

Do Taxes Still Affect Earning Persistence?

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Abstract: While financial statements are the primary source of information about a firm, they tend to be under earnings management practices, namely to avoid paying tax. Therefore, we aim to examine whether taxes still affect earning persistence in an era of prevalent digital information. For that purpose, we use book–tax differences considering the deductible temporary differences and the taxable temporary differences. In addition, we analyze which of the two earnings components are more affected by taxes, specifically cash flow or accruals. We estimate econometric regressions using panel data to test our hypotheses. Through a sample of 421 small- and medium-sized (SME) Portuguese firms, between 2016 and 2020, we found empirical evidence that earning persistence tends to be lower when deductible temporary differences increase, while taxable temporary differences produce no statically significant effect. Furthermore, our results suggest that cash flow component increases more earning persistence than accruals. Therefore, deductible temporary difference may be an indicator of earnings management activities in these firms. These results are relevant, given the potential negative consequences of earnings management for the efficient decision making of stakeholders and even more because SMEs represent a substantial number of firms in European countries, particularly in Portugal.

Keywords: earning persistence; book–tax differences; accruals; cash flows



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1. Introduction

The financial statements aim to support users in decision making, as described in the Conceptual Framework of Portuguese Accounting and Financial Reporting Standards **CNC (2015b)**, which is based on the Conceptual Framework for Financial Reporting of the International Accounting Standards Board (IASB). Therefore, financial information has to reflect the true and fair view of entities, in order to allow the users a reliable evaluation (**Niyama et al. 2015**). In fact, financial statements are a fundamental source of information to analyze the economic and financial performance of entities as stated by **Jeon and Oh (2020)** and **Givoly et al. (2010)**. With regard to shareholders, the net income from the income statement is one of the critical diagnostic factors of financial performance (**Dichev et al. 2013**). Meanwhile, **Palepu et al. (2004)** mentioned that financial information must establish the conditions for investors to be able to predict the cash flows and structure of capital.

Financial reporting quality is fundamental to an efficient capital allocation across countries. In this sense, **Bradshaw et al. (2004)** found that American US investment is higher for non-US firms that exhibit accounting methods conforming to the US generally accepted accounting principles (GAAP) because such methods are perceived to enhance the quality of financial information. In the same vein, **Cerqueira and Pereira (2017)** argued that high earnings quality leads into more efficient decisions. Therefore, it is our motivation to analyze the underlying quality of reported earnings.

In spite of earnings quality being a broad concept, it is related to the usefulness of financial statements to several parties contracting with the firm (**Ball and Shivakumar 2005**). Actually, earnings quality is not directly observed, thus several proxies have been used in

prior literature as mentioned by [Schipper and Vincent \(2003\)](#), [Dechow et al. \(2010\)](#), [Ewert and Wagenhofer \(2011\)](#) and [Cerqueira and Pereira \(2020\)](#). The relevance of each proxy must be evaluated in the context of a specific decision model as [Dechow et al. \(2010\)](#) argued. The earning persistence approach represents a fundamental factor to promote an effective evaluation to support decision-making ([Kolozsvari and Macedo 2016](#); [Kimouche 2022](#)) because it allows to anticipate firms' ability to create future cash flows.

In turn, as entities are motivated to reduce their tax payments, this may lead them to engage in earnings management activities, denoted as tax avoidance by [Blaylock et al. \(2012\)](#) and [Kimouche \(2022\)](#). [Na et al. \(2021\)](#) stated that tax affects the short-term performance and long-term value of a firm. Therefore, it is important to analyze the impact of taxes on earnings quality. In this context, [Kimouche \(2022\)](#) argued that as deferred tax is an accounting accrual it is expected to affect earning persistence. In the same vein, [Hanlon \(2005\)](#) and [Blaylock et al. \(2012\)](#) found that large book–tax differences tend to reduce earning persistence which is consistent with lower earnings quality when book income is substantial higher than tax income. Considering that the empirical evidence is not yet fully convergent on this matter, we investigate whether the existent differences between accounting and tax regulations may be an opportunity to engage in earnings management activities by reducing earning persistence, both in the accruals and cash flow components of earnings.

