Arbeitskreis Quantitative Steuerlehre
Quantitative Research in Taxation – Discussion Papers

Vanessa Flagmeier / Jens Müller / Caren Sureth-Sloane

When do managers highlight their effective tax rate?

arqus Discussion Paper No. 214

March 2017

www.arqus.info
ISSN 1861-8944

When do managers highlight their effective tax rate?

Vanessa Flagmeier*, Jens Müller[#], Caren Sureth-Sloane[ǂ]

Abstract

We examine the disclosure of GAAP effective tax rate (ETR) information in firms' financial statements. Applying the theoretical underpinnings of Wagenhofer (1990) to a tax setting, we argue that firms face a tradeoff in their GAAP ETR disclosure decision. On the one hand, firms have incentives to increase GAAP ETR disclosure if the ratio has a condition that is favorable from an investor's perspective, expecting positive capital market reactions. On the other hand, the disclosure might draw tax auditors' and public attention to the GAAP ETR and result in proprietary costs in terms of additional tax payments or reputational damages. We empirically test the disclosure behavior by examining the relation between disclosure intensity and five different measures of favorable GAAP ETR conditions. First, we provide evidence that the annual report section in which most of the firms disclose GAAP ETR information is the management report, indicating that firms assign considerable relevance to the ratio. Second, we find a higher disclosure intensity if the GAAP ETR has a favorable condition, i.e. is decreasing or near the average ratio of firms in the same industry or size group. We do not find a significant relation to the disclosure level for smooth GAAP ETRs. Our findings indicate that firms assess the benefits of providing the favorable GAAP ETR information to be higher than the related costs. Documenting firms' GAAP ETR reporting behavior, we contribute to the tax disclosure literature by providing insights into possible disclosure incentives. Further, our results could increase awareness among investors to have a second look at the GAAP ETR if the disclosure intensity with respect to the ratio is low.

Keywords: Effective tax rate, Disclosure, Proprietary Costs

Acknowledgements: We thank participants at the 2013 arqus Doctoral Workshop for valuable comments on an earlier version of this paper.

* University of Paderborn, Faculty of Business Administration and Economics, Warburger Str.100, 33098 Paderborn, Germany, email: vanessa.flagmeier@upb.de.

[#] University of Paderborn, Faculty of Business Administration and Economics, Warburger Str.100, 33098 Paderborn, Germany, email: jens.mueller@upb.de.

[ǂ] University of Paderborn, Faculty of Business Administration and Economics, Warburger Str.100, 33098 Paderborn, Germany, email: caren.sureth@upb.de.

1. Introduction

Avoiding taxes has become a thorny issue for firms. Intense media interest in firms' tax policy imposes tax-related reputation risks on firms. Examples of global firms as Starbucks and Google demonstrate the public resentment regarding firms that avoid taxes, amounting even to 'tax shaming' (Barford and Holt, 2013). The related debate about corporate tax transparency went up to new heights after the Panama Paper scandal, leaking details about large-scale tax evasion. Therefore, it is not surprising that reputational concerns are among the most important factors explaining why firms do not adopt a potential tax planning strategy (Graham et al., 2014). A survey of 830 tax and finance executives by Ernst and Young (2014) indicates that firms take proactive steps to manage tax reputation risk, including the way in which they communicate tax-related information.

Given these developments, the tax disclosure of firms is an under-researched area. We do not know much about how firms communicate their tax information. Hanlon (2003) suggests that the tax information in financial statements is insufficient to infer firm's actual tax liabilities. In a similar vein, studies provide evidence that firms fail to comply with tax disclosure requirements (Gleason and Mills, 2002) or strategically avoid disclosure of unpleasant tax information (Dyreng et al., 2016). However, to mitigate negative capital market reactions caused by the absence of certain tax information, they seem to report the respective items voluntarily (Balakrishnan et al., 2012; Flagmeier and Müller, 2016).

In this study, we extend the literature on tax disclosure by examining how and when firms report information about an important indicator of the firm's tax burden: the GAAP effective tax rate (ETR).[1] Although the ratio is not without controversy (e.g., Plesko, 2003; Dyreng et al., 2008; Müller and Sureth, 2010), it is used as a benchmark for cross-company tax comparisons, to measure the performance of tax departments, in executive compensation contracts, and to evaluate important corporate decisions (Robinson et al., 2010; Armstrong et al., 2012; Graham et al., 2014; Graham et al., 2017). Firms face a tradeoff regarding the optimal level of the GAAP ETR. As tax payments represent substantial costs for a firm, managers usually strive for a low GAAP ETR (e.g., compared to the statutory tax rate). This incentive is reinforced by positive capital market reactions to tax avoidance (e.g., Frischmann et al., 2008; Desai and Dharmapala, 2009; Koester, 2011), and to lower GAAP ETRs in particular (e.g., Lev and Thiagarajan, 1993; Swenson, 1999).[2] However, reporting a low GAAP ETR can be associated with substantial risks for the firm. Referring to the above-mentioned discussion, it can attract the attention of the media, politicians or other public interest groups. The resulting public pressure can have considerable effects on the firm's reputation and tax policy in particular. Dyreng et al. (2016) provide evidence that public pressure from a non-profit organization can lead scrutinized firms to reduce tax avoidance,

[1] The GAAP ETR is defined as total income tax expense divided by pre-tax accounting income.

[2] The positive capital market reactions apply mainly to non-aggressive tax avoidance. Hanlon and Slemrod (2009) observe negative stock price reactions to news about a company's involvement in tax shelter. However, Gallemore et al. (2014) find that the negative capital market reactions to news of aggressive tax avoidance reverse within a short period.

resulting in an ETR increase of 2.7 percentage points. Moreover, reporting low GAAP ETRs could increase tax auditor's attention. Bozanic et al. (2017) find a negative association between GAAP ETRs and Internal Revenue Service (IRS) attention, indicating that firms with low GAAP ETRs are under more intense IRS scrutiny. Given the conflicting interests of different important stakeholder groups, firms face a tradeoff regarding the desirable GAAP ETR level and communication.

In this study, we examine how this tradeoff is reflected in firms' disclosure behavior. We define different GAAP ETR conditions that can be desirable from an investor's perspective. Whether we observe a high disclosure intensity if the GAAP ETR has a favorable condition can be an indicator for the cost-benefit tradeoff that the firm faces. We apply the line of argument of Wagenhofer (1990) to our tax setting: on the one hand, firms want to disclose favorable information (i.e. a desirable GAAP ETR) to investors to increase the market price. On the other hand, this favorable information can induce a third party (i.e. tax authority or public organization) to take an adverse action, causing proprietary costs for the firm (i.e. additional tax payments, reputational damages etc.). Hence, firms have incentives to increase GAAP ETR disclosure if the ratio has a desirable condition but may also decide not to draw the attention to the ratio.[3]

To analyze whether firms report information about desirable GAAP ETRs, we examine financial statement's GAAP ETR disclosure. As either the GAAP ETR or the equivalent in absolute terms (i.e. total tax expense and pretax income) has to be disclosed under International Financial Reporting Standards (IFRS) and United States Generally Accepted Accounting Principles (US-GAAP), an interested financial statement reader should always be able to find or calculate the ratio from the financial statement information. However, a (less sophisticated) investor who is not explicitly searching for GAAP ETR information might not notice the ratio if it is disclosed in a non-prominent section, e.g. the tax footnote. Prior studies document an increasing length of annual reports over the past decade (Li, 2008) and practitioners argue that this disclosure overload makes it difficult to process disclosures (Radin, 2007). Hence, increasing the GAAP ETR disclosure intensity can be an opportunity for managers to draw the attention to the GAAP ETR. We measure disclosure intensity with three different variables: the frequency of GAAP ETR appearance, the first page of GAAP ETR appearance, and whether the GAAP ETR is mentioned in the management report. All three measures capture how much attention the firm wants to draw to the ratio, suggesting the intensity of disclosure.

First, we provide a number of descriptive statistics on firms' GAAP ETR reporting behavior. We examine a sample of German DAX30 and MDAX firms over the period 2001 to 2012. Analyzing the largest German firms with respect to market capitalization and order book volume ensures that our sample firms are subject to high public interest and can therefore rationally expect proprietary costs

[3] The results of Wagenhofer (1990) indicate that there does not exist a nondisclosure equilibrium. However, there can be partial-disclosure equilibria where only average information is disclosed and the most favorable information is not disclosed.

from public actors. However, we acknowledge that choosing the largest firms weakens at the same time the threat of additional tax auditor attention as these firms are constantly under intense scrutiny of tax authorities. We find that, after scaling with the annual report length, both the average number and the first page on which the GAAP ETR appears are rather constant over the period 2005 to 2012 while we observe unsteady means in the first years of the sample period. Further, the reporting intensity of GAAP ETR information is higher for firms reporting under international standards (i.e. IFRS or US-GAAP) than under German GAAP. The part of the annual report where most firms mention the GAAP ETR is the management report (70 percent of all observations). The section where reporting standards usually require the disclosure of the GAAP ETR, the notes, ranks only second in the reporting frequency (66 percent of all observations).[4] In Appendix A, we provide anecdotal evidence on the GAAP ETR reporting behavior of our sample firms and particularly on disclosure changes within firms.

In a second step, we distinguish between several desirable GAAP ETR conditions and test the relation to financial statement disclosure. In line with the negative association between tax avoidance and capital market share prices (e.g. Lev and Thiagarajan, 1993; Desai and Dharmapala, 2009; Koester, 2011), we define the first desirable condition to be decreasing GAAP ETRs. Other possible target conditions of managers can be smooth GAAP ETRs (Demeré et al., 2016) and GAAP ETRs close to certain thresholds, e.g. the ratio of competitors (Wagener and Watrin, 2012; Armstrong et al., 2016). Building on this literature and additionally drawing on earnings management research (e.g., Trueman and Titman, 1988; Walker, 2013), we distinguish three desirable GAAP ETR conditions: decreasing ETRs, smooth ETRs, and ETRs close to the average ETR of a benchmark group.

We find a positive and, for the majority of our GAAP ETR measures, significant association with disclosure intensity. Firms that have decreasing ratios and ratios near a benchmark level, report on average more information about the GAAP ETR and on an earlier page in the annual report. Further, the probability that the GAAP ETR is mentioned in the management report increases if the ratio is decreasing or near a benchmark ETR. We do not find significant results for smooth GAAP ETRs in any of the tests. Moreover, additional tests suggest that the reporting intensity is low if the GAAP ETR is very volatile or increased in the current year.

The results indicate that managers report more GAAP ETR information if the ratio has a condition that is desirable from an investor's perspective, despite the risk that the disclosure of this information leads to proprietary costs. This finding suggests that the expected capital market benefits outweigh the costs imposed by tax audits or public pressure. However, this seems not to apply to smooth GAAP ETRs, as we do not find significant results for this category. While Demeré et al. (2016) and Wagener and Watrin

[4] While IFRS (IAS 12.81c) requires the disclosure of the GAAP ETR, firms are alternatively allowed to disclose the absolute values instead of the percentages, i.e. the reconciliation between expected tax payment based on accounting income and tax expense. This choice option explains why we do not find GAAP ETR information in all IFRS statement's notes.

