime is general regime. TB corresponds to company's tax burden measured by the ratio of tax expense over profit before interest and tax.

A limitation of the univariate analysis thus far is that it ignores a number of variables that potentially confound my results. Therefore, in Table 21 I present the results of the multivariate analysis relating the discretionary accruals with the interaction of STR with the signal of discretionary accruals. The signal of discretionary accruals by income taxation regime is explained by 13 percent by the model. The Chi-squared test is significant and I conclude that the model is reliable.

The coefficient of STR variable in the pooled estimated regression relates to a dummy variable representing the impact in negative discretionary accruals if companies have choose STR. Then, companies that are in STR present a negative discretionary accruals that is, on average, 9.5 percent lower than companies in general regime.

In turn, the interaction variable of interest STR\*SIGNAL shows whether the positive discretionary accruals is different for companies in STR and companies in general regime. Its coefficient is positive and significant at 1 percent significance level which suggests that companies in STR present a higher positive discretionary accruals then companies in general regime. Therefore, companies in STR present a positive discretionary accruals that is, on average, 5.5 percent higher than companies in the general regime.

The majority of control variables in the regression model in Table 21 are significantly associated with discretionary accruals. All of these variables are consistent with initial predictions and are statistically significant at a 1 percent level, except tax burden (TB) and other income (OTHER\_INCOME) variables, which present coefficients that are consistent with initial predictions but that are not statistically significant.

To mitigate the effect of any cross-sectional correlation in the regression error terms, I also estimate the model in equation (6) separately for each of the companies in general regime and companies that choose STR. The coefficients for these estimations are presented in the second and third column of Table 21 along with related t-statistics. The results are consistent with the pooled estimation. In particular, the coefficient of SIGNAL dummy variable is statistically significant and equal to -0.014 and 0.043 for companies in general regime and companies in STR, respectively. Thus, by the comparison of its values, there is evidence that, when discretionary accruals are positive, companies in

general regime present discretionary accruals that are lower by 1.4 percent of total assets, while companies in STR have positive discretionary accruals that are higher by 4.3 percent of total assets.

*Table 21 - Comparison of DA's signal by income taxation regime*

Variables	Exp. Sign	Pooled estimate		General Regime		STR	
		Coefficient	Prob.	Coefficient	Prob.	Coefficient	Prob.
		(t-statistics)		(t-statistics)		(t-statistics)	
<b>Intercept</b>		<b>2.654</b> (106.671) ***		<b>2.682</b> (102.406) ***		<b>2.428</b> (29.680) ***	
<b>STR</b>	-	<b>-0.095</b> (-9.243) ***					
<b>SIGNAL</b>		<b>-0.015</b> (-3.395) ***		<b>-0.014</b> (-3.033) ***		<b>0.043</b> (3.226) ***	
<b>STR*SIGNAL</b>	+	<b>0.055</b> (4.196) ***					
<b>CHSALES</b>	+	<b>0.002</b> (7.988) ***		<b>0.002</b> (7.602) ***		<b>0.019</b> (5.611) ***	
<b>ROA</b>	-	<b>-0.012</b> (-11.649) ***		<b>-0.015</b> (-13.011) ***		<b>0.004</b> (1.695) *	
<b>LEV</b>	+	<b>0.013</b> (60.069) ***		<b>0.013</b> (55.108) ***		<b>0.020</b> (23.658) ***	
<b>TB</b>	+/-	<b>-0.001</b> (-0.240)		<b>-0.001</b> (-0.429)		<b>-0.001</b> (-0.117)	
<b>OTHER_REV</b>	+	<b>0.006</b> (1.137)		<b>0.007</b> (1.185)		<b>-0.031</b> (-1.392)	
<b>SIZE</b>	+/-	<b>-0.475</b> (-98.865) ***		<b>-0.480</b> (-94.476) ***		<b>-0.451</b> (-30.129) ***	
<b>LOSS</b>		<b>0.065</b> (14.551) ***		<b>0.064</b> (13.751) ***		<b>0.039</b> (2.822) ***	
<b>ID</b>		INCLUDED		INCLUDED		INCLUDED	
<b>ST</b>		INCLUDED		INCLUDED		INCLUDED	
N		180,927		162,188		18,739	
Adjusted R <sup>2</sup>		0.130		0.132		0.124	
F-Value		1924.703 ***		2046.987 ***		220.552 ***	