More specifically, in this paper we aim to investigate whether taxes still determine earning persistence in this age of digital information. In fact, accounting and taxes rely on different regulations; however, digital vehicles accelerate the updating and institutional crossing of information ([Nyaribo 2016](#)), making information more accessible and, in turn, more difficult to incur on earning management activities. For this purpose, we use deferred taxes and earning persistence following prior studies ([Hanlon 2005](#); [Blaylock et al. 2012](#); [Saka et al. 2019](#); [Koubaa and Anis 2015](#); [Marques et al. 2016](#); [Kimouche 2022](#)). Our evidence suggests that when the deductible temporary differences increase, leading to deferred tax assets, earnings' persistence decreases, showing that deductible temporary tax differences may be a possible mechanism of earnings management. Furthermore, we find that the cash flow component of earnings increases more earning persistence than the accruals component, which is consistent with accruals exhibiting a higher likelihood to be managed.

This study aims at fill in the lack of evidence regarding the impact of book–tax difference in earnings quality for SME Portuguese firms. Furthermore, the evidence found of the influence of taxes on accounting is important to support investment, credit, and tax regulation decisions, especially within SMEs, which represent the basis of business activity in several European economies.

The remainder of this paper is organized as follows. In Section 2 we provide a brief literature review and develop the hypotheses. In Section 3 we present sample selection procedures and describe the variables and specifications of the empirical model. In Section 4 we present the descriptive statistics and results of the empirical tests. We provide the concluding remarks in Section 5.

2. Literature Review

2.1. Book–Tax Differences Context

Most firms annually prepare two different earnings. On the one hand, the entities calculate the accounting earnings based on the accounting standards to provide information to the stakeholders. On the other hand, the taxable earnings are determined through the application of tax regulations, the corporate income tax code ([Hanlon 2005](#); [Abdul and Holland 2015](#); [Kimouche 2022](#)).

Accounting and tax regulations rely on different objectives and, for this reason, follow divergent paths ([Hanlon 2005](#); [Koubaa and Anis 2015](#); [Görlitz and Dobler 2021](#)), which justify different earnings. While accounting aims to provide information about entities to several stakeholders, in order to improve decision-making, taxation is an economic and social policy instrument that aims to finance the State budget.

According to [Fekete et al. \(2012\)](#), [Nobes and Parker \(2010\)](#) and [Burgstahler et al. \(2006\)](#), accounting diversity can effectively come from the influence of taxation on accounting. Prior literature mentions that the fiscal influence on accounting practices differ by country ([Fekete et al. 2012](#)) and it is substantial in the accounting systems countries of continental European as mentioned by [Fearnley and Gray \(2015\)](#), [Nobes and Parker \(2010\)](#) and [Nobes \(1998\)](#). In some countries, financial information is prepared to determine the taxable amount, which means that accounting principles are, in a certain way, adapted and conditioned by tax laws. In the Portuguese case, as in continental European countries, tax regulation has a significant influence on accounting, namely on book earnings, given that the main recipient of financial statements is the tax authority (TA). Assuming this fiscal influence on accounting then we expect that book–tax differences to be small. In addition, [Mills and Newberry \(2001\)](#) found evidence suggesting that book–tax differences may be a less useful indicator of tax planning activities in private (non-listed) entities because they have fewer incentives to report non-conforming book income.

In Portugal, there are differences between the accounting and tax regulations, which become visible when calculating the taxable income. These divergences lead to the rectification of the accounting earnings, in order to obtain the taxable earning. Consistently, [Brouwer and Naarding \(2018\)](#) argued that accounting treatment for deferred taxes is under both estimation uncertainty and managerial judgment.

The book–tax differences may be temporary or permanent. Regarding permanent differences, the authors [Hanlon \(2005\)](#) and [Blaylock et al. \(2012\)](#) associated them to facts that cannot be reversed in future years, resulting in a definitive reduction or increase in taxation, thus they affect a certain period and not any period after. For example, [Hanlon \(2005\)](#) argued that research and development expenses drive towards permanent differences. Temporary differences arise from differences between the carrying amount in the balance sheet of assets or liabilities and their tax base, according to the Portuguese accounting standard no. 25 [CNC \(2015a\)](#). In fact, temporary differences occur when there is an expense or income not considered for tax purposes, in the period in which they occur, but which will have future tax implications, that is, they will be accepted or taxable in the future ([Hanlon 2005](#); [Kimouche 2022](#)).

