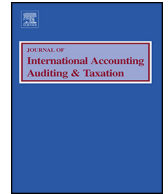




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Book-tax conformity and earnings management in response to tax rate cuts



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ABSTRACT

This study explores the link between earnings management and jurisdictional differences in book-tax conformity. A dataset of national reforms lowering the corporate tax rate is used to estimate the effect of conformity on private firm's earnings management behavior when a specific incentive to manage earnings downward exists. Total and discretionary accruals are used to measure earnings management and a continuous measure is used to assess the level of book-tax conformity. Results suggest that changes in the statutory tax rate affect firms in jurisdictions with high book-tax conformity more than firms in jurisdictions with less book-tax conformity. However, more overall earnings management is attributed to firms in low conformity jurisdictions. These findings contribute to the ongoing debate on the appropriate level of book-tax conformity.

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1. Introduction

The potential benefits and costs associated with conformity between reported earnings and taxable income have been debated in the United States (US) for some time. Politicians and academics have asked whether it would be wise to eliminate the book-tax gap and move to a high conformity system in which book earnings are more equal to taxable income. The debate includes both pro and con arguments. For instance, [Desai \(2005\)](#) proposes high book-tax conformity since it reduces aggressive financial reporting and improves earnings quality. Opponents argue that financial statement users and tax authorities require different kinds of information and that increased conformity will lead to a significant loss of information ([Hanlon & Shevlin, 2005](#)). Empirical tax accounting research provide mixed evidence. [Leuz, Nanda, and Wysocki \(2003\)](#) find no earnings management effect of book-tax conformity in a study across countries. More recently, [Blaylock, Gaertner, and Shevlin \(2015\)](#) and [Watrin, Ebert, and Thomsen \(2014\)](#) connect strong book-tax conformity with more earnings management. Simultaneously, [Tang \(2015\)](#) provides conflicting evidence that high conformity is associated with lower levels of earnings management and tax avoidance.

The present study further investigates the effect of book-tax conformity on earnings management. It analyzes earnings management in response to a reduction in the corporate tax rate among European private firms and assesses the effect of book-tax conformity in a jurisdiction. Several studies provide evidence that firms manage their earnings around such events to defer earnings from high to low tax rate periods (e.g., [Guenther, 1994](#); [Lopez, Regier, & Lee, 1998](#); [Roubi & Richardson, 1998](#)). In recent research, private firms in particular are observed to act according to the proposed incentive ([Lin, Mills, & Zhang, 2014](#); [Watrin, Pott, & Ullmann, 2012](#)). The present study differs from, and extends, previous work in important ways. First, most related work (e.g., [Blaylock et al., 2015](#); [Tang, 2015](#); [Watrin et al., 2014](#)) has a public firm focus, whereas the

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focus of this study is private firms. By using private firm data, it is possible to make inferences regarding an economically important and substantial part of the overall firm population.¹ In addition, the private firm setting allows analysis of a specific incentive in isolation from other strong motivations, such as those arising from capital markets. This incentive is simultaneously attractive for a large part of all private firms. Furthermore, European private firms are of interest from the viewpoint that International Financial Reporting Standards (IFRS) may eventually become relevant for all unconsolidated financial statements, thus forming the basis of future tax accounting. High book-tax conformity under IFRS is believed to lead to faster processes than under local rules and earlier tax payments, which could cause liquidity problems for private firms. The current analysis may inform policymakers regarding the effect of increased conformity. This information may also be useful concerning the disputed introduction of a Common Consolidated Corporate Tax Base (CCCTB) in the European Union, since low book-tax conformity would reduce the complexity of implementing such a scheme (Watrin et al., 2012). Second, this study focuses on signed earnings management in the light of a clear incentive to manage earnings in a specific direction, whereas previous cross-jurisdictional studies focus on unsigned measures highlighting overall differences in earnings management between conformity levels and ignore explicit incentives that may drive earnings management in a specific direction. Third, while previous cross-jurisdictional studies on book-tax conformity and earnings management analyze several years of data, they overlook the impact of statutory tax rate changes in their results. The present study highlights the impact of these tax rate changes. Fourth, Watrin et al. (2012) also relate to the present study because they observe exceptional accounting items as generators of book-tax differences and identify accounting strategy balancing firms that have a positive book-tax difference and report higher book income than tax income. These firms are noted to engage in less earnings management in response to a German tax rate cut. In contrast, the present study includes an examination of earnings management with reference to a country measure of book-tax conformity (i.e., book-tax differences at the jurisdictional level) instead of examining firm-level differences. Additionally, the present study analyzes several contemporary reforms instead of focusing on a single historical reform.

A sample of 32,472 private firms from the European region, including Russia, is used in this study. It analyzes two periods immediately preceding reductions in statutory corporate tax rates for the period from 2007 to 2014. Twelve jurisdictions are analyzed and the level of book-tax conformity is assessed in a manner consistent with Watrin et al. (2014). Earnings management is estimated with different accrual-based measures. The results of this study suggest that firms in higher conformity jurisdictions manage their earnings more in anticipation of a corporate tax rate cut than firms in lower conformity jurisdictions. In other words, firms more widely act according to the income shifting incentive when book-tax conformity is stronger. When observing the overall magnitude of earnings management, however, lower conformity is related to more earnings management overall.