(2012) provide evidence that firms intentionally smooth their GAAP ETR, managers might perceive drawing the attention to smooth GAAP ETRs as more costly or might expect the positive reactions to be rather small. As a smooth ratio implies few changes in the GAAP ETR over time, management might not see additional benefits in highlighting each period that the ratio stays basically the same. An alternative explanation can be that the ratio is not smoothed to impress investors but for internal reasons, as for example incentive compensation that is tied to the GAAP ETR (Robinson et al., 2010; Armstrong et al., 2012).

With this study, we make serval contributions. First, we add to the research investigating the importance that managers assign to tax related information. Graham et al. (2014) provide evidence that managers care about the GAAP ETR and our results indicate that this concern is reflected in the financial statement disclosure behavior. Finding that the management report (i.e. the section where firms are expected to discuss the most relevant information) is the annual report section in which most of our sample firms report GAAP ETR information highlights the importance that management assigns to the ratio. Second, we contribute to the tax disclosure literature. Our results suggest that the intensity of GAAP ETR reporting in the annual report depends on the condition of the ratio. Building on the theory in Wagenhofer (1990), this reporting behavior can be an indicator that management expects the benefits of communicating a favorable GAAP ETR condition to outweigh the possible proprietary costs of the disclosure. Given that firms intensify reporting despite the intense media interest in tax avoiding firms and the possible resulting public pressure (Dyreng et al., 2016), our results can be interpreted as firms expecting considerable capital market benefits from promoting for example decreasing GAAP ETRs. Providing insights into firms' disclosure incentives, we thus help to explain variation in cross-company tax reporting behavior (see e.g. Kvaal and Nobes, 2013). This evidence can be of interest for investors, indicating that a low GAAP ETR disclosure intensity might be interpreted as a signal for an unfavorable ratio on which the firm does not want to draw the attention. Hence, if it is hard to find GAAP ETR information in the annual report, intensifying the search might be worth the effort for investors and analysts.

While we address possible endogeneity problems, in particular correlated omitted variables, in the sensitivity tests in Section 6, our findings have to be interpreted with this caveat in mind.

The paper proceeds as follows. Section 2 presents prior literature and hypotheses development. Section 3 describes the research design. Section 4 gives information about the data and descriptive statistics while Section 5 presents regression results. In Section 6, we add further tests and sensitivity checks. Section 7 concludes.

2. Related Literature and Hypotheses Development

Disclosure of Tax Information

In line with recurring claims of politicians and other public interest groups about missing transparency in firms' reported tax information, some studies criticize financial statements' tax disclosure to be insufficient. Hanlon (2003) outlines the problems in calculating a firm's taxable income and actual tax liabilities from financial statements. She concludes that additional tax related disclosure in financial statements is needed. Gleason and Mills (2002) provide evidence that firms often do not report information on contingent tax liabilities even though the amounts exceed a materiality threshold. Similarly, Dyreng et al. (2016) examine firms that do not comply with disclosure requirements of the U.K.'s Companies Act of 2006 and find that firms strategically avoided the tax related disclosure. The general takeaway from these studies is that firms do not report sufficient tax information in financial statements. At the same time, other studies suggest that firms increase tax disclosure when they deem it relevant for financial statement users. Balakrishnan et al. (2012) indicate that managers try to mitigate a reduction in financial reporting transparency (caused by aggressive tax planning) by augmenting tax-related disclosure. In a similar vein, Flagmeier and Müller (2016) suggest that firms increase tax footnote disclosure about tax loss carryforwards to mitigate uncertainty about the future usability of the tax losses.

Hence, on the one hand, firms seem to report rather scarce tax details, on the other hand, they voluntarily provide information to mitigate possible negative (capital market) reactions to increased uncertainty.[5] We extend the literature on tax disclosure by analyzing the tax reporting behavior of firms with respect to an important and at the same time controversial tax item, the GAAP ETR. Our study differs from the prior tax reporting research, as we do not investigate a setting where firms are spurred by uncertainty to increase tax disclosure. As the literature indicates that capital markets usually react stronger to negative information than to positive information (e.g., Skinner, 1994; Kothari et al., 2009), firms have stronger incentives to avoid negative reactions. Absent the negative implications of non-disclosure, firms are subject to different incentives and have to trade off the (possibly weaker) positive capital market reactions to disclosing the positive information (i.e. the desirable GAAP ETR condition) and the expected proprietary costs. Hence, we examine whether firms disclose information about an important tax item without the threat of negative implications in the case of non-reporting but with the risk of proprietary costs in the case of reporting. We thus help to evaluate the benefits that firms expect from reporting favorable tax information.

[5] Both, financial reporting opacity (Balakrishnan et al., 2012) and uncertainty about future tax savings from loss offsetting (Flagmeier and Müller, 2016), can create investor uncertainty about firm value and lead to negative capital market reactions.

Theory and Hypotheses Development

Early analytical research on voluntary disclosure in the accounting literature suggests that favorable information is disclosed while unfavorable information is withheld (see Verrecchia, 2001). Other streams of literature indicate that incentives as for example litigation risk can motivate managers to release bad news (e.g., Skinner, 1994; Kasznik and Lev, 1995) and incentives as proprietary costs can induce managers to withhold good news (Wagenhofer, 1990). More specifically, Wagenhofer (1990) describes a setting where a firm has private information. If the information is favorable and the firm decides to disclose it, positive capital market reactions are the consequence. At the same time, disclosing the favorable information leads to an adverse action of an opponent. The opponent can for example be a rival or a political agency whose adverse action results in proprietary costs for the firm, e.g. increased competition, increased regulation or negative publicity. Wagenhofer (1990) derives different equilibrium strategies. In particular, he identifies partial-disclosure equilibria in which neither the very favorable nor the very unfavorable information is disclosed, deterring the opponent from taking the adverse action. Hence, if the proprietary costs are sufficiently large, a firm might decide to forgo the capital market benefits and not disclose the favorable information.

We apply this theoretical framework to a tax setting. We assume that firms are inclined to provide more GAAP ETR information if the ratio is favorable to draw investors' attention to the number. Building on prior research, we identify different GAAP ETR conditions that can be favorable from an investor's perspective.[6] However, the expected capital market benefits can be outweighed by the costs of drawing the attention to the GAAP ETR. A firm's tax information can be of interest for different potential 'opponents'. Possible 'adverse actions' can be taken by tax authorities if financial statement tax disclosure attracts or increases tax auditors' attention. Bozanic et al. (2017) find that the Internal Revenue Service (IRS) systematically acquires publicly available financial statements and that the information therein seems to complement company specific tax information that is privately available to the IRS (i.e. tax returns). Further, their results indicate that IRS attention is negatively associated with GAAP ETRs. The authors state that "[...] firms may wish to be as transparent as possible to investors regarding their tax positions while, at the same time, minimizing the probability that the revealed tax information is used against them by the tax authority […]" (Bozanic et al., 2017, p. 3/4). In a similar vein, Kubick et al. (2016) find that firms that seem to engage in greater tax avoidance have a higher probability to receive a tax-related comment letter from the Securities and Exchange Commission (SEC). Further, these firms decrease tax avoidance after receiving the comment letter. Consistent with this evidence, Hoopes et al. (2012) find that a higher likelihood of an IRS audit increases the cash effective tax rate, indicating that firms reduce tax avoidance if tax audits are more probable. Further, Robinson and Schmidt (2013) examine tax disclosure of uncertain tax positions in a Financial

[6] The desirable conditions are decreasing GAAP ETRs, smooth GAAP ETRs, and GAAP ETRs close to the ratio of a benchmark group. A more detailed discussion of the different conditions is provided in Section 3.

Interpretation No. 48 (FIN 48) setting and find a negative association between proprietary costs and disclosure quality. The result suggest that proprietary cost concerns due to revealing tax information to tax authorities limit firms' disclosures.

Other possible proprietary costs for the firm can result from public pressure. Recent evidence by Dyreng et al. (2016) indicates that activist groups can have a considerable influence on a firm's tax policy. The authors examine the effect of increased public scrutiny by a global non-profit organization, pressuring FTSE 100 firms to comply with U.K. law that requires the disclosure of the location and identity of all subsidiaries. Dyreng et al. (2016) find that noncompliant firms increase disclosure in response to the public pressure and that the firms seem to have strategically avoided the disclosure before. Further, the noncompliant firms reduce tax avoidance after the public scrutiny, represented by an increase in ETRs by 2.7 percentage points. Hence, firms seem to conceal certain tax related information due to the threat of public pressure. Relatedly, results of a tax executives survey of Graham et al. (2014) indicate that reputational concerns rank second in order of importance among all factors explaining why firms do not adopt a potential tax planning strategy. In another survey, Ernst and Young (2014, p. 6) find that 89 percent of the largest firms are concerned about media coverage of their low ETRs and 42 percent have changed their communication of tax information to external stakeholders due to these concerns.

In sum, firms have incentives to report GAAP ETR information if the ratio has a favorable condition to draw investors' attention to the ETR but might also face substantial proprietary costs if the disclosure increases tax auditor's or public scrutiny and might therefore decide not to disclose the favorable information. As outlined in detail in section 3, we identify three favorable GAAP ETR conditions: decreasing GAAP ETR, smooth GAAP ETR, and GAAP ETR close to a benchmark, i.e. the average ratio of industry or size peers. Building on the arguments above, we develop the following hypotheses for the different conditions.

H1: *Firms increase GAAP ETR disclosure intensity if the ratio is decreasing.*

H2*: Firms increase GAAP ETR disclosure intensity if the ratio is smooth.*

H3: *Firms increase GAAP ETR disclosure intensity if the ratio is close to a benchmark.*

3. Research Design

GAAP ETR Disclosure Intensity

We define our GAAP ETR measure (*ETR*) as total income tax expense divided by pre-tax accounting income. This definition is a standard in common reporting practice as it is in accordance with the definition of IAS 12 and commonly used in the prior literature (e.g., Hanlon and Heitzman, 2010; Dyreng et al., 2010). Our disclosure proxy should capture whether management wants to draw attention

to the GAAP ETR. Given that the annual report is still one of the most important communication channels despite the increasing use of additional disclosure media, we analyze firms' disclosure in financial statements.[7]

The first disclosure measure is based on Li et al. (2013). The authors use a textual analysis of firms' 10-K filings to develop a new measure of competition. They examine management's perception of competition intensity by counting the number of occurrences of the word "competition" or similar expressions in the 10-K. The competition related words are scaled by the total number of words in the 10-K to control for the length of the financial statement. In this study, we are interested in firms' reporting behavior regarding the GAAP ETR. Therefore, we count the number of times the expression "corporate effective tax rate" appears in a firm's annual report. Using a German sample and financial statements in German, we search for the following German expressions for the GAAP ETR: "Effektivsteuer", "Steuerquote", "Konzernsteuer".[8] We do not only count the words but also check the context to verify that the term indeed refers to the GAAP ETR and not for example to the average corporate statutory tax rate.[9] Similar to Li et al. (2013), we control for the length of the annual report by scaling our variable by the total number of pages. Hence, the first disclosure proxy *NUMBER* is the number of times the GAAP ETR is mentioned, divided by the total pages of the annual report.