As in the previous literature, this work focuses on the study of temporary differences, which are split into two categories: taxable temporary differences and deductible temporary differences, that is, differences that incorporate amounts to be taxed or deducted in the future, respectively. Given this, there are differences that result in taxable amounts in determining taxable income for future periods, when the carrying amount of the asset is recovered or settled, and give rise to deferred tax liabilities. On the other hand, there are differences that result from amounts that are deductible in determining taxable income for future periods, when the carrying amount of the asset or liability is recovered or settled, and give rise to deferred tax assets ([Kimouche 2022](#)).

However, differences between accounting standards and tax regulations are not just inherent to the fact that they rely on different standards. Other reason underlying these divergences may arise from tax planning or earnings manipulation developed by the organizations' decision-makers. For example, [Saka et al. \(2019\)](#) find evidence that tax avoidance is a topical issue worldwide. [Koubaa and Anis \(2015\)](#) argued that book–tax differences may be explained by agency theory, insofar as the demand for monitoring profits and tax management may result from manager's opportunistic behavior. Furthermore, [Júnior et al. \(2019\)](#) found that differences between accounting and tax regulations reduce the level of earning persistence. Dividing earnings into its two components, cash flow and accruals, Hanlon, 2005 concluded that earning persistence is greater in years that book–tax differences are lower. [Ebaid \(2011\)](#) defined earning persistence as a qualitative characteristic of earnings, examining which of the earnings components (accruals or cash flows) has the greatest influence on earning persistence. This author found evidence that cash flows exhibit the greatest influence, confirming previous studies such as [Sloan \(1996\)](#)

and Hanlon (2005). To further develop the investigation, this work also divides earnings into those two components.

2.2. Hypotheses Development

While the International Financial Reporting Standards (IFRS) aim to provide superior information to market participants, there are several concerns, primarily because they are based on principles rather than rules, leading to different interpretations and giving a higher level of flexibility in financial reporting (Nobes 2006; Kvaal and Nobes 2010). Furthermore, the use of fair value by the IFRS may add volatility to financial statements, thus increasing the potential for managers' discretion (Ball 2006). However, it is expected that the IFRS increase the quality of reported earnings because the main purpose of its adoption is to enhance financial reporting as mentioned by Andre et al. (2015). Therefore, this debate, motivated previous studies, examines the quality of earnings. In fact, financial information quality is a fundamental condition for the decision-making process for stakeholders, as stated by Pereira et al. (2021). These authors found empirical evidence that managers tend to engage in more conservative accounting practices in order to capture stakeholders' expectations.

Although earnings quality is a broad concept, Dechow et al. (2010) presented several proxies, including earning persistence. Therefore, non-random earnings have greater relevance in the evaluation of firms by their stakeholders (Kolozsvari and Macedo 2016). In the same vein, Nichols and Wahlen (2004) mentioned that earning persistence is related to the non-volatility of earnings, corroborating the study of Sloan (1996) who has shown that the greater correlation of earnings between economic periods denotes a greater persistence and quality.

Furthermore, prior studies found that pre-tax income is less persistent for firms that recognize large amounts of temporary differences between accounting and taxation (Hanlon 2005; Saka et al. 2019; Marques et al. 2016). In the same vein, Na et al. (2021) found that tax benefits that produce temporary differences may be used to reduce corporate value. In a study of five Latin American countries, Marques et al. (2016) found that temporary differences exacerbate the uncertainty in future income due to earnings being more transitory and less persistent in years with higher book-tax differences. However, Kimouche (2022) found that earning persistence is high for Algerian firms but the deferred tax does not impact their earning persistence. For a Korean sample of firms, Hong and Shim (2019) found evidence that the adoption of the IAS 12 (that regulates the accounting treatment of taxes) eliminates the incremental effects of deferred tax.

Given the potential association between future earnings and taxes, in this paper we intend to study the influence of tax on earning persistence through the impact of temporary differences between Portuguese accounting and tax regulations which lead to the recognition of deferred taxes following Hanlon (2005). Therefore, we posit the first hypothesis:

H1. *Book-tax differences produce a negative impact on earning persistence in Portuguese SMEs.*