This study makes a number of contributions to the literature. First, it contributes to the debate on book-tax conformity by providing evidence from a context with a clear incentive to manage earnings, namely changes in corporate tax rates. These changes are expected to provide a window of opportunity for firms to manage earnings in a specific direction and allow analysis of signed measures of earnings management, whereas prior studies mainly focus on unsigned measures. As such, the study answers the call of Hanlon and Heitzman (2010) for more research into the costs and benefits of book-tax conformity by providing evidence that high conformity may be associated with larger losses in tax revenues. The results of the study offer new insights to the puzzle of book-tax conformity and earnings management by supporting Tang (2015) in the general context, and Watrin et al. (2014) and Blaylock et al. (2015) in the presence of a strong incentive for earnings management. Second, this study contributes to the literature that investigates accounting attributes of private firms. Previous studies have primarily focused on earnings management in general (Burgstahler, Hail, & Leuz, 2006; Coppens & Peek, 2005), conditional conservatism (Ball & Shivakumar, 2005), and earnings smoothness (Gassen & Fülbier, 2015). This study examines the relation between tax-induced earnings management and book-tax conformity among private firms, whereas closely related studies have mainly concentrated on large public firms, with the exception of Watrin et al. (2012). Since private firms may be regarded as the base upon which economies are built globally, they are deserving of research attention. Third, this paper adds to the general understanding about tax-induced earnings management across jurisdictions. Previous studies have largely investigated single national reforms without any comparison of the extent of earnings management between jurisdictions. In addition, related studies focus on a US tax reform in 1986, while the reforms under investigation in this paper were introduced more recently and thus, provide findings from a more contemporary setting.

The paper proceeds as follows. Background and theoretical aspects of earnings management, the tax incentive, and book-tax conformity issues are discussed in order to develop a hypothesis for the study. Then, data and empirical methods are described. Finally, the results are presented and discussed.

¹ These private firms make up about two-thirds of overall employment and constitute 99 percent of all firms in the European Union (http://siteresources.worldbank.org/CGCSRLP/Resources/SME_statistics.pdf). Overall, private firms have about four times more employees, three times higher revenues, and double the assets of public firms (Berzins, Böhren, & Rydland, 2008).

2. Prior literature and hypothesis development

2.1. Earnings management in response to corporate tax rate changes

A number of studies on earnings management view the phenomena in the light of different underlying incentives.² These incentives are mostly associated with capital market incentives (Cohen & Zarowin, 2010) and contracting motives such as debt covenants (DeFond & Jiambalvo, 1994) and executive compensation contracts (Healy, 1985). A small number of studies observe the incentives that arise from taxation. One example is Coppens and Peek (2005), who study tax-induced earnings management and find that private firms in countries with high book-tax conformity engage in income-decreasing (downward) earnings management in order to reduce taxes. A consequence of this tax minimization technique is income-increasing (upward) earnings management in the future, which is related to higher future taxes. This is due to the reversal nature of accrual-based earnings management. If income is shifted between periods surrounding a change in the national corporate tax rate, however, it is possible to obtain permanent positive economic gains from the managed earnings. Studies performed on the US Tax Reform Act in 1986, for instance, provide evidence that firms managed their earnings downward prior to the reduction in the US corporate tax rate (Calegari, 2000; Dhaliwal & Wang, 1992; Guenther, 1994; Lopez et al., 1998; Manzon, 1992; Scholes, Wilson, & Wolfson, 1992). Other tax reforms that lowered the corporate tax rate have been studied by Roubi and Richardson (1998), who find that current discretionary accruals were managed by firms in Canada, Malaysia and Singapore. Furthermore, Hemmelgarn and Teichmann (2014) analyze several corporate tax reforms where the tax rate was changed and how this affected bank financing decisions and earnings management.

Private firms also are shown to engage in earnings management (Burgstahler et al., 2006). A typical private firm is more closely held with greater managerial ownership than public firms. Private firms often have active capital providers with insider access to corporate information (Van Tendeloo & Vanstraelen, 2008). Private firm financial statements are not widely distributed to the public and these firms are likely to be influenced by tax objectives (Ball & Shivakumar, 2005). 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), who provide evidence from a Russian context. Moreover, Watrin et al. (2012) investigate the 2001 German corporate tax rate decrease and find that tax incentives influenced the earnings management behavior of private firms more than public firms. Lin et al. (2014) provide evidence of material income shifting by private firms as a response to a tax rate reduction in China. Recently, Sundvik (2016) shows that Swedish private firms primarily use accounts receivable for the purpose of income shifting between periods. Further work on private firms is motivated, and Hanlon and Heitzman (2010), for instance, request more research on the reporting behavior of private firms.

2.2. Book-tax conformity and earnings management

In general, book-tax conformity is the association between financial accounting income and taxable income. High book-tax conformity is consistent with a common system for both accounting and taxation purposes, where financial accounting is directly used to calculate taxable income. On the other hand, with low book-tax conformity, the two systems of financial and tax accounting are separated (Goncharov & Zimmermann, 2006). Presently, the US has a low level of book-tax conformity, as noted by Hung (2001) and Atwood, Drake, and Myers (2010). Levels of conformity vary within Europe, and studies examine the effects of different conformity levels on various variables. The United Kingdom, the Netherlands, and Denmark are, for instance, commonly regarded as having lower book-tax conformity, whereas conformity is high in countries such as Finland, France, and Sweden (Hung, 2001). Goncharov and Zimmermann (2006) note that Russia shifted towards lower conformity in 2002.

For some time, the potential benefits and costs associated with increased levels of book-tax conformity have been debated in the US and opinions are currently polarized. One pro argument is that the simultaneous reporting of both “book profits” and “tax profits” leads firms to report inflated profits to the capital markets and understated profits to the tax authorities. Increased conformity is argued to lead to a considerably simpler tax system that would constrain opportunism by managers. In other words, conformity could improve earnings quality and increase tax compliance (Desai, 2005). Opponents of increased conformity argue that lower earnings quality will result because tax authorities and other stakeholders require different kinds of information. If information is to be aligned into one measure, the quality of information for investors and other financial statement users will be reduced (Hanlon & Shevlin, 2005). On the other hand, Desai and Dharmapala (2009) argue that shareholders and policymakers should question the rationality of separate reporting, since they provide evidence of mutual benefits with greater book-tax conformity for investors and tax authorities.