The second proxy measures the first page on which the GAAP ETR appears in the annual report. Due to the limited attention span of financial statement users and the increasing length of annual reports (Li, 2008), firms might place the most important information right at the beginning of the document.[10] We therefore expect firms that want to draw the attention to the GAAP ETR, to mention the ratio early in the annual report. Analogous to our first proxy, we search for the German expressions for the GAAP ETR in the annual report and record the first page on which the ratio appears.[11] This item, again scaled by total annual report pages, is the second disclosure measure: *PAGE*.

Apart from the number of times and the first page on which the GAAP ETR is mentioned, another indicator of disclosure intensity can be the section of the annual report in which the ratio is discussed. IFRS (IAS 12.81 (c) and 12.86) and US-GAAP (SFAS 109.47) require a reconciliation between the theoretical tax burden of a firm (based on pretax accounting income) and tax expense with either the absolute values or the percentages, the latter one referring to the GAAP ETR. Hence, the usual section

[7] See for example De Franco et al. (2011) or Atwood and Reynolds (2008) for the importance of financial statement information.

[8] The translation is as follows: "Effektivsteuer" effective tax, "Steuerquote" tax rate, "Konzernsteuer" corporate tax.

[9] Examining the tax notes in detail, we find other expressions for the ETR, e.g. "Ertragsteueraufwand in Prozent" (income tax expense percentage) which are also counted.

[10] For evidence on the limited attention of information recipients, see Simon (1971) who first identified the concept of Attention Economy.

[11] We do not record the page-number printed in the annual report but the "counted" page, beginning with page one on the annual report cover.

where we would expect information about the GAAP ETR is in the notes.[12] However, firms might choose to report the GAAP ETR also in other, more salient parts of the annual report. A prominent example is the management report. While the management report is not a mandatory part of the reporting under IFRS, German companies are required to include the management report due to German GAAP (§ 264 I HGB, § 290 I HGB) even if they prepare their statements in accordance with IFRS. However, the report should only include the *most important* financial and non-financial business indicators (§ 289 I, III HGB). Referring to the GAAP ETR in this part indicates that management considers the ratio to be among the most relevant information. Therefore, we create a dummy variable *MAN_REPORT* taking the value one, if the GAAP ETR appears in the management report.

Desirable GAAP ETR Conditions

We identify three different GAAP ETR conditions that might be desirable from an investor's perspective: decreasing GAAP ETRs, smooth GAAP ETRs, and GAAP ETRs close to certain benchmarks. First, being primarily interested in current and future after-tax cash flows of a firm, investors generally react positively if firms try to reduce tax payments (e.g., Desai and Dharmapala, 2009; Koester, 2011). With respect to the GAAP ETR, a low ratio (e.g., compared to the statutory tax rate) is usually interpreted as small tax burden for the firm (Graham et al., 2011).[13] Therefore, we expect decreasing GAAP ETRs to be desirable for investors. Our measures for decreasing ETRs are *DECR1* and *DECR2*. *DECR1* is an indicator variable that equals one if the current year GAAP ETR is smaller than the prior year GAAP ETR. Extending the period, the indicator variable *DECR2* is one if the GAAP ETR decreased in the current and previous year.[14] Increased disclosure in the case of a GAAP ETR decrease and hence a positive association of the two measures with *NUMBER* and *MAN_REPORT* and a negative relation with *PAGE* would support our hypothesis H1.

Second, Jacob and Schütt (2013) find that earnings of firms with poor tax planning or volatile ETRs are valued by market participants with a discount. Consistent with this notion, a recent stream of literature indicates that sustainable tax strategies, i.e. smooth ETRs, provide useful information about future tax payments and earnings persistence (McGuire et al., 2013; Demeré et al., 2016). Hence, investors might prefer less volatile GAAP ETRs. Based on this evidence and drawing on earnings management research (e.g., Trueman and Titman, 1988; Walker, 2013), we define our second desirable condition to be smooth GAAP ETRs. The variable *SMOOTH* captures the firm-specific GAAP ETR standard deviation within a period up to five years, including the current and up to the four previous years.[15] A smaller standard

[12] With 92.88 percent of our sample observations, the broad majority are IFRS statements – including mandatory and voluntary adopters.

[13] However, the GAAP ETR reflects only the part of tax reducing behavior that creates permanent differences between book and tax income and hence reduces the numerator of the ratio. Other tax strategies might be directed at increasing the after-tax rate of return via accelerating deductions and delaying income. These activities create temporary differences that do not affect the GAAP ETR (Shackelford and Shevlin, 2001).

[14] In other words, GAAP ETR in t < GAAP ETR in t-1 < GAAP ETR in t-2.

[15] To preserve sample size, we use a shorter period if less than five years of data are available.

deviation means less variation in the ratio. We multiply *SMOOTH* with minus one for the ease of interpretation: after the multiplication, a higher value of the measure means lower volatility.[16] Therefore, we again expect a positive association with *NUMBER* and *MAN_REPORT* and a negative association with *PAGE*.

Third, another possible target condition for the GAAP ETR can be the (average) ratio of a certain benchmark group, e.g. firms within the same industry or of a similar size. As investors tend to compare ETRs of different firms (Graham et al., 2011), a GAAP ETR can be desirable if it is close to the ratio of a benchmark group. In line with this notion, Armstrong et al. (2016) find that firms strategically change their tax avoidance behavior in response to tax avoidance changes of industry competitors. Our first proxy *BENCHM1* measures the absolute deviation of the firm-level GAAP ETR from the lagged average industry GAAP ETR. Industry is defined on the one-digit SIC level.[17] Another group of interest can be firms with the same size. We use total sales as a proxy for size and divide the distribution into quintiles. Then, we create our second measure *BENCHM2* as the absolute deviation of the firm-level GAAP ETR from the lagged average GAAP ETR of firms in the same sales quintile. After, again, multiplying both measures with minus one, a higher value means less distance to the benchmark GAAP ETR. We expect a positive association with *NUMBER* and *MAN_REPORT* and a negative association with *PAGE*.

Model

To analyze the relation between GAAP ETR disclosure intensity and the condition of the ratio, we estimate the following regression model:

$$ETRDISCL = \beta_0 + \beta_1 ETRCOND + \beta_2 ETR + \beta_3 MANDIFRS + \beta_4 SIZE + \beta_5 AUD + \beta_6 ARSCORE + \beta_7 LEV + \beta_8 IFRSFIRST + \beta_9 IND + \beta_{10} TREND + \varepsilon \quad (1)$$

where ε is the error term and firm subscripts, i, are suppressed in all models. Variables are defined in Table 1. We estimate the model with three alternative variables for *ETRDISCL*, representing the above-defined disclosure measures *NUMBER*, *PAGE*, and *MAN_REPORT*. Further, we estimate five different models per dependent variable, where *ETRCOND* represents the different desirable GAAP ETR measures *DECR1, DECR2, SMOOTH, BENCHM1,* and *BENCHM2*. While we estimate OLS regressions for the dependent variables *NUMBER* and *PAGE,* we use logit models for the dichotomous dependent variable *MAN_REPORT*.

[Insert Table 1 here]

To control for the level of the current GAAP ETR, we include *ETR* in our regressions. As our sample includes firms that report under different accounting standards (see Table 3), we control for these

[16] "Higher" means in this case less negative.
[17] In Section 6, we provide an additional test using the two-digit SIC level. Our inferences are unaffected.

differences with two variables.[18] The first variable is a proxy for the application of IFRS (*MANDIFRS)*, representing an indicator variable with the value one if the firm applies IFRS and is a mandatory adopter, i.e. after the year 2004.[19] To measure experience with the application of IFRS, we include the indicator variable *IFRSFIRST*, which is one in the year in which the firm applies IFRS for the first time (mandatorily or voluntarily).

Further control variables are derived from the disclosure literature: *SIZE* is the firm size and measured by the natural logarithm of total assets, *AUD* is a dummy variable indicating whether the firm is audited by one of the Big4 auditors, *LEV* is the ratio of long-term debt to total assets and measures how strongly a firm is leveraged, *IND* is the one-digit SIC code for the industry identification, and *TREND* is a yearly increasing variable that captures whether there exists a linear trend in the development of the dependent variable. Our additional control variable *ARSCORE* is a disclosure score of the overall annual report content quality. With this variable, we want to control for the general disclosure behavior of the firm. The score is developed for the German yearly annual report contest "Der beste Geschäftsbericht" (Baetge, 1997) and published in the "Manager Magazin", a German business magazine. For this competition, a research group analyzes each year the annual reports of all large German listed companies with respect to content, design, and language. We use the results in the category content, where the possible scores range from zero to one (one indicates the highest content quality).

4. Data

Sample

Our sample comprises firm-year observations for the German DAX30 and MDAX firms over the period 2001 to 2012. We examine the largest and most salient German firms because they are subject to considerable public attention and managers of these firms can reasonably expect their tax disclosures to be scrutinized by a broad audience. While this characteristic of our sample firms enforces the proprietary cost argument with respect to public pressure, it attenuates the threat of increased tax auditor attention because firms of this size are under constant tax audit. The sample period starts in 2001 to avoid having the effect of the corporate tax reform 2000 in our sample period and due to the limited availability of earlier annual reports for the hand-collection.[20] We obtain financial and accounting data from DataStream. Disclosure information and the applied accounting standard are hand-collected from

[18] To further control for different effects of accounting standards followed, we repeat the analysis with a shorter sample period starting in 2005, including only IFRS adopters. Using the reduced sample does not change our inferences (see Section 6 for details).

[19] We repeat our tests with an alternative IFRS control variable, which equals one for all IFRS adopting observations, i.e. mandatory and voluntary adopter. Results are virtually the same as in our main tests.

[20] We do different robustness checks in Section 6 to control for the effect of the corporate tax reform 2008.

financial statements.[21] Data for the variable *ARSCORE* is partly obtained from the "Manager Magazin" and in part directly provided by the Baetge Research Group. The sample selection is described in Table 2. Because not all of our 80 sample firms existed/have been listed in the year 2001 and due to the limited availability of early annual reports, our initial sample is an unbalanced panel with 769 firm-year observations.[22] We exclude observations with negative pretax income, negative tax expense, or cases where the tax expense is larger than pretax income because these cases can indicate unusual circumstances and lead to abnormal values for the GAAP ETR. By eliminating these outliers, we lose 114 observations. Due to missing data for single variables, our sample is further reduced by 135 observations. The resulting sample size of 520 observations of 70 firms is our final sample for the variable *NUMBER*. Estimations with *PAGE* are further reduced because we have to exclude those firms that have zero references to the GAAP ETR in the annual report, resulting in a sample size of 440 observations.[23]

[Insert Table 2 here]

Descriptive Statistics

Graph 1 Panel A presents the yearly development of the average scaled and unscaled variable *NUMBER*. The average unscaled number of times the GAAP ETR appears in the annual report increases over the sample period from 0.93 in 2001 to 3.38 in 2012. In yearly comparisons, only the difference between the mean of the year 2001 and 2002 is statistically significant.[24] After adjusting the number for the total pages of the annual report, the development does not show any trend or statistically significant differences in the year-to-year comparison.[25] The development for the variable *PAGE* is presented in Panel B of Graph 1. The average unscaled variable increases over the sample period without significant changes, indicating a trend to mention the GAAP ETR further back in the annual report. However, after scaling the variable with the total pages, the mean is rather stable from 2005 to 2012 and shows a significant difference (10 percent level) in yearly means only for 2004/2005.