To further develop the analysis, it is important to examine the impact of deductible temporary differences, which give rise to deferred tax assets, on earning persistence. Hanlon (2005) and Blaylock et al. (2012) found that the greater the recognition of deductible temporary differences, the less persistent the results will be. These authors argued that large positive book-tax differences act like a "red-flag", indicating low earnings quality (less persistent earnings and accruals). In the same vein, a number of studies have reported evidence that the gap between accounting and taxing is largely attributable to earning management practices (Mills and Newberry 2001; Phillips et al. 2003; Koubaa and Anis 2015). Meanwhile, Blaylock et al. (2012) found that firms with large positive book-tax differences, likely arising from upward earnings management (tax avoidance), exhibit lower earning persistence and accruals than other firms with large negative book-tax differences. In the same sense, Görlitz and Dobler (2021) mentioned that prior literature

on earnings management show that deferred tax, namely deferred tax assets, may be an indicator of upward earnings management. Therefore, we consider that deductible temporary differences that produce deferred tax assets tend to reduce earnings quality, then we posit the following hypothesis:

H2. *Deductible temporary differences are negatively associated with earning persistence in Portuguese SMEs.*

Another important aspect is to analyze the impact of taxable temporary differences on earning persistence. Previous literature has not reported substantial evidence for this relationship. However, we expect that persistence to be lower the greater the taxable temporary differences are, and that this gives rise to deferred tax liabilities. Thus, we formulate the third hypothesis:

H3. *Taxable temporary differences are negatively associated with earning persistence in Portuguese SMEs.*

Previous studies have found that earnings are significantly less persistent than the cash flow component (Sloan 1996; Hanlon 2005; Blaylock et al. 2012). Therefore, the accruals component is likely to be less persistent than the cash flow component. Given previous literature (Hanlon 2005; Ebaid 2011), we aim to confirm whether the increase in temporary differences reduces the persistence of earnings in the accruals component more significantly than in the cash flow component. Thus, we formulate the fourth hypothesis that we split into two sub-hypotheses:

H4a. *The increase in deductible temporary differences decreases earning persistence more in the accruals component than in the cash flow component.*

H4b. *The increase in taxable temporary differences decreases earning persistence more in the accruals component than in the cash flow component.*

3. Empirical Results

3.1. Descriptive Statistic

Table 1 documents the descriptive statistics for the continuous variables included in the estimated regressions presented below.

Table 1. Descriptive statistics.

	Mean	St. Deviation	25%	Median	75%
$PTI_{i,t+1}$	0.024	0.097	−0.008	0.022	0.061
$PTI_{i,t}$	0.027	0.095	−0.004	0.0224	0.061
$PTCF_{i,t}$	0.063	0.155	0.010	0.050	0.105
$PTA_{i,t}$	−0.036	0.150	−0.078	−0.031	0.019
$SIZE_{i,t}$	41,100,000	245,439.585	6,037,000	11,980,000	22,070,000

PTI is the pre-tax income scaled by the average total assets; PTCF is the pre-tax cash flow scaled by the average total assets; PTA is the pre-tax accruals scaled by the average total assets; SIZE is total assets.

The first statistics show that pre-tax income represents 2.37% of assets on average and the pre-tax accruals present negative values in the mean and median (−0.0362 and −0.0312, respectively), which suggests that the cash flow component (representing in average terms 0.0627 of assets) is higher than pre-tax income. These statistics are similar to those obtained in previous studies, such as Dechow (1994), Hanlon (2005) and Blaylock et al. (2012).

In Table 2, we report the Pearson correlations between variables included in the empirical study.

Table 2. Matrix of Pearson's correlations.

	PTI _{t+1}	PTI _t	PTCF _t	PTA _t	DTD _t	TTD _t	SIZE _t
PTI _{t+1}	1	0.586	0.205	0.159	−0.120	−0.216	0.056
PTI _t	0.586	1	0.356	0.265	−0.211	−0.235	0.069
PTCF _t	0.205	0.356	1	−0.807	−0.026	−0.063	−0.032
PTA _t	0.159	0.265	−0.807	1	−0.106	−0.083	0.076
DTD _t	−0.120	−0.211	−0.026	−0.106	1	0.047	−0.071
TTD _t	−0.216	−0.235	−0.063	−0.083	0.047	1	−0.057
SIZE _t	0.056	0.069	−0.032	0.076	−0.071	−0.057	1

PTI is the pre-tax income scaled by the average total assets; PTCF is the pre-tax cash flow scaled by the average total assets; PTA is the pre-tax accruals scaled by the average total assets; TTD represents the taxable temporary difference and it is a dummy equal to 1 if taxable income is in the lowest quintile; DTD represents the deductible temporary difference and it is a dummy equal to 1 if deductible temporary differences is in the highest quintile; SIZE is total assets.

The evidence shows that pre-tax income between the next period and the current period are positively correlated at 0.5864.