Several empirical studies address this topic Atwood et al. (2010) find that higher conformity is related to lower earnings persistence and a lower association between earnings and future cash flows. The empirical measure of book-tax conformity developed by Atwood et al. (2010) has been applied to study the impact of conformity on earnings management. For instance, Blaylock et al. (2015) conclude that more absolute earnings management is connected with stronger book-tax conformity. Watrin et al. (2014) use an alternative specification of the measure for the European setting and presents the same ultimate

² Here, earnings management is defined according to Healy and Wahlen (1999) as alterations in firms' reported economic performance invoked by the firm itself to either mislead stakeholders or influence outcomes of accounting-based contracts.

conclusion. In contrast, [Tang \(2015\)](#) associates higher mandatory conformity with lower levels of earnings management and tax avoidance.

Prior empirical literature using indicator variables for a high or low level of conformity has also provided mixed evidence on the topic. Less income smoothing, for instance, is found to be associated with lower book-tax conformity by [Lang, Lins, and Maffett \(2012\)](#). [Leuz et al. \(2003\)](#), on the other hand, do not find any significant relation between the degree of a country's book-tax conformity and earnings management with a public firm sample. [Burgstahler et al. \(2006\)](#) document that higher conformity is associated with more earnings management for private firms. Moreover, [Coppens and Peek \(2005\)](#) present evidence of private firms in high book-tax conformity countries not avoiding the reporting of small losses. Tax incentives are noted as an explanation as to why these firms do not manage their earnings upwards. Private firms often report only to the bank and the taxman. As a consequence, earnings management incentives may be influenced by these instances. If taxable income and financial statement earnings are highly aligned, it is expected that private firms respond more to a change in the corporate tax rate and that this response is indirectly visible in the financial statements. On the other hand, if the level of book-tax conformity is lower, firms are expected to engage in less income shifting via earnings management in response to a corporate tax rate change, because such acts would not have as strong an effect on taxes payable as in the high conformity setting.

In summary, the literature on earnings management and book-tax conformity is somewhat ambiguous. Based on prior evidence and in the context of corporate tax rate changes, however, it is reasonable to suggest that high conformity jurisdiction firms manage their earnings according to the tax incentive to a larger extent than the firms in jurisdictions with lower conformity. Therefore, the following directional hypothesis is formulated:

H1. Higher (lower) conformity between accounting and tax reporting in a jurisdiction is associated with more (less) income-decreasing earnings management among private firms in response to a tax rate reduction.

Firms who utilize a tax rate reduction to reduce their tax burden are assumed to engage in income-decreasing earnings management in the year(s) prior to a corporate tax rate reduction in order to present lower earnings while taxation is still high and consequently to defer income forward to lower tax rate periods. In a private firm setting, without the capital market as a main player, firms usually have a small set of owners and use private channels to communicate information. Furthermore, tax authorities are one of the most important users of their accounting information ([Goncharov & Zimmermann, 2006](#)). Private firms are likely to have a strong link between tax and financial reporting independent of the legal prescriptions in the respective jurisdiction. Private firms commonly choose to produce only one set of financial statements, due to cost considerations ([Ball & Shivakumar, 2005](#)). Measures of book-tax conformity have, however, been developed by several researchers ([Atwood et al., 2010](#); [Hung, 2001](#); [Watrin et al., 2014](#)), permitting the evaluation of the level of conformity.

3. Data and methodology

3.1. Tax reforms and sample

The data used in this study is mainly composed of statutory corporate income tax rates and financial statement data of private firms. The sample is restricted to Russia and countries within Europe. This sample region is associated with an overall decrease in the average corporate tax rate over the last decade and is therefore a suitable region of investigation.

Countries are included in the analysis if their statutory corporate tax rate was reduced between 2006 and 2014. These reductions are identified from KPMG's Corporate and Indirect Tax Survey. Ultimately, twelve national tax reforms that reduce national corporate income tax rates are considered. Most of the tax rate changes became public within one preceding year.³ The average rate decrease is 3.51 percent, with Germany having the largest decrease and Denmark and the Netherlands the smallest. Before the reforms, the average tax rate was 27.05 percent, while the post-reform percentage is 23.53. This study examines earnings management before these events. A decrease in the corporate tax rate should create an incentive for firms to shift earnings from the period prior to the tax reform to the period subsequent to the tax reform. The actual period of analysis consists of two years before the changes. The year immediately prior to the reform year is labeled *PRE Year*, while the second year prior to the reform year is labeled *PRE Year - 1*.

The sample is unconsolidated private firms with total assets more than 500 TEUR and available financial statement data for all the variables compulsory for the analyzes. All financial statement data is from the Orbis database of Bureau van Dijk. If taxation of corporate earnings in a jurisdiction includes several rates for different limits of income, only such firms that exceed the highest limit are included. Further, only firms reporting under local GAAP with a fiscal year of twelve months and using the calendar year are included, in line with [Roubi and Richardson \(1998\)](#). Firms with accruals above 100 percent of lagged total assets are excluded, thus the absolute value of minimum and maximum accruals is below 100 percent of lagged total assets. To further mitigate the influence of outliers, all continuous firm variables are winsorized at the 1st and 99th percentile. The final sample includes a total of 32,472 private firms.

³ For example, the 2014 corporate tax rate cut in Finland was unveiled in March 2013.

3.2. Cross-country earnings management and level of book-tax conformity

The earnings management of private firms and its association with book-tax conformity are examined using multiple linear regression analysis. In this study, earnings management is proxied by total and discretionary accruals and book-tax conformity is measured based on book-tax differences. The measurement and estimation of these variables are described as follows.