[21] Information about the applied accounting standards is also available in DataStream (Field WC07536) but deviates in two percent of all cases from the hand-collected data. Therefore, we use the hand-collected information for our estimation.

[22] We include those firms in our sample that were listed on the DAX30 or MDAX on an arbitrary date, in this case November 28, 2013.

[23] Of the observations that do not mention the GAAP ETR, five are firms reporting under German GAAP were the disclosure was not required. The other 75 observations report under IFRS (71) or US-GAAP (4). IAS 12.81c and SFAS 109.47 require the disclosure of the GAAP ETR but allow alternatively the reporting of absolute values, i.e. the reconciliation between expected tax payment based on accounting income and tax expense. The observations that do not mention the GAAP ETR make use of this option and report only the absolute values in the tax reconciliation.

[24] Significant on 10 percent level based on two-sided t-test.

[25] The peak for the scaled and unscaled *NUMBER* in 2002 is mainly driven by STADA AG who mentions the GAAP ETR 13 times in 2002. STADA's GAAP ETR decreased from 62.1 percent in 2001 to 42.5 percent in 2002. The firm explains in an own section in the financial results that this lower tax burden leads to an increased after-tax profit and describes reasons for the GAAP ETR reduction (STADA annual report 2002, p. 49).

[Insert Graph 1 here]

Summary statistics are provided in Table 3. Panel A splits the variable *NUMBER* into the different annual report sections where firms report GAAP ETR information. The first section, introduction, refers to the part at the beginning of the annual report where only key numbers and ratios are discussed. We find GAAP ETR information in this section for 16 observations (3 percent), each referring to the ratio once. The section where we find the highest average number of GAAP ETR references is the management report with a mean of 2.24 and up to a maximum of 12 appearances. Of the 520 observations, 365 (70 percent) disclose GAAP ETR information in this section. The second highest number of references is reported in the notes with a mean of 1.54 for 344 (66 percent) observations. Finally, 57 (11 percent) observations report GAAP ETR information with on average 1.74 references in other parts of the annual report.

[Insert Table 3 here]

Panel B of Table 3 presents summary statistics for *NUMBER* and *PAGE* for the different applied accounting standards. Both variables are scaled by the total pages of the annual report to take the different extent of reporting requirements under the standards into account. The highest average value for *NUMBER* can be found for firms that report under US-GAAP, followed by voluntary IFRS adopters, mandatory IFRS adopters, and German GAAP. Regarding *PAGE*, the earliest average reference to the GAAP ETR can be found in mandatory IFRS reports, closely followed by US-GAAP. Voluntary IFRS adopter and firms reporting under HGB disclose GAAP ETR information, on average, further back in the annual report.

Summary statistics for the regression variables are presented in Panel C of Table 3. The variables are summarized for the 520 firm-year observations except for the scaled and unscaled variable *PAGE*, which is only available for 440 observations.[26] The highest number of GAAP ETR references per annual report is 13 and the earliest appearance can be found on page two. The smoothing variable and the benchmark variables are per construction negative while the measures for GAAP ETR decreases are indicator variables. The average distance from the mean lagged industry and size quintile GAAP ETR are similar with 0.09 (*BENCHM1*) and 0.08 (*BENCHM2*).[27] For 51 percent of all observations, the GAAP ETR decreases from the prior to the current year (*DECR1*) and 21 percent show two subsequent decreases (*DECR2*). The majority of observations (82 percent) are mandatory IFRS adopter (*MAND_IFRS)*. The average ETR is 0.30, which is very close to the current German corporate statutory tax rate.

[26] The reduced sample size results from 80 observations that do not report GAAP ETR information. See Table 2.

[27] The value of 0.09 has to be interpreted as follows: if the lagged industry GAAP ETR has a mean of e.g. 0.30, the firm GAAP ETR deviates on average by 0.09. As the value is expressed in absolute terms, it could indicate a GAAP ETR of 0.21 or 0.39. The negative sign results from multiplying the value with -1 in order to align the direction with the other *ETRCOND* variables.

[Insert Table 4 here]

Table 4 shows the spearman correlation matrix. The correlations indicate for each of the favorable GAAP ETR condition indicators (*DECR1*, *DECR2*, *SMOOTH*, *BENCHM1*, and *BENCHM2*) a positive association with *NUMBER* and *MAN_REPORT* and a negative association with *PAGE*, in line with our hypotheses. We find statistically significant correlations with *NUMBER* only for *SMOOTH* and *BENCHM1* and with the variable *PAGE* for *SMOOTH* and *BENCHM2*. *MAN_REPORT* is significantly related to *DECR1*, *SMOOTH*, *BENCHM1*, and *BENCHM2*.

5. Regression Results

Table 5 presents OLS regression results for Model (1) with the dependent variable *NUMBER* and the five different GAAP ETR condition measures respectively. Standard errors clustered by firm and year are presented below the coefficients in parentheses.[28] The coefficients for all of the five GAAP ETR measures are positive. The coefficients for *DECR1* and *DECR2* are highly significant and the coefficient for *BENCHM1* is significant at the 10 percent-level. This finding is mainly in line with our expectations and suggests that firms report more GAAP ETR information if the ratio is decreasing or close to the average industry GAAP ETR. Regarding the control variables, the results indicate that larger firms report, on average, less GAAP ETR information while firms with higher overall annual report quality (*ARSCORE)* disclose more information about the ratio.

[Insert Table 5 and Table 6 here]

Results for the OLS estimations with *PAGE* as the dependent variable are presented in Table 6. We find the expected negative correlation for all of the five GAAP ETR proxies. Except for *SMOOTH*, all variables have significant coefficients, indicating that the GAAP ETR information is disclosed on an earlier page in the annual report if the ratio is decreasing or close to the industry or size benchmark.[29] Among the control variables, only *IFRSFIRST* has as (positive) significant coefficient, suggesting that the GAAP ETR information is reported further back in the annual report in the first IFRS adoption year.

[Insert Table 7 here]

Table 7 presents the results for the dependent variable *MAN_REPORT*. Given the dichotomous nature of the dependent variable, we estimate a logit model instead of OLS. We include year-fixed effects and cluster standard errors by firm. Again, each of the five GAAP ETR variables has a positive sign and all except for *SMOOTH* have significant coefficients. The findings suggest that the likelihood that a firm

[28] See Petersen (2009) for a detailed discussion about the need for two-way clustered standard errors when working with panel data.

[29] Note that the F-Value of Model I is rather low. Hence, we cannot reject that none of the explanatory variables in Model I has an effect on *PAGE*.

reports the GAAP ETR in the management report increases if the ratio is decreasing or near one of the chosen benchmark levels. Further, the results show positive and significant coefficients for the *TREND* variable in all five models, indicating that the probability of reporting GAAP ETR information in the management report increased over the years of our sample period. Negative and significant coefficients for *MANDIFRS* and *IFRSFIRST* indicate that adopting IFRS decreases the likelihood of reporting GAAP ETR information in the management report while positive coefficients for *ARSCORE* suggest that a high annual report quality increases the probability.

In sum, the findings are consistent with our expectations for four of our five GAAP ETR measures, indicating that firms communicate GAAP ETR information more intensely if the ratio is decreasing or near the average ratio of industry or size-quintile peers. These results suggest that firms value the benefits of drawing investors' attention to the ratio higher than the potential proprietary costs from attracting public attention. We do not find significant results for smooth GAAP ETRs although the literature indicates that firms actively smooth the ratio (Demeré et al., 2016). A possible interpretation of this finding can be that firms assess the cost-benefit tradeoff differently in the case of smooth GAAP ETRs, expecting smaller positive or higher negative effects if they draw the attention to the smooth ratio compared to the other GAAP ETR conditions. As a smooth ratio indicates few GAAP ETR changes over time, management might expect few benefits from highlighting each period that the ratio stays the same. Alternatively, firms might primarily smooth the ratio for internal purposes, e.g. induced by incentive compensation tied to the GAAP ETR (Robinson et al., 2010; Armstrong et al., 2012).

6. Additional and Sensitivity Tests

Undesirable GAAP ETR Conditions

In our main tests, we analyze whether firms disclose more GAAP ETR information if the ratio has a condition that is desirable from an investor's perspective, arguing in line with Wagenhofer (1990) that firms have incentives to present favorable information to investors. High or volatile GAAP ETRs, on the other hand, could indicate the absence of efficient tax planning and suggest high tax payments that are moreover hard to predict, being a negative signal on which the firm does not want to draw the attention. However, one could develop a different line of argument, expecting that a firm increases disclosure exactly when the ratio is unfavorable. In this case, the incentive for the firm would be to reduce possible uncertainty due to the unfavorable GAAP ETR. Related to the earnings smoothing literature (Trueman and Titman, 1988), uncertainty can for example emerge because volatile GAAP ETRs make it more difficult for investors to predict future ETRs. Evidence that firms voluntarily increase disclosure to mitigate such kind of uncertainty is provided by Chen et al. (2002) for uncertain future earnings and, in a tax context, by Flagmeier and Müller (2016) for uncertain tax loss carryforward usability. Building on this stream of research, firms might increase GAAP ETR disclosure if the ratio is unusually high or volatile to reduce uncertainty.

We include additional tests to examine this notion, analyzing whether firms increase GAAP ETR disclosure if the ratio has an undesirable condition. We assume that increasing and volatile GAAP ETRs as well as ratios that are considerably higher than the benchmark average are unfavorable from an investor's perspective. Analogous to our main tests, we use five different measures that represent an unfavorable GAAP ETR condition. The first two variables are indicator variables equal to one if the GAAP ETR increased in the current relative to the previous year (*INCR1*) and in the current and previous year (*INCR2*). We identify volatile GAAP ETRs with an indicator variable (*VOLETR*) that equals one if the GAAP ETR lies within the two highest deciles of the GAAP ETR standard deviation in the whole sample. Finally, *ABOVE_BENCHM1* (*ABOVE_BENCHM2*) is an indicator variable that equals one if the GAAP ETR exceeds the lagged industry (size quintile) mean GAAP ETR by more than ten percent. We replace the *ETRCOND* variables in our main regressions with these five variables and report the results in Tables 8 – 10.