Regarding the deductible (DTD) and taxable (TTD) temporary differences, each correlation with current pre-tax income is negative (−0.2106 and −0.2352, respectively), showing that the higher the temporary differences are the lower the earning persistence tends to be. Furthermore, PTCF exhibits a high and negative correlation with PTA (−0.8068), consistent with the studies carried out by [Dechow \(1994\)](#) and [Hanlon \(2005\)](#), denoting that a positive evolution of pre-tax cash flow causes a negative evolution of pre-tax accruals around 80%, or vice versa.

3.2. Econometric Regressions Results

The usual statistical tests selected the panel data model with random effects for individuals as the most appropriate for the empirical study (see Section 5). To test our hypotheses, we first estimated the regression relating the book–tax differences to earning persistence. Table 3 documents the estimation results:

Table 3. Book–tax difference effect on earnings quality.

Coefficients	Expected Sign	Coefficient	t-Value	Level of Significance
β_0		0.002	0.743	
β_1		0.007	1.225	
β_2		0.003	0.562	
β_3	+	0.731	25.766	***
β_4		0.007	0.144	
β_5	−	−0.374	−8.866	***

No. observations: 1684/ F statistic: 201.8; p -value = 0.000. R^2 adjusted: 0.375. $PTI_{t+1} = \beta_0 + \beta_1 PTI_{i,t} + \beta_2 TTD_{i,t} + \beta_3 DTD_{i,t} + \beta_4 PTI_{i,t} \times TTD_{i,t} + \beta_5 PTI_{i,t} \times DTD_{i,t} + \varepsilon_{t+1}$. PTI is the pre-tax income scaled by the average total assets; PTCF is the pre-tax cash flow scaled by the average total assets; PTA is the pre-tax accruals scaled by the average total assets; TTD represents the taxable temporary difference and it is a dummy equal to 1 if taxable income is in the lowest quintile; DTD represents the deductible temporary difference and it is a dummy equal to 1 if deductible temporary differences is in the highest quintile; SIZE is total assets. *** represents a statistic significance level of 1%.

The incremental effect of taxable temporary differences is given by the coefficient β_4 , which is not statistically significant. The coefficient β_5 gives the incremental effect of deductible temporary differences on earning persistence, which is statistically significant at the 1% level and has a negative sign, consistent with the evidence of [Hanlon \(2005\)](#) and [Blaylock et al. \(2012\)](#). This result suggests that the deductible temporary differences reduce earning persistence. In general terms, these evidences allow the confirmation of hypothesis H1, according to which book–tax differences negatively affect earning persistence in Portuguese SMEs.

To analyze in detail and confirm the robustness of the previous results we split the effect of each book–tax difference into two regressions: one regression for taxable temporary

differences and another for deductible temporary differences, which are independently estimated. Thus, the results documented in Tables 4 and 5 constitute a robustness analysis to the evidence reported in Table 3.

Table 4. Deductible temporary differences effect on earning persistence.

Coefficients	Expected Sign	Coefficient	t-Value	Level of Significance
β_0		0.003	1.332	
β_1		0.003	0.535	
β_2	+	0.739	29.266	***
β_3	−	−0.379	−9.111	***

No. observations: 1684. F statistic: 335.6; p -value = 0.000. R^2 adjusted: 0.353. $PTI_{i,t+1} = \beta_0 + \beta_1 PTI_{i,t} + \beta_2 DTD_{i,t} + \beta_3 PTI_{i,t} \times DTD_{i,t} + \varepsilon_{t+1}$. *** represents a statistic significance level of 1%.

Table 5. Taxable temporary differences effect on earning persistence.

Coefficients	Expected Sign	Coefficient	t-Value	Level of Significance
β_0		0.006	2.934	**
β_1	+	0.006	1.041	
β_2	+	0.578	25.475	***
β_3	−	0.080	1.540	

No. observations: 168. F statistic: 296.6; p -value: 0.000. R^2 adjusted: 0.454. $PTI_{i,t+1} = \beta_0 + \beta_1 PTI_{i,t} + \beta_2 TTD_{i,t} + \beta_3 PTI_{i,t} \times TTD_{i,t} + \varepsilon_{t+1}$. ***, ** represents a statistic significance level 1% and 5%, respectively.