Total accruals (*TACC*) are estimated using the balance sheet approach of Callao and Jarne (2010), because the statements of cash flows are not available for the firms in the study. Total accruals (*TACC*) are calculated as:

$$TACC_{i,t} = \Delta Receivables_{i,t} + \Delta Inventories_{i,t} - \Delta Payables_{i,t} - DEP_{i,t} \quad (1)$$

where $\Delta Receivables$ is the change in accounts receivable; $\Delta Inventories$ is the change in stocks; $\Delta Payables$ is the change in accounts payable; and DEP is depreciation and amortization expense. Next, *TACC* is regressed on change in sales (ΔREV), gross property, plant and equipment (*PPE*), and return on assets (*ROA*) according to the following equation based on the Jones (1991) model:

$$\frac{TACC_{i,t}}{TA_{i,t-1}} = \beta_1 \left(\frac{1}{TA_{i,t-1}} \right) + \beta_2 \left(\frac{\Delta REV_{i,t}}{TA_{i,t-1}} \right) + \beta_3 \left(\frac{PPE_{i,t}}{TA_{i,t-1}} \right) + \beta_4 (ROA_{i,t}) + \varepsilon_{i,t} \quad (2)$$

Lagged total assets ($TA_{i,t-1}$) are used as a deflator to avoid problems with heteroscedasticity. With reference to Kothari, Leone, and Wasley, (2005), the original model is augmented with return on assets as a performance control, due to the non-availability of operating cash flows for the private firms as used in Callao and Jarne (2010). Following Callao and Jarne (2010), an estimation period comprising several years before or after the actual period of analysis is used for this estimation. The maximum number of years included in the estimation period is five (Norway, Portugal, and Ukraine). Only two periods are included in the estimation process for Denmark, the Netherlands, and Sweden. The length of the estimation period depends on data availability and the presence of conflicting events such as another corporate tax reform that could bias the estimation procedure. Having estimated the industry-specific parameters for the estimation period, the values obtained are then applied to predict discretionary accruals for the years comprising the analysis period. The prediction error is interpreted as the discretionary part of total accruals, defined as follows:

$$\frac{TDACC_{i,t}}{TA_{i,t-1}} = \frac{TACC_{i,t}}{TA_{i,t-1}} - \left(b_1 \left(\frac{1}{TA_{i,t-1}} \right) + b_2 \left(\frac{\Delta REV_{i,t}}{TA_{i,t-1}} \right) + b_3 \left(\frac{PPE_{i,t}}{TA_{i,t-1}} \right) + b_4 (ROA_{i,t}) \right) \quad (3)$$

Book-tax conformity is estimated as in Watrin et al. (2014) who develop an empirical and continuous measure that correctly reflects European-specific characteristics. This approach allows for quantification of different degrees of conformity and changes in the degree of conformity during the period of analysis. Book-tax conformity is measured at the single-entity level and aggregated at the country level. Initially, permanent book-tax differences are calculated as the gap between taxable income and book income in single financial statements with the following equation:

$$PermBTD_{i,t} = PTBI_{i,t} - \left(\frac{Taxation_{i,t}}{TaxRate_{k,t}} \right) \quad (4)$$

where *PermBTD* is permanent book-tax difference; *PTBI* is pre-tax book income; *Taxation* is total taxation from income statement; and *Tax Rate* is the statutory corporate income tax rate. Book-tax differences can be classified as either permanent or temporary (Hanlon & Shevlin, 2005). Permanent differences are defined as items included in either book income or tax income but never included in both. Depending on the jurisdiction, examples may be internally generated intangible assets that are included in the financial statement but not in the tax statement and tax non-deductible expenses such as fines and penalties. Other examples may include tax exempt dividends received from other firms and provisions for contingent losses. Temporary differences stem from the timing of recognition of income and expense items. For instance, depreciation rules may be different for accounting and tax purposes. The Bureau van Dijk's Orbis database does, however, not differentiate between current and deferred taxes. Therefore, it is not possible to calculate temporary book-tax differences in isolation.

All variables are scaled by lagged total assets. Absolute values of permanent book-tax differences are calculated for each country for the two years preceding the approaching corporate tax rate change. Higher (lower) book-tax differences indicate lower (higher) book-tax conformity. A final country measure of book-tax conformity is constructed out of these differences by first summing up all absolute values of permanent book-tax differences in one country each year and then dividing by the number of observations. Second, a rank is assigned to each country for each year based on this mean so that countries with higher rankings show higher conformity. Descending rankings are used so that the highest book-tax difference is assigned 0 and the lowest difference is assigned a value of $n-1$, where n is the number of countries included in the study. The year rankings are scaled to range from 0 to 1 by dividing by $n-1$. A final country rank is calculated as the average rank over the years. This rank (*BTC*) and the corresponding book-tax differences (*BTD*) for the sample countries are presented in Table 1, together with information on the tax reforms and tax rates of each country described earlier. As shown in Table 1, Portugal has the highest book-tax conformity which is in line with Marques, Rodrigues, and Craig (2011). Ukraine has the lowest conformity level in the sample. Overall, the sample private firms are found to have quite high conformity. With a few exceptions, these

Table 1
Corporate Tax Rates and Level of Book-Tax Conformity in Sample Countries.

Rank	Country	Reform Year	Tax Rate Before	Tax Rate After	Scaled BTC Rank	BTD	
1.	Portugal	2014	25.00%	23.00%	1.0000	0.0185	High Book-Tax Conformity
2.	Norway	2014	28.00%	27.00%	0.9091	0.0187	↑
3.	Spain	2007	35.00%	32.50%	0.8182	0.0228	
4.	Czech Republic	2008	24.00%	21.00%	0.7273	0.0335	
5.	Denmark	2014	25.00%	24.50%	0.6364	0.0357	
6.	Finland	2014	24.50%	20.00%	0.5455	0.0381	
7.	Sweden	2013	26.30%	22.00%	0.4545	0.0404	
8.	Germany	2008	25.00%	15.00%	0.3636	0.0430	
9.	Netherlands	2011	25.50%	25.00%	0.2727	0.0434	
10.	Italy	2008	37.25%	31.40%	0.1818	0.0461	
11.	Russia	2009	24.00%	20.00%	0.0909	0.0502	
12.	Ukraine	2012	25.00%	21.00%	0.0000	0.0683	Low Book-Tax Conformity

A rank is assigned to each country according to the absolute value of permanent book-tax differences in the two years preceding the tax reform year. The Scaled BTC Rank is calculated as the average rank over these years. Column BTD is the mean of the absolute value of permanent book-tax differences over the same period.

ranks correspond to those in [Watrin et al. \(2014\)](#) that incorporate listed entities. With respect to the national tax rates, Italy has the highest tax rate before the reforms and Spain has the top rate after the reforms.