[Insert Table 8, Table 9, and Table 10 here]

Results for the dependent variable *NUMBER* are presented in Table 8. All GAAP ETR condition variables have negative coefficients with the coefficients for *VOLETR* and *INCR1* being significant, suggesting that firms report less information about the GAAP ETR if the ratio is very volatile or increasing. The results for *PAGE* in Table 9 show mixed signs for coefficients of the GAAP ETR condition variables. Only *INCR1* has a significant and positive coefficient, indicating that the GAAP ETR information is reported on a later annual report page if the ratio is increasing. The results for the logit estimation with the dependent variable *MAN_REPORT* in Table 10 show negative coefficients for all variables of interest and significant results, again, for *VOLETR* and *INCR1*. This finding suggests that the likelihood that a firm mentions the GAAP ETR in the management report decreases if the ratio is volatile or increased from the previous to the current year. Overall, the findings indicate no significant relation between the GAAP ETR condition and the disclosure behavior for ratios that exceed the industry or size benchmark. Interestingly, if the GAAP ETR has a high volatility or increased from the previous to the current year, firms seem to reduce the GAAP ETR disclosure intensity. This finding is line with the results of our main tests, indicating that firms aim to draw investor's attention to favorable GAAP ETR conditions while they are rather silent about the ratio if it has an undesirable condition.

Excluding non-IFRS adopting observations

We analyze a sample period from 2001 to 2012 in our main tests. As the adoption of IFRS became mandatory for (most of) our sample firms in 2005,[30] different accounting standards are applied in our sample. We control for whether a firm is a mandatory IFRS adopter (*MANDIFRS*) and for the first year of IFRS adoption (*IFRSFIRST*), but concerns about the effect of different accounting standards on the

[30] Firms that already applied international standards (e.g. US-GAAP) were allowed to postpone the IFRS adoption until 2007.

GAAP ETR or on the reporting behavior may remain. Hence, we repeat our tests for a sample including only mandatory IFRS adopting firms, i.e. we start the sample period in 2005 and exclude observations that do not apply IFRS.[31] We lose 82 observations for the period 2001 to 2004 and 12 observations for non-IFRS adopting firms after 2004. The results for the variables of interest have the same signs and show only minor changes in significance relative to our main tests.[32] Hence, excluding the years before the IFRS adoption and non-adopting firms does not affect our inferences.

Corporate Tax Reform 2008

Another concern in our main regressions is the effect of corporate tax reforms on the GAAP ETR. Changes in tax law can mechanically alter GAAP ETRs – in particular, a reduction or increase of the statutory tax rate affects the current tax expense and the deferred tax expense in the numerator while it has no impact on the denominator of the ratio. During our sample period, we are aware of one major corporate tax reform in the year 2008. Among the most noteworthy measures of the tax reform is a reduction of the corporate income tax rate from 25 to 15 percent.[33] A lower GAAP ETR after the reform does not necessarily indicate an intentional reduction of the ratio but likely results from the tax rate cut. We control for changing statutory tax rates by creating a new GAAP ETR proxy, *ETR_RES*, which measures the difference between the GAAP ETR and the annual statutory tax rate.[34] *ETR_RES* should not be affected by tax rate changes as it considers the deviation of the GAAP ETR from the statutory tax rate. We adjust the *ETRCOND* measures by replacing *ETR* with *ETR_RES* and create the variables *DECR1a, DECR2a, SMOOTHa, BENCHM1a,* and *BENCHM2a.* Results for estimating the main tests again with these variables are presented in Table 11, Table 12 and Table 13. The tables show that the coefficients have the same sign and comparable size relative to our main results while the significance is reduced for some of the variables (e.g., insignificant coefficient for *BENCHM1a* in Table 11 and *DECR2a* in Table 12). However, most of the test variables are still significant at conventional levels and our basic inferences are unaffected by controlling for the statutory tax rate, indicating a higher disclosure intensity if the GAAP ETR has a desirable condition.

[Insert Table 11, Table 12, and Table 13 here]

[31] We estimate the regressions without the control variable *MANDIFRS* (which is now a constant).

[32] Using *NUMBER* as dependent variable, we now find significant coefficients for *BENCHM2* but not for *BENCHM1*; in the *PAGE* models, *DECR2* is now significant on the 5 percent level (as compared to 10 percent in Table 6); in the *MAN_REPORT* tests, *BENCHM1* is significant on the 5 percent level (1 percent in Table 7) and *BENCHM2* on the 1 percent level (5 percent in Table 7). The other results are virtually unchanged.

[33] While other changes, for example, the interest-capping rule or the reduction of certain tax deductions, might also affect the GAAP ETR, we expect the tax rate change to have the biggest impact and therefore primarily control for this effect.

[34] We use yearly average income tax rates of 30 percent for the years 2008-2012, 40 percent for the period 2001-2007, 51 percent for the years 1999-2000 and 58 percent for earlier years (early years are needed to calculate *SMOOTHa*), considering corporate income tax, solidarity surcharge, and local trade tax. If we use yearly tax rates obtained from KPMG surveys instead (KPMG, 2007 – 2012), results show slight decreases in significance but inferences are unaffected.

Considering the annual statutory tax rate in our GAAP ETR measure controls for the major effects of the tax rate change. However, there is one aspect that we control for in a separate test. Under IFRS, deferred taxes have to be calculated "using the tax rates (and tax laws) that have been enacted or substantively enacted by the end of the reporting period" (IAS 12.46). The 2008 corporate tax reform bill was enacted on August 18, 2007. Accordingly, for fiscal years ending after August 18, 2007 deferred taxes had to be recognized using the reduced tax rate. Because deferred taxes are part of the nominator of our GAAP ETR measure and this effect is not captured by adjusting the ratio for the current statutory tax rate (which did officially not change before 2008), we re-estimate our main regressions excluding observations for the year 2007.[35] Again, some variables have now insignificant coefficients while significant in the main results,[36] but the findings still support our main results and inferences.

Excluding Utilities and Financials

Prior studies often exclude observations from the utilities and financial institutions industries because firms are subject to different regulations and reporting requirements (see e.g. Hanlon, 2005). We repeat our main tests after excluding 19 financial institutions observations (SIC 6000-6099) and 15 utilities observations (SIC 4900-4999). Results are very close to our main findings, not showing changes in sign or significance for our variables of interest. Hence, our inferences are unaffected by excluding these observations.

Tobit Regression

In our main tests with the dependent variables *NUMBER* and *PAGE*, we estimate OLS regressions. However, both variables are censored at zero and *PAGE* is further censored at one (due to scaling with total pages). To address these upper and lower bounds, we repeat the main tests using Tobit regressions. Results are reported in Table 14 for *NUMBER* and Table 15 for *PAGE*. Estimating Tobit models for *NUMBER*, we find positive coefficients of similar size as in the main tests for all *ETRCOND* variables, highly significant for *SMOOTH*, *DECR1*, and *DECR2*. In the Tobit models for *PAGE*, coefficients of the *ETRCOND* variables are negative and similar to the main results regarding size. Changes in significance are observable for *DECR1*, which is now significant on the ten percent level (one percent level in main tests) and *DECR2*, which is now significant at the five percent level (ten percent in main tests). Overall, inferences from our main results are not affected if we estimate Tobit regressions instead of OLS.

[Insert Table 14 and Table 15 here]

[35] 53 observations are excluded.

[36] Insignificant while significant in main tests for *NUMBER: BENCHM1*; for *PAGE: DECR2*; for *MAN_REPORT: BENCHM2*.

Industry Definition

The GAAP ETR condition variable *BENCH1* identifies industry peers on the one-digit SIC level in our main tests. The limited sample size does not allow a finer industry classification. However, in additional tests we calculate the industry mean on the two-digit SIC level for an extended sample, using all German listed firms available in the Datastream database. Having calculated the lagged average industry GAAP ETR based on 6.680 observations, we construct *BENCH1* again as the absolute deviation from the mean for our 520 sample observations, multiplied by -1. The results for the modified *BENCH1* variable have coefficients of similar size and with the same sign and significance level as in our main tests in all models.

Endogeneity

In this section, we address possible endogeneity concerns. Particularly, correlated omitted variables might be a concern because firms can (at least partly) affect both, the disclosure intensity and the GAAP ETR condition. Hence, unobservable firm characteristics could cause the error term to be correlated with our test variables (see e.g., Roberts and Whited, 2013). For example, firm-specific levels of tax awareness might cause some firms to strive for a favorable GAAP ETR condition and intensify communication at the same time while other firms care less about taxes. This concern is partly mitigated because our DAX30 and MDAX sample firms are a rather homogenous group regarding incentives resulting from international activity or capital market attention. However, we apply the following test to investigate the endogeneity issue.

A possible specification to address firm-specific correlated omitted variables is to include firm-fixed effects into the model (Prabhala and Li, 2008; Amir et al., 2016). However, firm-fixed effects only control for those omitted variables that are time-invariant.[37] While recent evidence indicates that certain tax strategies might for example depend on managers' educational background (Graham et al., 2017) and hence change with manager turnover, we expect the general attitude towards tax issues, e.g. whether the firm engages in tax planning or not, to be rather sticky over time. Assuming that the tax awareness of a firm is time-invariant, we estimate our main models with firm- and year-fixed effects.[38] To avoid multicollinearity, we include only those of our control variables that are varying over time, i.e. *ETR* and *ARSCORE*. Results for the fixed-effects estimation with our three different dependent variables are presented in Tables 16 to 18.

[37] If the omitted variable is time-varying, Amir et al. (2016) suggest to use first differencing of the dependent and independent variables as a specification to control for endogeneity. However, first differencing reduces sample size as the first year of observations is lost. As we assume that it is more likely that the omitted variable is time-invariant and due to our modest sample size, we chose to address the endogeneity concern with firm-fixed effects.

[38] A drawback of our sample in a fixed-effects estimation is that we have only two firms with a complete time-series of observations, i.e. most firms have incomplete time-series, often with gaps. A balanced panel would allow a more meaningful fixed-effects estimation.

[Insert Table 16, Table 17, and Table 18 here]

We find significant associations with the expected sign for the variable *DECR2* with all of our three dependent variables *NUMBER, PAGE,* and *MANREPORT*. The variables *SMOOTH* and *DECR1* have the expected sign in all regressions and significant coefficients in the *MANREPORT* model. Results for the two benchmark variables are mixed, partly with reverse signs relative to our main regressions and largely insignificant. While we use standard definitions for *BENCHM1* and *BENCHM2*, they are noisy measures and might have low within-firm variation, possibly explaining the mixed results.