The estimated coefficient β_3 for the incremental effect of deductible temporary differences is negative, as expected, and statistically significant at the 1% level, allowing the support of hypothesis H2 and H1. This evidence mean that deductible temporary differences tend to decrease earning persistence, consistent with studies developed by [Dechow \(1994\)](#), [Hanlon \(2005\)](#) and [Blaylock et al. \(2012\)](#).

The incremental impact of taxable temporary differences on earning persistence is given by β_3 , which remains statistically irrelevant and therefore without empirical evidence to support hypothesis H3. This is consistent with the result reported on Table 3 where taxable temporary differences, given by the coefficient β_4 , is not statistically significant.

To further the current study, we examined whether the book–tax differences have a higher impact on earning persistence in the accruals or cash flow components of earnings. Table 6 provides the results for this analysis:

Table 6. Taxable and deductible temporary differences effect on cash flow and accruals persistence.

Coefficients	Expected Sign	Coefficient	t-Value	Level of Significance
β_0		0.003	1.069	
β_1		0.002	0.279	
β_2		−0.003	−0.582	
β_3	+	0.726	25.073	***
β_4	+	0.745	25.181	***
β_5		0.058	1.034	
β_6	−	−0.354	−8.087	***
β_7		−0.054	−0.948	
β_8	−	−0.437	−8.927	***

No. observations: 1684. F statistic:128.3; p -value: 0.000. R^2 adjusted: 0.378. $PTI_{i,t+1} = \beta_0 + \beta_1 TTD_{i,t} + \beta_2 DTD_{i,t} + \beta_3 PTCF_{i,t} + \beta_4 PTA_{i,t} + \beta_5 PTCF_{i,t} \times TTD_{i,t} + \beta_6 PTCF_{i,t} \times DTD_{i,t} + \beta_7 PTA_{i,t} \times TTD_{i,t} + \beta_8 PTA_{i,t} \times DTD_{i,t} + \varepsilon_{t+1}$. *** represents a statistic significance level of 1%.

The coefficients β_3 and β_4 give the impact of both components of earnings in the current period relative to earnings in the next period. The results suggest that accruals and cash flow, respectively, have a significant positive impact on future earnings at the 0.1% level.

The coefficients that give the incremental effect of book–tax differences are β_5 and β_6 for cash flow, and β_7 and β_8 for accruals. The taxable temporary differences are not statistically significant for either cash flow or accruals, while the deductible tax differences are statistically significant, at the 1% level, and negative in both cases, as expected. Therefore, evidence emerges that deductible tax differences tend to reduce earning persistence in both components of earnings. In addition, the relationship $\beta_8 > \beta_6$ denotes that the increase in deductible temporary differences decreases earning persistence more in the accruals component than in the cash flow component, which supports hypothesis H4 and converges with Hanlon (2005) and Blaylock et al. (2012).

The p values of the F statistic are null in all regressions, meaning that at least one of the regression coefficients is statistically relevant (different from zero). Furthermore, the adjusted coefficient of determination R^2 shows that the variance of the dependent variable is reasonably (between 35.28% and 45.35%) explained by the independent variables for this sample of 421 Portuguese SMEs.

4. Discussion

The evidence supports hypothesis H1, meaning that book–tax difference reduces the earning persistence of Portuguese SMEs which is in line with Na et al. (2021), Marques et al. (2016) and Hanlon (2005). In addition, empirical results also support hypothesis H2, showing that deductible temporary differences tend to decrease earning persistence, although they reject hypothesis H3, whereby the taxable differences cannot be associated with earning persistence. Therefore, this evidence is consistent with the studies of Dechow (1994), Hanlon (2005) and Blaylock et al. (2012), which found that large positive book–tax differences can arise from earnings management activities, while large negative book–tax differences do not tend to produce a significant impact on earning persistence. In addition, these results are consistent with the literature review developed by Görlitz and Dobler (2021) on earnings management, pointing out that deferred tax assets may be used as an indicator of upward earnings management. In this sense, the positive (deductible) book–tax differences can be interpreted as an indicator of earnings management practices for external stakeholders in order to mitigate information asymmetry problems.

Furthermore, we found that both components of earnings, when combined with deductible temporary differences, reduce earning persistence. However, the impact on earning persistence is higher in the accruals component, which supports hypothesis H4 and is consistent with the findings reported by Dechow (1994), Hanlon (2005), Blaylock et al. (2012) and Ebaid (2011). Therefore, the accruals component of earnings is subject to higher earnings management activities in the sample of Portuguese SMEs.