Notes: STR is a dummy variable which is 1 if company choose STR and 0 if company is in general regime. SIGNAL is a dummy variable which is 1 if DA is positive and 0 otherwise. CHSALES is the change on company's sales and is measured by net sales and services in period t less net sales and services in period t-1 deflated by net sales and services in period t-1. ROA is company's return on assets and is measured with operating income scaled by lagged assets. LEV corresponds to company's leverage and is measured by company's total debt scaled by lagged assets. TB corresponds to company's tax burden measured by the ratio of tax expense over profit before interest and tax. OTHER\_REV is company's other incomes. LOSS is 1 if company reports a negative taxable income and 0 otherwise.

## **5.4. ACCRUALS COMPONENTS MANAGEMENT BY INCOME TAXATION REGIMES**

### **5.4.1. DESCRIPTIVE STATISTICS**

Table 22 shows the descriptive statistics for variables used to test the fourth hypothesis by DBTA and DBOA's signal. To rule out the effects of outliers I exclude the observations greater than three times the standard deviation from the mean.

In general, companies manage earnings by using DBTA and DBOA simultaneously in different directions. By consulting the Table 22, it is evident that the number of companies that manage earnings downwards to avoid tax payment by using DBTA, and manage earnings upwards to mask their tax avoidance by using DBOA represent more than 60% of the sample (248,676 firm-year observations of a total of 405,625). In average terms, companies present a negative DBTA of 2.5 percent of total assets and made use of positive DBOA to upward earnings representing 11.4 percent of total assets. In its turn, companies that present a negative DBOA (15.8 percent of total assets) tend to mask the earnings management practices by using DBTA (7.0 percent of total assets).

Table 22 – Descriptive statistics of fourth hypothesis' variables by DBTA and DBOA's signal

<b>PANEL A: Descriptive statistics for main variables of fourth hypothesis</b>									
	<b>DBOA</b>	<b>DBTA</b>	<b>LOSS</b>	<b>LEV</b>	<b>ROA</b>	<b>SIZE</b>	<b>TB</b>	<b>CHSALES</b>	
<b>Mean</b>	0.009	0.012	0.413	1.464	-0.148	4.766	0.156	0.222	
<b>Std. Dev.</b>	0.300	1.040	0.492	9.051	3.792	0.447	0.935	9.935	
<b>Minimum</b>	-5.992	-28.315	0.000	-2.774	-808.489	-2.000	-35.068	-1.000	
<b>Median</b>	0.025	0.066	0.000	0.696	0.015	4.799	0.050	-0.028	
<b>Maximum</b>	5.995	28.441	1.000	1196.462	887.820	5.699	35.596	3898.281	
<b>N</b>	405,625								
<b>PANEL B: Descriptive statistics for main variables when DBOA is positive</b>									
	<b>DBOA</b>	<b>DBTA</b>	<b>LOSS</b>	<b>LEV</b>	<b>ROA</b>	<b>SIZE</b>	<b>TB</b>	<b>CHSALES</b>	
<b>Mean</b>	0.114	-0.025	0.410	1.405	-0.136	4.745	0.162	0.012	
<b>Std. Dev.</b>	0.207	0.985	0.492	9.382	3.487	0.440	0.986	2.320	
<b>Minimum</b>	0.000	-28.315	0.000	-2.774	-607.374	-2.000	-35.068	-1.000	
<b>Median</b>	0.070	0.046	0.000	0.659	0.016	4.774	0.044	-0.067	
<b>Maximum</b>	5.995	27.670	1.000	1196.462	887.820	5.699	35.596	704.351	
<b>N</b>	248,676								
<b>PANEL C: Descriptive statistics for main variables when DBOA is negative</b>									
	<b>DBOA</b>	<b>DBTA</b>	<b>LOSS</b>	<b>LEV</b>	<b>ROA</b>	<b>SIZE</b>	<b>TB</b>	<b>CHSALES</b>	
<b>Mean</b>	-0.158	0.070	0.418	1.557	-0.167	4.798	0.147	0.555	
<b>Std. Dev.</b>	0.346	1.120	0.493	8.499	4.231	0.457	0.849	15.697	
<b>Minimum</b>	-5.992	-28.041	0.000	-0.446	-808.489	-2.000	-32.304	-1.000	
<b>Median</b>	-0.057	0.093	0.000	0.749	0.014	4.839	0.051	0.038	
<b>Maximum</b>	0.000	28.441	1.000	1018.767	76.700	5.699	33.619	3898.281	
<b>N</b>	156,949								