In sum, after controlling for fixed effects, we find a higher disclosure intensity if the GAAP ETR is decreasing but no consistent relation if the ratio is smooth or close to a benchmark. While this finding mitigates endogeneity concerns at least for part of our GAAP ETR condition measures, we would like to stress that this specification does not control for omitted variables that vary across time. Hence, our results still have to be interpreted with the caveat in mind that endogeneity might affect inferences.[39]

7. Conclusion

We examine the disclosure of GAAP ETR information in financial statements. Building on the theoretical arguments in Wagenhofer (1990), we analyze whether firms report more information about the GAAP ETR if the ratio has a condition that is appreciated by investors. In determining the disclosure intensity, firms have to trade off possible capital market benefits from communicating favorable information and expected proprietary costs due to attracting public attention. First, we provide descriptive evidence that the annual report section in which most of our observations disclose GAAP ETR information is the management report, indicating that firms assign substantial relevance to the ratio. Second, we expect and find increased disclosure if the GAAP ETR is decreasing or close to the ratio of industry or size peers. We do not find a significant relation between smooth GAAP ETRs and the disclosure intensity. In additional tests, we document that firms report less information about the GAAP ETR if the ratio is very volatile or increasing.

The result of a higher disclosure intensity for favorable GAAP ETRs suggests that the expected capital market benefits outweigh the predicted proprietary costs. Even common media interest and public scrutiny of firms' tax payments seem not to deter firms from promoting their GAAP ETR if it has a condition that is in line with investors' preferences. Providing evidence on firms' disclosure incentives, we add to the tax disclosure literature and help to explain prior evidence on cross-sectional differences in firms' disclosure behavior (e.g. Kvaal and Nobes, 2013). Moreover, our results can inform investors

[39] Another possible remedy for endogeneity could be an instrumental variable approach. However, this specification requires an instrument that satisfies the relevance and exclusion conditions, which is extremely difficult to find (Roberts and Whited, 2013). In our case, we would need an instrument that has a non-zero partial correlation with our GAAP ETR condition variable and a zero correlation with the error term in our main regression. Absent such instrument, we currently mainly rely on the fixed-effects estimation.

to consider GAAP ETR information in their decision making. Particularly, a low GAAP ETR disclosure intensity can be an indicator for an unfavorable ratio and could hence encourage investors to scrutinize the tax information in more detail.

The study is subject to a number of limitations. First, we examine a sample of the largest German firms regarding market capitalization and trading volume. As these firms are subject to constant tax audits, they probably face low proprietary costs for disclosing additional tax information in the financial statement, weakening our argument that attracting the tax authority's attention might deter disclosure. However, choosing the largest firms ensures a considerable public interest in these firms and reinforces therefore the threat of proprietary costs due to public pressure (for media interest in our sample firms see e.g., Fockenbrock, 2006).

Second, a financial statement reader who is interested in the GAAP ETR can infer the level of the ratio from financial statements anyway, no matter how much information the firm reports about the ratio and on which page the information in disclosed. Based on this notion, firms would have no incentives to vary their GAAP ETR disclosure behavior. However, (less sophisticated) investors who are not explicitly searching for the GAAP ETR might not notice the ratio if it is disclosed in the back of the annual report or mentioned only once. Prior evidence documents an increasing length of annual reports over the past decade (Li, 2008) and practitioners argue that this disclosure overload makes it difficult to process disclosures. Radin (2007) claims that useful information might be hard to discover among plenty of less relevant data and that unpleasant information can be hidden in the footnote because no one ever reads this part of the financial statements. Hence, the repeated disclosure, disclosure early in the annual report, and particularly in the management report can be an opportunity for managers to increase attention to the GAAP ETR.

Third, endogeneity concerns are in order as both, the dependent variable and the main variables of interest, are to some extent choice variables of firm's management. Our results might be driven by unobserved characteristics of a firm, i.e. firm-specific levels of tax awareness. This concern is mitigated by the homogeneity of our sample firms and addressed by a fixed-effects estimation in our sensitivity tests, indicating robust evidence for the relation between decreasing GAAP ETRs and disclosure intensity. Still, we cannot rule out that endogeneity (particularly resulting from time-variant omitted variables) affects our inferences and our results have to be interpreted with this caveat in mind.

References

Amir, E., Carabias, J. M., Jona, J., and Livne, G. (2016): Fixed-effects in Empirical Accounting Research, Working Paper. Available at SSRN: https://ssrn.com/abstract=2634089, (last access 2017/02/20).

Armstrong, C. S., Blouin, J. L., and Larcker, D. F. (2012): The incentives for tax planning, in: Journal of Accounting and Economics, Vol. 53, No. 1-2, 391-411.

Armstrong, C. S., Glaeser, S., and Kepler, J. D. (2016): Strategic reactions in corporate tax avoidance, Working Paper. Available at SSRN: https://ssrn.com/abstract=2889145, (last access 2017/02/20).

Atwood, T.J. and Reynolds, J. K. (2008): The Pricing of Realized Tax Benefits from NOL Carryforwards: Effect of Income Statement Presentation, in: The Journal of the American Taxation Association, Vol. 30, No. 1, 1-27.

Baetge, J. (1997): Anforderungen an die Geschäftsberichterstattung aus betriebswirtschaftlicher und handelsrechtlicher Sicht, in: Deutsches Steuerrecht, Vol. 35, No. 5, 176-180.

Balakrishnan, K., Blouin, J., and Guay, W. (2012): Does Tax Aggressiveness Reduce Corporate Transparency, Working Paper. Available at SSRN: http://ssrn.com/abstract=1792783, (last access 2017/02/20).

Barford, V. and Holt, G. (2013): Google, Amazon, Starbucks: The rise of 'tax shaming', BBC News Magazine. Available online: http://www.bbc.com/news/magazine-20560359, (last access 2017/02/20).

Bozanic, Z., Hoopes, J. L., Thornock, J. R., and Williams, B. M. (2017): IRS Attention, in: Journal of Accounting Research, Forthcoming.

Chen, S., DeFond, M. L., and Park, C. W. (2002): Voluntary disclosure of balance sheet information in quarterly earnings announcements, in: Journal of Accounting and Economics, Vol. 33, No. 2, 229-251.

De Franco, G., Wong, M. H. F., and Zhou, Y. (2011): Accounting Adjustments and the Valuation of Financial Statement Note Information in 10-K Filings, in: The Accounting Review, Vol. 86, No. 5, 1577-1604.

Demeré, P., Li, L. Y., Lisowsky, P., and Snyder, R. W. (2016): The Smoothing and Informativeness of GAAP Effective Tax Rates, Working Paper. Available at SSRN: https://ssrn.com/abstract=2757786, (last access 2017/02/20).

Desai, M. A. and Dharmapala, D. (2009): Corporate Tax Avoidance and Firm Value, in: The Review of Economics and Statistics, Vol. 91, No. 3, 537-546.

Dyreng, S. D., Hanlon, M., and Maydew, E. L. (2008): Long-Run Corporate Tax Avoidance, in: The Accounting Review, Vol. 83, No. 1, 61-82.

Dyreng, S. D., Hanlon, M., and Maydew, E. L. (2010): The Effects of Executives on Corporate Tax Avoidance, in: The Accounting Review, Vol. 85, No. 4, 1163-1189.

Dyreng, S. D., Hoopes, S. J., and Wilde, J. (2016): Public Pressure and Corporate Tax Behavior, in: Journal of Accounting Research, Vol. 54, No. 1, 147-186.

Ernst and Young (2014): Bridging the divide: Highlights from the 2014 Tax risk and controversy survey, Available online: http://www.ey.com/Publication/vwLUAssets/ey-tax-risk-survey-2014/$FILE/ey-tax-risk-survey-2014.pdf, (last access 2017/02/20).

Flagmeier, V. and Müller, J. (2016): Tax Loss Carryforward Disclosure and Uncertainty, arqus Discussion Paper No. 208. Available online: http://www.arqus.info/mobile/paper/arqus_208.pdf, (last access 2017/02/20).

Fockenbrock, D. (2006): Konzerne bremsen den Fiskus aus, Handelsblatt, September 26, Available online: http://www.handelsblatt.com/unternehmen/firmen-rankings/handelsblatt-firmencheck-konzerne-bremsen-den-fiskus-aus/2710974.html, (last access 2017/02/20).

Frischmann, P. J., Shevlin, T., and Wilson, R. (2008): Economic consequences of increasing the conformity in accounting for uncertain tax benefits, in: Journal of Accounting and Economics, Vol. 46, No. 2-3, 261-278.

Gallemore, J., Maydew, E. L., and Thornock, J. R. (2014): The Reputational Costs of Tax Avoidance, in: Contemporary Accounting Research, Vol. 31, No. 4, 1103-1133.

Gleason, C. A. and Mills, L. F. (2002): Materiality and Contingent Tax Liability Reporting, in: The Accounting Review, Vol. 77, No. 2, 317-342.

Graham, J. R., Hanlon, M., and Shevlin, T. (2011): Real Effects of Accounting Rules: Evidence from Multinational Firms' Investment Location and Profit Repatriation Decisions, in: Journal of Accounting Research, Vol. 49, No. 1, 137-185.

Graham, J. R., Hanlon, M., Shevlin, T., and Shroff, N. (2014): Incentives for Tax Planning and Avoidance: Evidence from the Field, in: The Accounting Review, Vol. 89, No. 3, 991-1023.

Graham, J. R., Hanlon, M., Shevlin, T., and Shroff, N. (2017): Tax Rates and Corporate Decision Making, The Review of Financial Studies, forthcoming.

Graham, J. R., Raedy, J. S., and Shackelford, D. A. (2012): Research in accounting for income taxes, in: Journal of Accounting and Economics, Vol. 53, No. 1-2, 412-434.

Hanlon, M. (2003): What Can We Infer about a Firm's Taxable Income from Its Financial Statements? in: National Tax Journal, Vol. LVI, No. 4, 831-863.

Hanlon, M. (2005): The persistence and pricing of earnings, accruals, and cash flows when firms have large book-tax differences, in: The Accounting Review, Vol. 80, No. 1, 137-166.

Hanlon, M. and Heitzman, S. (2010): A review of tax research, in: Journal of Accounting and Economics, Vol. 50, No. 2-3, 127-178.

Hanlon, M. and Slemrod, J. (2009): What does tax aggressiveness signal? Evidence from stock price reactions to news about tax shelter involvement, in: Journal of Public Economics, Vol. 93, No. 1-2, 126-141.

Hoopes, J. L., Mescall, D., and Pittman, J. A. (2012): Do IRS Audits Deter Corporate Tax Avoidance, in: The Accounting Review, Vol. 87, No. 5, 1603-1639.

Jacob, M. and Schütt, H. (2013): Firm Valuation and the Uncertainty of Future Tax Avoidance, Working Paper. Available at SSRN: http://ssrn.com/abstract=2347330, (last access 2017/02/20).

Kasznik, R. and Lev, B. (1995): To Warn or Not to Warn: Management Disclosures in the Face of an Earnings Surprise, in: The Accounting Review, Vol. 70, No. 1, 113-134.

Koester, A. (2011): Investor Valuation of Tax Avoidance Through Uncertain Tax Positions, Working Paper. Available at SSRN: https://ssrn.com/abstract=1905210, (last access 2017/02/20).

Kothari, S. P., Shu, S., and Wysocki, P. D. (2009): Do Managers Withhold Bad News?, in: Journal of Accounting Research, Vol. 47, No. 1, 241-276.