5. Methods

5.1. Sample and Selection Procedures

The data were collected from the database SABI—Iberian Balance Sheet Analysis System. The sample contained financial information from Portuguese entities for the period from 2016 to 2020, inclusively. We choose this period due to changes in accounting regulations resulting from the transposition of EU Directive 2013/34/EU as of 1 January 2016.

The total number of Portuguese firms available in the SABI is 226,623. However, we considered SMEs as defined by the Portuguese accounting standards that fulfill two of the three requirements: total assets between 350,000 and 20,000,000 EUR; turnover between 700,000 and 40,000,000 EUR; annual average number of employees between 10 and 50 (at the end of the year). On the other hand, we included firms that reported financial statements for the entire period of analysis and excluded firms from the financial industry, due to the diverse specific regulations, as well as entities from the Azores and Madeira, due to differences in tax regulations. These procedures led us to a sample of 29,527 firms.

However, the requirement to disclose items “cash flow from operating activities” and “payment/receipt of income tax” in all years under study reduced the sample to 2435 firms. At last, as our study focused on book–tax differences, we selected firms that reported deferred taxes both taxable and deductible in the sample period. After the selection procedures, the final sample consisted of 421 firms (2105 firm-year observations).

Therefore, we used a convenience and non-probabilistic sample, as is often the case when the population is quite large.

5.2. Empirical Models

According to Hsiao (2014), panel data models provide better statistical inference of parameters, since they have more degrees of freedom and less multicollinearity than cross-sectional models, they also have a greater ability to capture the complexity of time series behaviors.

In order to confirm the hypotheses raised in this paper, we ran econometric regressions using panel data with random effects after accepting the null hypothesis of the Hausman test (Wooldridge 2009). The specification of this model can be represented as follows (Murteira and Castro 2018):

$$y_{i,t} = \beta_0 + \beta_1 X_{1\ i,t} + \beta_2 X_{2\ i,t} + \beta_k X_{k\ i,t} + \dots + b_i + e_{i,t} \quad (1)$$

where b_i are values of a random variable with normal distribution and zero mean, being independent of errors $e_{i,t}$.

The first regression allows estimating the persistence of pre-tax income (PTI). This variable is obtained from the income statement, and it is scaled by the average total assets, collected from the balance sheet:

$$PTI_{t+1} = \beta_0 + \beta_1 PTI_{i,t} + \varepsilon_{t+1} \quad (2)$$

where i represents the entity and t represents the year.

If the estimated coefficient β_1 is statistically significant and positive, the result suggests that the entities exhibit persistent earnings.

The second regression aims to analyze which of the temporary differences, taxable (TTD) or deductible (DTD), has a greater impact on earning persistence:

$$PTI_{t+1} = \beta_0 + \beta_1 PTI_{i,t} + \beta_2 TTD_{i,t} + \beta_3 DTD_{i,t} + \beta_4 PTI_{i,t} \times TTD_{i,t} + \beta_5 PTI_{i,t} \times DTD_{i,t} + \varepsilon_{t+1} \quad (3)$$

In this regression, TTD is a dummy variable that, in each year, takes the value 1 in the entities that present taxable (negative) temporary differences located in the lowest quintile and the value 0 in the remaining situations. The taxable temporary differences are computed from negative deferred taxes scaled by income tax (21% in the Portuguese fiscal regulation). The DTD is a dummy variable that, in each year, takes the value 1 for entities that have deductible (positive) temporary differences located in the highest quintile and the value 0 otherwise. The deductible temporary differences are computed from negative deferred taxes scaled by 21%.

The coefficients that give the incremental impact of taxable and deductible temporary differences on earning persistence are β_4 and β_5 , respectively. To support hypothesis H1, under which earning persistence is negatively affected by greater recognition of temporary differences, it is expected that the estimated coefficients $\beta_4 < 0$ and $\beta_5 < 0$.

To test hypotheses H2 and H3, which examine whether deductible temporary differences and taxable temporary differences are negatively associated with earning persistence, respectively, it is expected that the estimated coefficient $\beta_3 < 0$ in the following two regressions:

$$PTI_{t+1} = \beta_0 + \beta_1 PTI_{i,t} + \beta_2 TTD_{i,t} + \beta_3 PTI_{i,t} \times TTD_{i,t} + \varepsilon_{t+1} \quad (4)$$

$$PTI_{t+1} = \beta_0 + \beta_1 PTI_{i,t} + \beta_2 DTD_{i,t} + \beta_3 PTI_{i,t} \times DTD_{i,t} + \varepsilon_{t+1} \quad (5)$$

To further develop our analysis, in the next step the study focuses on the two components of earnings: cash flow and accruals. Therefore, we tested hypothesis H4 using the pre-tax accruals (PTA) variable and the pre-tax cash flow (PTCF) variable, both scaled by the average of total assets, in order to examine which of these components has a greater impact on persistence.