Notes: DBOA correspond to company's discretionary book-only accruals and DBTA correspond to company's discretionary book-tax accruals. CHSALES is the change on company's sales and is measured by net sales and services in period t less net sales and services in period t-1 deflated by net sales and services in period t-1. ROA is company's return on assets and is measured with operating income scaled by lagged assets. SIZE corresponds to natural logarithm of company's total assets. TB corresponds to company's tax burden measured by the ratio of tax expense over profit before interest and tax. LEV corresponds to company's leverage and is measured by company's total debt scaled by lagged assets. LOSS is 1 if company reports a negative taxable income and 0 otherwise.



Nevertheless, the mean value of DBOA and DBTA from companies that made use of positive DBTA and negative DBOA simultaneously is still considerable, which highlights that other variables can influence the companies' behaviour about the use of DBTA and DBOA.

#### **5.4.2. MULTIVARIATE ANALYSIS**

Table 23 shows the correlations among the variables used in the fourth regression analysis. This correlation matrix is to examine whether multicollinearity is a potential issue. All the correlations are below 0.80. Also, there is a negative association between DBTA and DBOA, which provides some evidence that earnings management with DBOA increases when book income is reduced by DBTA.

To confirm that collinearity does not affect my results I also performed a multicollinearity test as shown in Table 23. I find that all variance inflation factors (VIF) are below the standard acceptable level of 3 (Judge, Hill, Griffiths, Lutkepohl & Lee, 1988).

Table 23 – Correlation coefficients among variables

	DBOA	DBTA	CHSALES	ROA	SIZE	TB	LEV	LOSS	VIF
<b>DBOA</b>	<b>1</b> ---								
<b>DBTA</b>	<b>-0.161**</b> (0.000)	<b>1</b> ---							<b>1.034</b>
<b>CHSALES</b>	<b>-0.026**</b> (0.000)	<b>-0.016**</b> (0.000)	<b>1</b> ---						<b>1.001</b>
<b>ROA</b>	<b>0.006**</b> (0.000)	<b>0.066**</b> (0.000)	<b>0.001</b> (0.410)	<b>1</b> ---					<b>1.174</b>
<b>SIZE</b>	<b>-0.016**</b> (0.000)	<b>0.146**</b> (0.000)	<b>-0.002</b> (0.159)	<b>0.121**</b> (0.000)	<b>1</b> ---				<b>1.121</b>
<b>TB</b>	<b>-0.000</b> (0.980)	<b>0.013**</b> (0.000)	<b>-0.001</b> (0.470)	<b>0.011**</b> (2.387)	<b>0.037**</b> 0.000	<b>1</b> ---			<b>1.047</b>
<b>LEV</b>	<b>0.008**</b> (0.000)	<b>-0.108**</b> (0.000)	<b>-0.000</b> (0.851)	<b>-0.380**</b> (0.000)	<b>-0.222**</b> (0.000)	<b>-0.017**</b> (0.000)	<b>1</b> ---		<b>1.223</b>
<b>LOSS</b>	<b>-0.001</b> (0.614)	<b>-0.095**</b> (0.000)	<b>-0.008**</b> (0.000)	<b>-0.089**</b> (0.000)	<b>-0.186**</b> (0.000)	<b>-0.209**</b> (0.000)	<b>0.099**</b> (0.000)	<b>1</b> ---	<b>1.143</b>

\*\* Correlation is significant at the 0.01 level (2-tailed).