KPMG (2007) – (2012): Corporate and Indirect Tax Survey, online publication: http://www.kpmg.com/tax, (last access 2017/02/20).

Kubick, T. R., Lynch, D. P., Mayberry, M. A., and Omer, T. C. (2016): The Effects of Regulatory Scrutiny on Tax Avoidance: An Examination of SEC Comment Letters, in: The Accounting Review, Vol. 91, No. 6, 1751-1780.

Kvaal, E. and Nobes, C. (2013): International Variations in Tax Disclosures, in: Accounting in Europe, Vol. 10, No. 2, 241-273.

Lev, B. and Thiagarjan, S. R. (1993): Fundamental Information Analysis, in: Journal of Accounting Research, Vol. 31, No. 2, 190-215,

Li, F., Lundholm, R., and Minnis, M. (2013): A Measure of Competition Based on 10-K Filings, in: Journal of Accounting Research, Vol. 51, No. 2, 399-436.

McGuire, S. T., Neumann, S. S., and Omer, T. C. (2013): Sustainable Tax Strategies and Earnings Persistence, Working Paper, Available at SSRN: https://ssrn.com/abstract=1950378, (last access 2017/02/20).

Müller, J. and Sureth, C. (2010): The impact of tax optimized investment projects on the effective group tax rate, in: Die Betriebswirtschaft, Vol. 70, No. 4, 331-348.

Petersen, M. A. (2009): Estimating Standard Errors in Finance Panel Data Sets: Comparing Approaches, in: The Review of Financial Studies, Vol. 22, No. 1, 435-480.

Plesko, G. (2003): An evaluation of alternative measures of corporate tax rates, in: Journal of Accounting and Economics, Vol. 35, No. 2, 201-226.

Prabhala, N. and Li, K. (2008): Self-Selection Models in Corporate Finance, Handbook of Empirical Corporate Finance 2. 37-86.

Radin, A. J. (2007): Have We Created Financial Statement Overload? Available online: http://archives.cpajournal.com/2007/1107/perspectives/p6.htm, (last access 2017/02/20).

Roberts, M. R. and Whited, T. M. (2013): Endogeneity in Empirical Corporate Finance, Handbook of the Economics of Finance 2, 493-572.

Robinson, L. A. and Schmidt, A. P. (2013): Firm and Investor Responses to Uncertain Tax Benefit Disclosure Requirements, in: Journal of the American Taxation Association, Vol. 35, No. 2, 85-120.

Robinson, J. R., Sikes, S. A., and Weaver, C. D. (2010): Performance Measurement of Corporate Tax Departments, in: The Accounting Review, Vol. 85, No. 3, 1035-1064.

Shackelford, D. A. and Shevlin, T. (2001): Empirical tax research in accounting, in: Journal of Accounting and Economics, Vol. 31, No. 1, 321-387.

Simon, H. A. (1971): Designing organizations for an information-rich world, in: Computers, communications, and the public interest, 37-72.

Skinner, D. (1994): Why Firms Voluntarily Disclose Bad News, in: Journal of Accounting Research, Vol. 32, No. 1, 38-60.

Swenson, C. W. (1999): Increasing Stock Market Value By Reducing Effective Tax Rates, in: Tax Notes, 1503-1505.

Trueman, B. and Titman, S. (1988): An Explanation for Accounting Income Smoothing, in: Journal of Accounting Research, Vol. 26, Supp., 127-139.

Verrecchia, R. E. (2001): Essays on disclosure, in: Journal of Accounting and Economics, Vol. 32, No. 1-3, 97-180.

Wagener, T. and Watrin, C. (2012): GAAP ETR Management to Beat Relevant Thresholds, Working Paper. Available at SSRN: http://ssrn.com/abstract=2121373, (last access 2015/10/02).

Wagenhofer, A. (1990): Voluntary Disclosure with a Strategic Opponent, in: Journal of Accounting and Economics, Vol. 12, No. 4, 341-363.

Walker, M. (2013): How far can we trust earnings numbers? What research tells us about earnings management, in: Accounting and Business Research, Vol. 43, No. 4, 445-481.

APPENDIX A

Anecdotal Evidence on Disclosure Intensity Changes

The following two examples provide anecdotal evidence on disclosure intensity changes within firms. The first example is the GAAP ETR disclosure of Bayer AG from 2004 to 2008. In the year 2004, Bayer (already reporting under IFRS) has a GAAP ETR of 39.1 percent and mentions the GAAP ETR once in the notes. In 2005, the GAAP ETR decreases to 29.1 percent. The number of references increases to two because the GAAP ETR is now mentioned in the management report (Bayer annual report 2005, p. 32).[40] Hence, our variable *NUMBER* increases to two and *MAN_REPORT* changes from zero to one. In 2006, the GAAP ETR further decreases (to 22.9 percent) and appears again in the management report (Bayer annual report 2006, p. 54). The year 2007 is special because Bayer has a negative GAAP ETR of -3.2 percent and is excluded from our sample.[41] However, in 2008 the ratio increases (compared to 2007, but also compared to 2006) to 26.9 percent. Bayer does not mention the GAAP ETR in the management report in 2008. The disclosure is, analogous to the year 2004, limited to one reference in the notes.

Another example is Leoni AG. In the year 2006, Leoni has a GAAP ETR of 32 percent and discloses the ratio twice: once in the notes and once in the management report (Leoni AG annual report 2006, p. 38). The disclosure in the management report explains reasons for the decrease from 36.9 percent in the previous year to 32 percent in 2006. In the following year 2007, the GAAP ETR decreases to 26 percent and Leoni mentions the ratio three times. Additional to the reference in the notes and the explanation for the ETR decrease in the management report, the GAAP ETR is mentioned a second time in the management report, referring to the favorable effect of the GAAP ETR on after-tax income (Leoni AG annual report 2007, p. 37). In 2008, the GAAP ETR increases to 67 percent and appears only (once) in the notes. Interestingly, the firm mentions the high tax burden relative to the pretax income in the management report but does not quote the GAAP ETR directly (Leoni AG annual report 2008, p. 58).

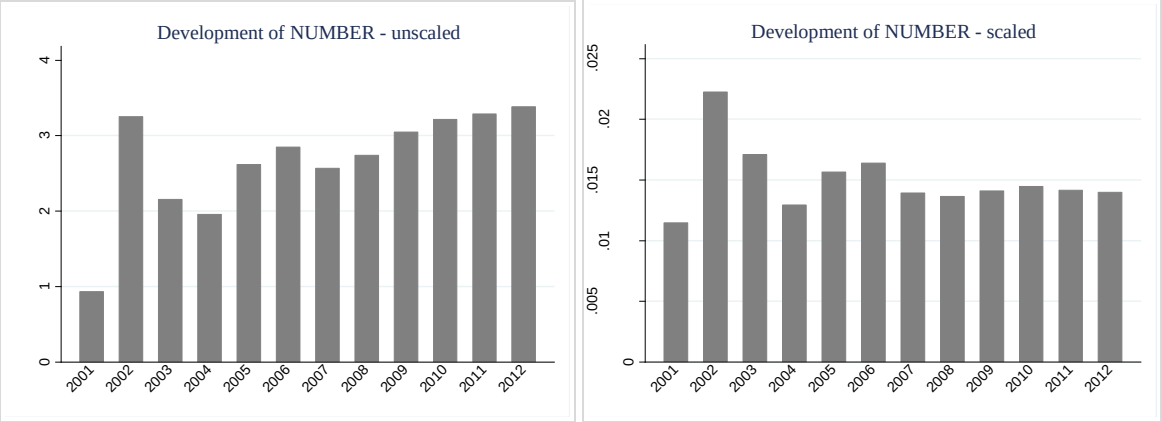
[40] Page 32 in terms of the pages printed in the document and page 39 in terms of the total counted pages (which we record for our data). The content of the reference in the management report is (translated): The GAAP ETR decreased to 29.1 percent.

[41] Bayer does not report the GAAP ETR in the management report in 2007. The only reference to the ratio is in the notes.

APPENDIX B

Graph 1: Development of *NUMBER* and *PAGE*, unscaled and scaled

Panel A



Panel B

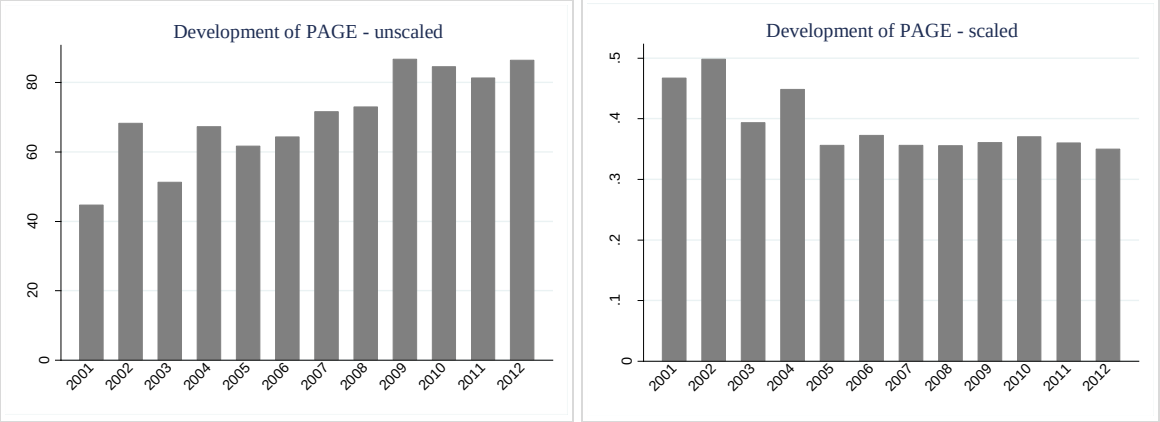


Table 1: Variable Definitions

Dependent Variables	
ETRDISCL	Alternatively *NUMBER, PAGE, or MAN_REPORT*
NUMBER	Number of times the GAAP ETR appears in annual report, scaled by total pages
PAGE	Page of first GAAP ETR appearance in annual report, scaled by total pages
MAN_REPORT	Indicator variable: one if GAAP ETR information is disclosed in management report, zero otherwise
Variables of Interest	
ETRCOND	Alternatively *DECR1, DECR2, SMOOTH, BENCHM1,* or *BENCHM2*
DECR1	Indicator variable: one if GAAP ETR decreases in current compared to previous year, zero otherwise
DECR2	Indicator variable: one if GAAP ETR decreases in current and previous year, zero otherwise
SMOOTH	Firm specific GAAP ETR standard deviation of current and (up to) four previous years (*-1)
BENCHM1	(Absolute) deviation of firm-level GAAP ETR from lagged average (one-digit SIC) industry GAAP ETR (*-1)
BENCHM2	(Absolute) deviation of firm-level GAAP ETR from lagged average GAAP ETR in same sales quintile (*-1)
Control Variables	
MANDIFRS	Indicator variable: one if firm applies IFRS and year>=2005, zero otherwise
ETR	GAAP Effective Tax Rate: total income tax expense divided by pre-tax accounting income
ETR_RES	Difference between GAAP ETR and statutory tax rate
SIZE	Natural logarithm of total assets
AUD	Indicator variable: one if firm is audited by Big4 auditor, zero otherwise
ARSCORE	Disclosure score of overall annual report content quality
LEV	Long-term debt / total assets
IFRSFIRST	Indicator variable: one if year of first-time IFRS Adoption, zero otherwise
IND	One-digit SIC code
TREND	Yearly variable, starting with 1 in the year 2001 and ranging to 12 in 2012