3.3. Tests of the impact of conformity on earnings management

This study examines the variation of book-tax conformity (*BTC*) and how it impacts earnings management (*EM*) before reductions in national corporate income tax rates. The following models are used to test the hypothesis of the study:

$$EM = \beta_0 + \beta_1 BTC + \sum \beta_k Control + Fixed\ effects + \varepsilon \quad (5)$$

$$EM = \beta_0 + \beta_1 PRE \times BTC + \beta_2 PRE + \sum \beta_k Control + Fixed\ effects + \varepsilon \quad (6)$$

where *EM* represents the *TACC* or *TDACC* median per industry; *BTC* is the rankings of book-tax conformity; and *PRE* is an indicator variable for the year immediately before the tax rate change (*PRE Year*). The control variables include *SIZE*, the industry median size of firms measured as the natural logarithm of firm total assets; *LEV*, the industry median leverage ratio of firms measured as the sum of liabilities divided by total assets; *ROA*, the industry median return on assets of firms measured as net income divided by total assets; and *LOSS*, the fraction of loss years within an industry. Finally, fixed effects for industries, years and countries are added to the regression model. White heteroskedasticity-consistent standard errors and covariance matrix are applied for all regressions. The regression model is run with country-industry observations, in accordance with [Blaylock et al. \(2015\)](#) because a firm-year analysis could overstate the level of significance ([Tang, 2015](#)).

The control variables and fixed effects specifications are used since accounting research has identified a number of factors that influence earnings management. A variable controlling for firm size is added to proxy for various omitted variables and because smaller firms have been noted to be less opportunistic tax planners ([Scholes et al., 1992](#)). A variable controlling for leverage is included due to a proposed debt association with earnings management ([DeFond & Jiambalvo, 1994](#)). Furthermore, since [Kothari et al. \(2005\)](#) showed that discretionary accruals correlate with firm performance, a control variable for the return on assets is added together with a dummy variable indicating a loss year.

3.4. Descriptive statistics

Table 2 presents descriptive statistics for the *PRE Year*. The number of firms included in the analysis differs between countries, with a very low number of firms registered in Denmark and a high number of firms included from Norway. According to median firm size and leverage, the Netherlands has the largest firms in the sample with an average level of leverage. Overall, the level of leverage resembles that in [Gassen and Fülbier \(2015\)](#). Based on the number of fiscal years with negative income, Ukraine is the most prominent while firms in Portugal have experienced fewer losses. Many of the other variables also show differences, as expected in a study across jurisdictions. In terms of *TDACC*, more negative figures are noted among the top row firms (high book-tax conformity) than among the bottom row firms (low book-tax conformity). This may be seen as prima facie evidence of more income-decreasing earnings management among firms with higher conformity between accounting and taxable income. The economic significance of the -0.022 median (-0.030 mean) *TDACC* for Portugal in 2013 with a tax rate decrease of two percent and at the country sample mean of total assets (8000 TEUR) would be translated into 3.5 TEUR (4.8 TEUR) in monetary terms. This amount assumes that all the estimated discretionary

Table 2
Descriptive Statistics of Sample Firms.

Country	# of Firms	Median SIZE	Median LEV	Median ROA	Fraction of LOSS (=1)	Fraction of Manufacturing Firms	Median TACC	Median TDACC
Portugal	1293	8.051	0.536	0.033	0.1%	36.5%	-0.013	-0.022
Norway	11134	8.014	0.673	0.046	18.5%	15.1%	-0.035	-0.008
Spain	1349	9.533	0.676	0.048	6.1%	25.9%	-0.010	0.001
Czech Republic	1975	7.827	0.518	0.083	8.4%	44.7%	-0.013	-0.011
Denmark	78	8.248	0.660	0.051	19.2%	0.0%	0.006	-0.015
Finland	2239	8.094	0.470	0.046	15.4%	31.8%	-0.043	-0.008
Sweden	3352	8.057	0.582	0.047	19.7%	24.9%	-0.030	-0.005
Germany	812	9.784	0.677	0.023	10.0%	37.4%	-0.024	0.005
Netherlands	222	10.845	0.584	0.079	0.5%	23.4%	0.033	0.012
Italy	2176	8.429	0.816	0.016	14.6%	47.0%	-0.004	0.005
Russia	5496	8.818	0.679	0.050	14.2%	39.7%	0.016	0.002
Ukraine	2346	8.338	0.651	0.010	35.5%	41.8%	-0.009	0.006
Mean	2706	8.670	0.627	0.044	13.5%	30.7%	-0.010	-0.003
Standard Deviation	3028	0.920	0.093	0.022	9.7%	13.6%	0.021	0.010
Min.	78	7.827	0.470	0.010	0.1%	0.0%	-0.043	-0.022
Max.	11134	10.845	0.816	0.083	35.5%	47.0%	0.033	0.012

Variable definitions: SIZE = size of firm measured as the natural logarithm of firm total assets; LEV = leverage ratio of firm measured as the sum of liabilities divided by total assets; ROA = return on assets of firm measured as net income divided by total assets; LOSS = indicator variable of firm if net income is negative; TACC = total accruals of firm; and TDACC = total discretionary accruals of firm.

Table 3
Pearson Correlations.

	TACC	TDACC	BTC	SIZE	LEV	ROA	LOSS
TACC	1.000						
TDACC	0.830***	1.000					
BTC	-0.137***	-0.090***	1.000				
SIZE	0.065***	0.048***	-0.154***	1.000			
LEV	0.001	0.022***	-0.061***	0.101***	1.000		
ROA	0.191***	0.056***	-0.002	-0.044***	-0.301***	1.000	
LOSS	-0.116***	-0.042***	-0.055***	0.004	0.196***	-0.496***	1.000

Variable definitions: TACC = total accruals of firm; TDACC = total discretionary accruals of firm; BTC = Book-Tax Conformity measured as the scaled descending rank of the absolute values of permanent book-tax differences in each country; SIZE = size of firm measured as the natural logarithm of firm total assets; LEV = leverage ratio of firm measured as the sum of liabilities divided by total assets; ROA = return on assets of firm measured as net income divided by total assets; and LOSS = indicator variable of firm if net income is negative.