Notes: DBOA correspond to company's discretionary book-only accruals and DBTA correspond to company's discretionary book-tax accruals. CHSALES is the change on company's sales and is measured by net sales and services in period t less net sales and services in period t-1 deflated by net sales and services in period t-1. ROA is company's return on assets and is measured with operating income scaled by lagged assets. SIZE corresponds to natural logarithm of company's total assets. TB corresponds to company's tax burden measured by the ratio of tax expense over profit before interest and tax. LEV corresponds to company's leverage and is measured by company's total debt scaled by lagged assets. LOSS is 1 if company reports a negative taxable income and 0 otherwise.

Besides, a limitation of the univariate analysis thus far is that it ignores a number of variables that potentially confound my results. Therefore, Table 24 shows the results for the association between DBOA and DBTA. The coefficient of interest is the coefficient of discretionary book-tax accruals (DBTA) and is -0.047 (t-value = - 104.454), which is negative and significant at the 1 percent significance level. These results implies that earnings management with DBOA increases when book income is reduced by DBTA. In fact, companies have, in general regime, incentives to report higher book income and lower taxable income. Since higher revenues and lower expenses increase both financial profits and income tax liabilities, a trade-off exists between tax planning and financial reporting objectives. To offset the potential costs related with this trade-off, companies try to increase book income by using DBOA when attempting to decrease taxable income. This result implies that firms with DBTA have a tendency to inflate earnings upward using DBOA. Thus, the fourth hypothesis is supported.

**Table 24 – Association between DBTA and DBOA**

<b>Variables</b>	<b>Exp. Sign</b>	<b>Coefficient (t-statistics)</b>	<b>Prob.</b>
<b>Interception</b>		<b>-0.012</b> (-2.055)	**
<b>DBTA</b>	-	<b>-0.047</b> (-104.454)	***
<b>TB</b>	+/-	<b>-0.001</b> (-1.067)	
<b>SIZE</b>	+/-	<b>0.004</b> (3.808)	***
<b>CHSALES</b>	+	<b>-0.001</b> (-18.802)	***
<b>ROA</b>	-	<b>0.001</b> (8.715)	***
<b>LEV</b>	-	<b>-0.000</b> (-0.837)	
<b>LOSS</b>	-	<b>-0.007</b> (-7.010)	***
<b>ID</b>	N/A	<b>INCLUDED</b>	
<b>ST</b>	N/A	<b>INCLUDED</b>	
	N	405,625	
	Adjusted R <sup>2</sup>	0.028	
	F-value	1062.330	***

Notes: DBTA correspond to company's discretionary book-tax accruals. TB corresponds to company's tax burden measured by the ratio of tax expense over profit before interest and tax. SIZE corresponds to natural logarithm of company's total assets. CHSALES is the change on company's sales and is measured by net sales and services in period t less net sales and services in period t-1 deflated by net sales and services in period t-1. ROA is company's return on assets and is measured with operating income scaled by lagged assets. LEV corresponds to company's leverage and is measured by company's total debt scaled by lagged assets. LOSS is 1 if company reports a negative taxable income and 0 otherwise.

## **6. SUMMARY AND CONCLUSIONS**

Portuguese policy makers are conscious of the need to change the current STR in order to find a consensual income taxation regime for SMEs and consequently promote the option for a simplified and easier to control regime.

Progress on this issue has been hampered by a gap in the tax literature on the determinants of the choice about income taxation regimes. The largely unaddressed question bearing on this issue is the extent to which SMEs' choice is related with reporting quality and the use of earnings management practices. This dissertation contributes to the taxation literature by answering this question in a unique setting in which SMEs have discretion to apply either one of the income taxation regimes.

The results of this study support my initial prediction that earnings management, although it is not the main, is one determinant of choice between income taxation regimes. However, the results also provide empirical evidence supporting the importance of tax burden in the choice between income taxation regimes, giving it the main role in this issue. These findings are consistent with Dâmaso and Martins (2015), who demonstrate that the majority of certified accountants do not recommend STR due primarily to the saving of tax payable, even though these two concepts may be related to each other.