The PTCF variable is obtained through the total cash flow from operating activities (from the cash flow statement), plus other income and gains, minus other expenses and losses (both from the income statement), and minus income tax paid/received (from the cash flow statement). On the other hand, the PTA variable is given by subtracting the PTCF from the PTI variable.

To test hypothesis H4, according to which the increase in deductible or taxable temporary differences decreases earning persistence more in the accruals component than in the cash flow component, we estimated the following regression:

$$PTI_{i,t+1} = \beta_0 + \beta_1 TTD_{i,t} + \beta_2 DTD_{i,t} + \beta_3 PTCF_{i,t} + \beta_4 PTA_{i,t} + \beta_5 PTCF_{i,t} \times TTD_{i,t} + \beta_6 PTCF_{i,t} \times DTD_{i,t} + \beta_7 PTA_{i,t} \times TTD_{i,t} + \beta_8 PTA_{i,t} \times DTD_{i,t} + \varepsilon_{t+1} \quad (6)$$

The coefficient β_5 gives the incremental effect of cash flow and taxable book–tax difference on earning persistence, while the coefficient β_6 gives the incremental effect of cash flow and deductible book–tax difference on earning persistence. Furthermore, the coefficient β_7 gives the incremental effect of accruals and taxable book–tax difference on earning persistence, while the coefficient β_8 gives the incremental effect of accruals and deductible book–tax difference on earning persistence.

Expecting all coefficients to be negative, since the cash flow component should have a smaller negative effect than accruals on earning persistence (Hanlon 2005), then $\beta_5 < \beta_6$ and $\beta_7 < \beta_8$ will support our fourth hypothesis.

6. Conclusions

6.1. Contributions and Implications

Given the importance of financial statements, specifically earnings reported in the income statement for finance performance analysis, this paper studied the impact of book–tax differences on the earning persistence of Portuguese SMEs. To analyze the relationship between taxes and accounting, we focused on the temporary differences arising from the existence of two specific regulations in Portugal, one for accounting and the other for taxes. While the natural recognition of deferred taxes arises from these regulations, the current digital era can contribute to mitigating book–tax differences by reducing managers' opportunities to engage in earnings management activities. This is valued by stakeholders and is important for controlling agency problems. Therefore, we used earning persistence as a proxy of earnings quality and to test four research hypotheses.

Our results show that deductible temporary tax differences may be a possible mechanism of earnings management, which is in line with the arguments of Na et al. (2021) and the empirical evidence of Hanlon (2005). Furthermore, we also found that deductible temporary tax differences produce a decrease in earning persistence in the accruals component, but not in the cash flow component, consistent with Blaylock et al. (2012) and Hanlon (2005).

This study is also important because it applies to one European Union country where SMEs represent a large part of the business landscape, although this reality is common to other Member States.

Overall, the implications of this study bring forth useful evidence for efficient decision making by stakeholders, such as investors and creditors, which may assist them in understanding the nature of tax-influenced earnings management practices and the extent to which these practices affect financial information.

More specifically, the paper contributes to regulators of both accounting and fiscal authorities, by specifically showing the influence of taxes on accounting for Portuguese SMEs, namely that deductible tax-differences and accruals may sign earnings management activities. Therefore, our empirical evidence provides relevant insights, given the potential

negative consequences of earnings management for stakeholders, firms and even the entire economy. For example, the knowledge of these relationships can mitigate agency problems between managers and creditors. In addition, the quality of information can attract investors and improve corporate value. Finally, management practices are scrutinized by the market, which exercises a control function over the activity of decision-makers.

6.2. Limitations and Future Research

The SMEs that report deferred taxes are few in number, which may limit the scope of the conclusions of this study. Therefore, for future research we are willing to expand the sample, namely by including micro-entities, which also have a large expression in smaller economies, and other European countries with similar relative size. In addition, the impact of the joint effect with other determinants, such as the level of indebtedness, is another research development to pursue.

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