***, **, and * represents significance at the 0.01, 0.05, and 0.1 levels, respectively.

accruals are being shifted from a period with a higher tax rate to a period with a lower tax rate. The amount may, however, be interpreted as economically significant in the context of these small private firms.

The Pearson correlations among selected firm-level variables are provided in Table 3. It is observed that TACC and TDACC have a significant and negative correlation with BTC. Although numerous other significant correlations exist, they are not very strong. This lowers the risk of bias due to strong correlations. Among the control variables, the strongest correlations can be observed between ROA and LOSS (-0.496) as well as between LEV and ROA (-0.301). Furthermore, concerns about multicollinearity are mitigated based on the level of the variance inflation factors (VIFs), which are all below 10.0 in the regression models discussed.

4. Results

4.1. Primary regression

Table 4 presents the country-industry estimation results of OLS model (5) for the full sample and for the two years of analysis separately. The association between earnings management and book-tax conformity is assessed based on a signed dependent variable measuring total and discretionary accruals. According to the tax incentive provided by a reduction in the corporate tax rate, earnings are hypothesized as being downward managed while the tax rate is still high to shift income into lower tax periods. Therefore, the accrual measures are expected to be negative in the year immediately prior to the reform year (*PRE Year*). In the regression results for the full sample, the sign of the coefficient on BTC (β_1) is negative and statistically significant in both Models (1) and (4) which indicates that higher conformity is linked with more downward earnings management, consistent with Watrin et al. (2014). A similar and significant relationship is found in Models (2) and (5) for the *PRE Year*. However, for the period two years prior to the reform (*PRE Year - 1*) in Model (3) and (6), the coefficient on BTC is small and statistically insignificant. Taken together, these results suggest that firms in countries with a higher conformity between book and taxable income engage in more income-decreasing earnings management in the year immediately prior

Table 4
Regression Results with Book-Tax Conformity and Earnings Management.

	Total Accruals (TACC)			Total Discretionary Accruals (TDACC)		
	Model (1)	Model (2)	Model (3)	Model (4)	Model (5)	Model (6)
	Full sample	PRE Year	PRE Year–1	Full sample	PRE Year	PRE Year–1
Intercept	–0.146***	–0.189***	–0.135***	–0.087*	–0.144***	–0.046
BTC	–0.063***	–0.065***	–0.007	–0.048***	–0.068***	0.011
SIZE	0.018**	0.030***	0.008*	0.014**	0.023***	0.005
LEV	–0.047	–0.131	0.018	–0.031	–0.056	–0.019
ROA	0.257**	0.331*	0.151	0.443***	0.618***	0.328**
LOSS	–0.004	–0.020	0.017	0.003	0.005	0.007
Industry	YES	YES	YES	YES	YES	YES
Year	YES	YES	YES	YES	YES	YES
Country	YES	YES	YES	YES	YES	YES
N	178	89	89	178	89	89
Adj. R2	0.515	0.497	0.685	0.422	0.479	0.431

Variable definitions: BTC = Book-Tax Conformity measured as the scaled descending rank of the absolute values of permanent book-tax differences in each country; SIZE = industry median size of firms measured as the natural logarithm of firm total assets; LEV = industry median leverage ratio of firms measured as the sum of liabilities divided by total assets; ROA = industry median return on assets of firms measured as net income divided by total assets; and LOSS = industry fraction of loss firms (negative net income).

***, **, and * represents significance at the 0.01, 0.05, and 0.1 levels, respectively.

Table 5
Regression Results with an Interaction Effect.

	Model (1)	Model (2)	Model (3)	Model (4)
	TACC	TACC	TDACC	TDACC
Intercept	–0.135***	–0.133***	–0.088*	–0.085*
BTC × PRE	–0.015**	–0.028***	–0.026***	–0.051***
PRE	0.000	0.007	0.018**	0.031***
SIZE	0.014**	0.014**	0.008	0.008
LEV	–0.034	–0.038	–0.011	–0.018
ROA	0.164	0.175	0.303**	0.323**
LOSS	0.001	0.000	0.014	0.011
Industry	YES	YES	YES	YES
Year	YES	YES	YES	YES
Country	YES	YES	YES	YES
N	178	178	178	178
Adj. R2	0.492	0.497	0.313	0.346

Variable definitions: TACC = total accruals of firm; TDACC = total discretionary accruals of firm; BTC = Book-Tax Conformity measured as: the scaled descending rank of the absolute values of permanent book-tax differences in each country in Model (2) and (4) and a dummy variable indicating high (1 if top-six jurisdictions) or low (0 if bottom-six jurisdictions) BTC in Model (1) and (3); SIZE = industry median size of firms measured as the natural logarithm of firm total assets; LEV = industry median leverage ratio of firms measured as the sum of liabilities divided by total assets; ROA = industry median return on assets of firms measured as net income divided by total assets; and LOSS = industry fraction of loss firms (negative net income).

***, **, and * represents significance at the 0.01, 0.05, and 0.1 levels, respectively.

to a tax reduction year.⁴ Regarding the control variables, firm size and performance are both positively associated with the dependent variables in the regressions. While expected to be important, leverage is insignificant, which is consistent with the country-year regressions of Tang (2015). Although the adjusted R square is higher in the TACC regressions, both specifications are associated with a relatively good explanatory power.