It is also important to understand whether the option for STR had an impact on earnings quality. Concentrating on companies that chose STR in 2014-2015 and comparing this post-STR period with pre-STR (2011-2013), I find that earnings management declines after the option for STR and confirm that after the choice for this regime, companies do not have the same incentives to manage their earnings as when they are in the general regime, especially because the determination of the taxable income in STR departs from the book income. This is consistent with the idea that the income taxation regime plays an important role in financial reporting characteristics, probably more important than accounting standards alone.

I therefore suggest that policy makers should devote their efforts to creating an income taxation regime applied to SMEs that is completely or partially independent from accounting, based on objective factors. In particular, the average profit margin on sales

and services, the market value of the goods or services, the average rate of return on invested capital, or the location and size of the activity carried out are factors that appear to be better able to guarantee an efficient and attractive income taxation regime applied to Portuguese SMEs. The analysis of the consequences of the earnings quality on tax choices is a promising avenue for future research.

In the third hypothesis I examine the relationship between the income taxation regime and the signal of earnings management, measured by discretionary accruals. I hypothesize that companies in the general regime are more likely to manage earnings downwards while companies in STR are more likely to manage earnings upwards. This hypothesis is supported by evidence from a sample composed of companies in STR and companies in general regime in the years 2014-2015. Specifically, companies in STR report positive discretionary accruals that is, on average, 5.5 percent higher than companies in the general regime. In turn, companies in STR report negative discretionary accruals that is, on average, 9.5 percent lower than companies in general regime.

The higher book-tax conformity in the general income taxation regime allows companies to manage earnings in two different ways simultaneously. Accruals with relatively high tax conformity are used to achieve tax planning goals, and accruals with relatively low tax conformity are used to accomplish financial reporting objectives. Using a sample of 405,625 firm-year observations, hypothesis 4 examines how companies in the general income taxation regime use book-tax accruals and book-only accruals considering that incentives for book income disclosure and taxes reduction are not independent and must be considered together. The results of testing this hypothesis demonstrate that companies use book-tax accruals to lower taxable income and book-only accruals to increase book income.

This study is subject to several limitations, mainly related to the database used. First, in the sample selection not all of the conditions for choosing STR were addressed. It is not possible with the initial sample to know if companies do not have their accounts mandatorily audited, if their share capital is not held in more than 20 percent, directly or indirectly, by companies who do not fulfil any of the conditions to choose STR, and if they adopt the accounting standard applicable to micro-entities.

This study also did not take into account companies that began their activity in one of the years 2011-2015, considering that one condition from the sample selection process is to exclude companies without information in one or more years. This can be a limitation considering that in STR and at the beginning of the activity it may have some benefits, such as the reduction of some coefficients in the calculation of the taxable income and the minimum taxable income.

Another limitation of this study is that it was not possible to differentiate the nature of the companies' income to allow a correct perception about the coefficient of the STR to be applied, and consequently the accurate tax burden calculation if companies that are in general regime have chosen STR. It would be very interesting to analyse whether there will be any adjustment in conclusions concerning the income detail, especially in terms of tax burden.

Future research is needed to investigate the earnings management consequences for tax purposes and compare the earnings management practices when the option of choosing between different income taxation regimes exists. In addition, evidence from other geographic, cultural, and institutional contexts is useful to provide a comparative counterpoint about the influence of accounting choices on tax decisions.

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**APPENDICE 1**  
**DEFINITION OF ID VARIABLE**

<b>CAE</b>	<b>Description</b>		<b>Coefficient</b>	
01	Agriculture, hunting, and related service activities	A	0.04	
02	Forestry and logging	A		
03	Fishing and aquaculture	A		
05	Mining of coal and lignite	B		
06	Extraction of crude petroleum and natural gas	B		
07	Mining of metal ores	B		
08	Other Extractive Industries	B		
09	Services related with Extrative Industries	B		
10	Manufacture of food products	C		
11	Manufacture of beverages	C		
12	Manufacture of tobacco products	C		
13	Manufacture of textiles	C		
14	Manufacture of wearing apparel	C		
15	Manufacture of leather and related products	C		
16	Manufacture of wood and of products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials	C		
17	Manufacture of paper and paper products	C		
18	Printing and reproduction of recorded media	C		
19	Manufacture of coke and refined petroleum products	C		
20	Manufacture of chemicals and chemical products	C		
21	Manufacture of basic pharmaceutical products and pharmaceutical preparations	C		
22	Manufacture of rubber and plastic products	C		
23	Manufacture of other non-metallic mineral products	C		
24	Manufacture of basic metals	C		
25	Manufacture of fabricated metal products, except machinery and equipment	C		
26	Manufacture of computer, electronic, and optical products	C		
27	Manufacture of electrical equipment	C		
28	Manufacture of machinery and equipment n.e.c.	C		
29	Manufacture of motor vehicles, trailers, and semi-trailers	C		
30	Manufacture of other transport equipment	C		
31	Manufacture of furniture	C		
32	Other manufacturing	C		0.04
33	Repair and installation of machinery and equipment	C		0.1

<b>CAE</b>	<b>Description</b>		<b>Coefficient</b>
35	Electricity, gas, steam, and air conditioning supply	D	0.04
36	Water collection, treatment, and supply	E	
37	Sewerage	E	0.1
38	Waste collection, treatment, and disposal activities; materials recovery	E	
39	Remediation activities and other waste management services	E	
41	Construction of buildings	F	0.04
42	Civil engineering	F	0.75
43	Specialized construction activities	F	0.1
45	Wholesale and retail trade and repair of motor vehicles and motorcycles	G	0.04 or 0.10
46	Wholesale trade, except of motor vehicles and motorcycles	G	0.04 or 0.75
47	Retail trade, except of motor vehicles and motorcycles	G	0.04
49	Land transport and transport via pipelines	H	0.1
50	Water transport	H	
51	Air transport	H	
52	Warehousing and support activities for transportation	H	
53	Postal and courier activities	H	
55	Accommodation	I	0.04
56	Food and beverage service activities	I	
58	Publishing activities	J	0.75
59	Motion picture, video and television programme production, sound recording, and music publishing activities	J	0.1
60	Programming and broadcasting activities	J	
61	Telecommunications	J	
62	Computer programming, consultancy, and related activities	J	0.75
63	Information service activities	J	0.1
64	Financial service activities, except insurance and pension funding	K	
65	Insurance, reinsurance, and pension funding, except compulsory social security	K	
66	Activities auxiliary to financial services and insurance activities	K	
68	Real estate activities	L	0.75
69	Legal and accounting activities	M	
70	Activities of head offices; management consultancy activities	M	

<b>CAE</b>	<b>Description</b>		<b>Coefficient</b>
71	Architectural and engineering activities; technical testing and analysis	M	
72	Scientific research and development	M	
73	Advertising and market research	M	
74	Other professional, scientific, and technical activities	M	
75	Veterinary activities	M	
77	Rental and leasing activities	N	0.1
78	Employment activities	N	
79	Travel agency, tour operator reservation service, and related activities	N	
80	Security and investigation activities	N	
81	Services to buildings and landscape activities	N	
82	Office administrative, office support, and other business support activities	N	
84	Public administration and defence; compulsory social security	O	
85	Education	P	
86	Human health activities	Q	
87	Residential care activities	Q	
88	Social work activities without accommodation	Q	
90	Creative arts and entertainment activities	R	0.75
91	Libraries, archives, museums, and other cultural activities	R	
92	Gambling and betting activities	R	
93	Sports activities and amusement and recreation activities	R	
94	Activities of membership organizations	S	
95	Repair of computers and personal and household goods	S	0.1
96	Other personal service activities	S	
97	Activities of households as employers of domestic personnel	T	
98	Undifferentiated goods- and services-producing activities of private households for own use	T	
99	Activities of extraterritorial organizations and bodies	T	