Table 5 reports the OLS model (6) estimation results. Explanatory power is again lower with TDACC as the dependent variable. In Models (1) and (3), BTC equals a dummy indicating high or low book-tax conformity. With this specification, both in terms of TACC and TDACC, the interaction term is negative and statistically significant. This suggests that a higher conformity level is associated with more income-decreasing reporting in the PRE Year. In terms of economic significance, the magnitude of the interaction term in Model (3) at the sample mean of total assets (16,700 TEUR) translates into a difference in earnings management between firms in high conformity and low conformity jurisdictions of 434.2 TEUR. In the context of the private firms in this study, this is considered an economically significant amount. In Models (2) and (4), the BTC variable is the scaled rank measure. Here, a similarly negative coefficient is observed on the interaction term. This coefficient is larger

⁴ In unreported results, a dummy variable is constructed out of the BTC measure so that the sample is split into high conformity countries (Country #1–6 in Table 1) and low conformity countries (Country #7–12 in Table 1). This dummy variable is then used instead of BTC in Table 4 regressions. With this setup, a significantly negative β_1 coefficient is also noted with the full sample and the PRE Year regression, however not in the PRE Year–1 regression.

Table 6
Sensitivity Analysis Results.

	Model (1)	Model (2)	Model (3)
	TDACC	TDACC >= 0	TDACC < 0
Intercept	0.076***	0.078***	0.072***
BTC	−0.018***	−0.044***	0.003
SIZE	−0.003***	−0.002***	−0.004***
LEV	0.053***	0.062***	0.044***
ROA	0.084***	0.120***	0.049***
LOSS	0.013***	0.010***	0.014***
Industry	YES	YES	YES
Year	YES	YES	YES
Country	YES	YES	YES
N	64944	31713	33231
Adj. R2	0.136	0.188	0.097

Variable definitions: TDACC = total discretionary accruals of firm; BTC = Book-Tax Conformity measured as the scaled descending rank of the absolute values of permanent book-tax differences in each country; SIZE = size of firm measured as the natural logarithm of firm total assets; LEV = leverage ratio of firm measured as the sum of liabilities divided by total assets; ROA = return on assets of firm measured as net income divided by total assets; and LOSS = indicator variable of firm if net income is negative.

***, **, and * represents significance at the 0.01, 0.05, and 0.1 levels, respectively.

in magnitude and more income-decreasing earnings management is thus continuously attributed to higher conformity jurisdictions.

Overall, these regression results provide evidence that higher conformity between accounting and tax reporting in a jurisdiction is associated with more earnings management as a response to an upcoming tax reform that decreases the corporate tax rate. These results are consistent with the hypothesis of the study.

4.2. Sensitivity analysis

The sensitivity of the documented relation between book-tax conformity and earnings management is verified along several dimensions. First, Eq. (5) is re-estimated after removing each country, one at a time, from the sample, to ensure that the results are not driven by any single country. The results are not sensitive to excluding any one country. To some extent, this may be expected when considering the evenly distributed sample of the country-industry regressions presented above. However, with reference to country-firm regressions, the results also remain robust after excluding one country at a time. Furthermore, the exclusion impact of some countries is naturally stronger in the latter case. For example, the number of Norwegian firm-years is the highest and the exclusion of them clearly affects the estimation results. In any case, the level of significance remains the same.

As a second sensitivity test, unsigned, positive and negative discretionary accruals are analyzed to measure the extent of overall, income-increasing, as well as income-decreasing earnings management. These results, based on country-firm observations, are presented in Table 6. Less earnings management overall, in the unsigned form of TDACC, is ascribed to higher conformity firms based on the negative coefficient on the BTC variable (t-statistic = −8.48).⁵ This result is aligned with Tang (2015) but stands in contrast to studies attributing more earnings management to public firms in countries with a higher degree of book-tax conformity (Watrin et al., 2014; Blaylock et al., 2015). With regard to the positive accruals, Table 6 suggests that less income-increasing earnings management is linked with higher conformity. These findings are reasonable, based on the fact that private firms in higher book-tax conformity jurisdictions are less prone to manage earnings upwards due to tax consequences. Finally, Table 6 does not show that higher conformity is associated with more downward earnings management in the analysis period as a whole. The coefficient on BTC is small and positive (t-statistic = 1.09). Thus, income-decreasing behavior is mostly attributed to the PRE Year, in terms of firm-level observations and negative accruals in isolation.

Third, Tables 4 and 5 results are also reproduced with country-firm observations, as presented in Table 6. This approach leads to models with a lower explanatory power, although the essence of the previous results is replicated. More downward earnings management is attributed to firms in higher conformity jurisdictions in the PRE Year, consistent with the hypothesis of the study.

Fourth, there is a risk that country-specific effects not controlled for by the fixed effects specification impact the findings on the effects of conformity on earnings management. For instance, Leuz et al. (2003) find that strong investor protection in a country has a negative influence on the magnitude of earnings management. Furthermore, Burgstahler et al. (2006) show that less earnings management is associated with strong legal enforcement. Motivated by these studies, an aggregate index composed of three country controls is included in the regression models as a robustness check. The specific variables range from 0 to 7 and grade the judicial independence, investor protection, and ethical behavior of firms within a country. This

⁵ The coefficient remains negative and significant at the 1 percent level if the regression is run yearly (untabulated).

country-specific data is retrieved from the World Economic Forum, in accordance with [Watrin et al. \(2014\)](#). Inclusion of controls for these effects does, however, not influence any of the previously presented results.

As a fifth sensitivity test, a battery of alternative proxies for the variables used in this study is used to assess the relation between earnings management and book-tax conformity. Current accruals (*CACC*) and current discretionary accruals (*CDACC*) are analyzed as more short-run proxies for earnings management instead of *TACC* and *TDACC*. As such, *CACC* is calculated by excluding the long-term accrual of *DEP* from Eq. (1). Then, the estimation technique of *TDACC* is followed where the explanatory variable *PPE* is excluded and *CACC* is used instead of *TACC* in Eqs. (2) and (3). With signed *CACC* and *CDACC* as the dependent variable in the regressions tabulated in [Tables 4–6](#), the signs and significance levels remain the same. However, the coefficients in the current models are smaller than the coefficients in the total specifications in all model variations, which is natural since the former measure excludes the large accrual of depreciation. Therefore, the results are robust to an alternative and more short-term measure of earnings management. In addition, the approach in [Dechow, Hutton, Kim, and Sloan \(2012\)](#) is followed since the setting provides reasonable priors about the timing and direction of the earnings management. For this, an indicator variable for the *PRE Year* is directly incorporated into Eq. (2), together with the other control variables and fixed effects. This model is run separately for high and low book-tax conformity country-groups. The *PRE* variable is negative and statistically significant for the high conformity sample, whereas it is positive for the low conformity sample. These results add to the previously presented evidence that higher conformity firms employ more income-decreasing earnings management before a tax rate cut. Alternative measures of book-tax conformity are also considered. The traditional indicator variable groupings used in [Hung \(2001\)](#) and [Burgstahler et al. \(2006\)](#) are utilized in this context. This dummy variable resembles the split sample structure (high and low book-tax conformity) used above. Thus, the measure utilized is concluded to subsume traditional dummy variables used as indicators for the level of book-tax conformity.

Sixth, correlated omitted variables that might bias the regression estimates are analyzed. All the identified and measured variables that could be correlated to country book-tax conformity are included as control variables in the model specifications. However, it is not possible to conclude that all such variables are included that could be correlated with earnings management. To verify the potential impacts of unobserved confounding variables, the approach in [Frank \(2000\)](#) is applied. Prior accounting literature has also utilized this method (e.g., [Blaylock et al., 2015](#); [Larcker & Rusticus, 2010](#); [Sundvik, 2016](#)). As it is difficult to control for every possible confounding effect, [Larcker and Rusticus \(2010\)](#) instead estimate how strong such an effect would have to be to turn a statistically significant result into insignificance. The Impact Threshold for a Confounding Variable (ITCV) is defined as the lowest product of the partial correlation between the dependent variable and the confounding variable, and the partial correlation between the independent variable of interest and the confounding variable that would lead to a statistically insignificant relation between the dependent variable and the variable of interest. The larger the ITCV, the more robust the regression results are to omitted variable concerns. For [Table 4](#) results regarding Model (5), for instance, the ITCV threshold value is 0.0228. The correlation between *TDACC* and *BTC* with the unobserved confounding variable would thus each need to be around 0.150 ($0.0228^{0.5}$) to render the coefficient on *BTC* insignificant. It is difficult to determine whether the ITCV is large enough for the results to be robust to omitted variables. Therefore, the impact for each control variable is also calculated in order to evaluate the threshold. Impact is defined as the product of the partial correlation between the dependent variable and the control variable, and the correlation between the variable of interest and the control variable. None of the control variables have an impact close to the ITCV. Any unobserved confounding variable must thus be much more highly correlated with the dependent variable and the independent variable of interest than any of the existing control variables in order to overturn the results. Assuming a good set of control variables, it is unlikely that there is an omitted variable that would overturn the results of this study. It appears that the main results are reasonably robust to potential correlated omitted variables.

5. Discussion and conclusions

This study further investigates the effect of book-tax conformity on earnings management. It analyzes an international sample of European firms across twelve countries with corporate tax cuts in the period from 2007 to 2014. The study contributes to the debate on the costs and benefits of increasing book-tax conformity. Opinions in this debate are polarized and prior literature provides mixed evidence on the impact of book-tax conformity on accounting quality. Recent evidence suggests that more earnings management is occurring in jurisdictions with high book-tax conformity ([Blaylock et al., 2015](#); [Watrin et al., 2014](#)). However, [Tang \(2015\)](#) provides evidence to the contrary. This paper investigates private firms and supports the findings that higher conformity is associated with less earnings management overall. At the same time, this paper argues that higher conformity is linked with more downward earnings management when there is a strong incentive to manage earnings, as exemplified by a situation where the corporate tax rate is to be lowered. As such, this study demonstrates a benefit of decreased conformity in the specific case of tax-induced earnings management.

This study contributes to the research arena in various ways. First, the simultaneous examination of a clear earnings management incentive and the association between earnings management and book-tax conformity delivers a major contribution. Previous studies on book-tax conformity have mainly focused on earnings management overall and in the absence of any incentive. Therefore, this study contributes by analyzing signed incentive-based earnings management instead of only observing unsigned and overall earnings management. Second, this study provides a contribution to the literature that investigates accounting attributes of private firms. Previous studies primarily highlight public firms. Since jurisdictions also have different levels of book-tax conformity when it comes to private firms, it is interesting to investigate this group of firms in

this context. Watrin et al. (2014) also highlighted that the importance of single financial statements has been underestimated in analyses of book-tax conformity, and this study extends prior literature by examining private firms with a specific incentive to manage earnings. Third, previous research on private firm responses to corporate tax rate adjustments has been performed on the national level. This study contributes by exploring recent reforms across several jurisdictions and is thus able to add to the understanding about private firm tax-induced earnings management in different countries.

This study may also generate practical implications concerning reporting and tax reforms. The results may be useful for regulators in evaluating corporate tax reforms and in planning of future reforms where the corporate tax rate is to be adjusted. This study is also important for countries considering switching from low to high conformity. In addition, the findings may be beneficial for tax authorities, creditors and independent auditors in the analysis of the financial statements of private firms.

One limitation of this study is that it uses data from a limited number of countries. By using additional countries with different levels of conformity between tax and accounting rules from other parts of the world, the results of the study could be strengthened and broadened. At the same time, another limitation may arise from the present multinational examination of the effects of book-tax conformity, which does not ensure constant institutional characteristics. Yet another limitation of the study is that alternative explanations to some of the earnings management evidence documented in this paper could exist. This study does not consider any conflicting incentives to manage earnings before a corporate tax rate reduction. For instance, the tax on dividends is often hiked when the tax on corporate profits is lowered. This could result in an alternative incentive to increase earnings to be able to pay out larger dividends before an increased tax rate is effective. Future research could incorporate such alternative incentives in the analysis. In this study, however, the incentive to decrease earnings prior to a corporate tax rate cut is seen as the strongest incentive present at the time of the investigation. To further deepen the analysis, future research could utilize different measures of earnings management such as the observation of other specific accruals. Another extension would be to measure other aspects of earnings quality which has not been the focus here.

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