Table 2: Sample Selection (sample period 2001 – 2012)

	Firms	**Observations**
DAX30 and MDAX firms [a)]	79	769
Unusual values for pretax income or tax expense [b)]	-1	-114
Missing data	-8	-135
Sample for *NUMBER* and *MAN_REPORT* [c)]	**70**	**520**
No GAAP ETR reference [d)]	-2	-80
Sample for *PAGE*	**68**	**440**

Notes: [a)] The initial number of firms is <80 because Osram AG was excluded as the firm went public in 2013 and no earlier financial reports are available (it was included in the sample because it was listed on MDAX when we chose our sample firms on November 28, 2013). The initial number of observations is <948 (79*12) due to limited annual report availability in the early sample years. [b)] Excluded unusual values for pretax income or tax expense are the following: pretax income<0, tax expense<0, tax expense>pretax income. The firm Sky Deutschland AG was dropped because it has a negative pretax profit in all sample years. [c)] Of the 70 sample firms, only two (Hugo Boss AG and Rhön-Klinikum AG) have a complete time-series, i.e. observations for each year from 2001 to 2012. STADA Arzneimittel AG has a nearly complete time-series with only the year 2001 missing. Ten consecutive years can be found for two firms, nine years for 17 firms. All other sample firms have a complete time-series only for smaller periods, e.g. due to dropped observations during the financial crisis (pretax income<0). [d)] Observations with zero references to the GAAP ETR are excluded from the sample for the dependent variable *PAGE* because a page-value of zero is not informative. The number of firms is reduced to 68 because the firms TUI AG and GAGFAH S.A. have zero GAAP ETR appearances in all of the available sample years.

Table 3: Summary Statistics

Panel A: *NUMBER* by annual report section

	Mean	Median	Std. Dev.	Min	Max	N
Introduction	1	1	0	1	1	16
Management Report	2.24	2	1.69	1	12	365
Notes	1.54	1	0.94	1	7	344
Others	1.74	1	1.47	1	8	57

Notes: The distribution of *NUMBER* in the different sections of the annual report. The values are the unscaled number of times the GAAP ETR appears in the respective annual report section. The table includes only those observations that refer to the GAAP ETR at least once in the respective section.

Panel B: *NUMBER* and *PAGE* by accounting standards followed

	Mean	Median	Std. Dev.	Min	Max	N
German GAAP (HGB)						
NUMBER	0.01	0.01	0.01	0	0.04	12
PAGE	0.45	0.36	0.23	0.20	0.80	7
Mandatory IFRS						
NUMBER	0.01	0.01	0.01	0	0.06	426
PAGE	0.36	0.33	0.20	0.01	1.00	372
Voluntary IFRS						
NUMBER	0.02	0.01	0.02	0	0.08	57
PAGE	0.45	0.36	0.24	0.01	0.91	40
US-GAAP						
NUMBER	0.02	0.02	0.01	0	0.04	25
PAGE	0.39	0.38	0.17	0.18	0.73	21

Notes: *NUMBER* and *PAGE* are both scaled with total annual report pages. Voluntary IFRS adopters are firms that adopted IFRS before 2005, i.e. before the adoption was mandatory.

Panel C: Regression variables

	Mean	Median	Std. Dev.	Min	Max	N
NUMBER (unscaled)	2.81	2	2.43	0	13	520
NUMBER	0.01	0.01	0.01	0	0.08	520
PAGE (unscaled)	74.72	66	49.56	2	292	440
PAGE	0.37	0.33	0.20	0.01	1.00	440
MAN_REPORT	0.70	1	0.46	0	1	520
DECR1	0.51	1	0.50	0	1	520
DECR2	0.21	0	0.41	0	1	520
SMOOTH	-0.26	-0.09	0.83	-9.31	-0.00	520
BENCHM1	-0.09	-0.06	0.10	-0.71	-0.00	520
BENCHM2	-0.08	-0.06	0.09	-0.69	-0.00	520
MANDIFRS	0.82	1	0.39	0	1	520
IFRSFIRST	0.09	0	0.29	0	1	520
ETR	0.30	0.29	0.12	0.00	0.98	520
SIZE	16.18	15.93	1.92	11.77	21.49	520
AUD	0.96	1	0.19	0	1	520
ARSCORE	0.62	0.62	0.08	0.36	0.87	520
LEV	0.17	0.16	0.11	0	0.58	520
TREND	7.76	8	2.98	1	12	520

Notes: *NUMBER* (unscaled) and *PAGE* (unscaled) are the variable before dividing by the total number of annual report pages. All other variables are defined in Table 1.

Table 4: Spearman Correlation Matrix

	1)	2)	3)	4)	5)	6)	7)	8)	9)	10)	11)	12)	13)	14)	15)	16)
1)NUMBER	1.000															
2)PAGE	***-0.343***	1.000														
3)MAN_REPORT	***0.435***	***-0.599***	1.000													
4)DECR1	0.047	-0.067	***0.100***	1.000												
5)DECR2	0.076	-0.073	0.082	***0.517***	1.000											
6)SMOOTH	***0.230***	***-0.201***	***0.259***	***0.152***	***0.159***	1.000										
7)BENCHM1	***0.114***	-0.075	***0.131***	0.048	-0.035	***0.256***	1.000									
8)BENCHM2	0.061	***-0.101***	***0.153***	***0.126***	0.027	***0.246***	***0.640***	1.000								
9)MANDIFRS	***-0.120***	***-0.102***	0.090	***0.145***	***0.120***	0.038	0.086	***0.170***	1.000							
10)IFRSFIRST	0.009	0.085	***-0.163***	***-0.141***	***-0.121***	-0.044	-0.013	-0.087	***-0.277***	1.000						
11)ETR	0.047	***-0.114***	0.073	***-0.257***	***-0.234***	-0.048	***0.162***	***0.126***	***-0.112***	0.046	1.000					
12)SIZE	***-0.202***	-0.091	***-0.125***	-0.062	-0.090	***-0.218***	***-0.164***	***-0.151***	0.053	0.042	-0.089	1.000				
13)AUD	**-0.122**	-0.005	***0.097***	0.026	0.001	-0.003	-0.008	0.045	0.045	0.014	-0.043	***0.204***	1.000			
14)ARSCORE	0.017	-0.090	-0.033	0.028	-0.021	-0.092	-0.058	-0.084	***-0.102***	***0.123***	***0.105***	***0.306***	***0.211***	1.000		
15)LEV	-0.003	-0.006	***-0.143***	-0.014	-0.010	-0.070	-0.086	***-0.104***	0.066	-0.063	-0.048	0.039	***-0.186***	0.075	1.000	
16)TREND	***-0.129***	-0.073	***0.095***	-0.020	0.010	0.074	0.042	0.088	***0.610***	***-0.313***	***-0.179***	***0.103***	0.046	***-0.111***	0.092	1.000

Notes: All variables are defined in Table 1. Figures in bold and italics indicate significance at 5% level.

Table 5: OLS Regressions with the dependent variable *NUMBER*

	I	II	III	IV	V
Constant	0.027**	0.026**	0.026**	0.027**	0.027**
	(0.013)	(0.013)	(0.012)	(0.013)	(0.013)
SMOOTH	0.001				
	(0.001)				
DECR1		0.002***			
		(0.000)			
DECR2			0.004***		
			(0.001)		
BENCHM1				0.010*	
				(0.006)	
BENCHM2					0.007
					(0.007)
MANDIFRS	-0.000	-0.001	-0.001	-0.001	-0.000
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
ETR	0.002	0.004	0.004	0.004	0.003
	(0.005)	(0.006)	(0.005)	(0.006)	(0.006)
SIZE	-0.001**	-0.001**	-0.001**	-0.001**	-0.001**
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
AUD	-0.013	-0.013	-0.013	-0.013	-0.013
	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)
ARSCORE	0.031**	0.028*	0.027*	0.029**	0.029**
	(0.015)	(0.014)	(0.014)	(0.014)	(0.014)
LEV	-0.006	-0.005	-0.006	-0.004	-0.005
	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)
IFRSFIRST	-0.001	-0.001	-0.001	-0.001	-0.001
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
IND	0.000	0.000	0.000	0.000	0.000
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
TREND	0.000	0.000	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
R^2	0.101	0.099	0.106	0.098	0.095
N	520	520	520	520	520
F-value	4.45	4.26	4.53	4.17	3.94

Notes: All variables are defined in Table 1. Standard errors clustered by firm and year in parentheses. ***, **, and * indicate significance at 1%, 5%, and 10% respectively.

Table 6: OLS Regressions with the dependent variable *PAGE*

	I	II	III	IV	V
Constant	0.626***	0.650***	0.646***	0.670***	0.676***
	(0.235)	(0.232)	(0.232)	(0.216)	(0.206)
SMOOTH	-0.011				
	(0.018)				
DECR1		-0.036***			
		(0.013)			
DECR2			-0.046*		
			(0.026)		
BENCHM1				-0.426***	
				(0.102)	
BENCHM2					-0.491***
					(0.124)
MANDIFRS	-0.048	-0.036	-0.040	-0.036	-0.031
	(0.033)	(0.033)	(0.036)	(0.031)	(0.033)
ETR	-0.128	-0.166	-0.160	-0.224**	-0.253**
	(0.121)	(0.128)	(0.128)	(0.109)	(0.114)
SIZE	-0.001	-0.002	-0.002	-0.004	-0.005
	(0.011)	(0.011)	(0.011)	(0.011)	(0.010)
AUD	0.016	0.015	0.014	0.010	0.024
	(0.142)	(0.139)	(0.139)	(0.139)	(0.128)
ARSCORE	-0.300	-0.257	-0.261	-0.268	-0.274
	(0.256)	(0.240)	(0.241)	(0.232)	(0.226)
LEV	0.077	0.069	0.070	0.028	0.025
	(0.156)	(0.158)	(0.157)	(0.149)	(0.147)
IFRSFIRST	0.063***	0.053***	0.055***	0.062***	0.055***
	(0.013)	(0.015)	(0.016)	(0.017)	(0.016)
IND	0.003	0.004	0.004	0.001	0.001
	(0.010)	(0.010)	(0.010)	(0.009)	(0.009)
TREND	-0.003	-0.004*	-0.003	-0.003	-0.003
	(0.004)	(0.002)	(0.003)	(0.003)	(0.004)
R^2	0.044	0.049	0.051	0.080	0.084
N	440	440	440	440	440
F-value	1.53	1.94	2.19	3.44	3.36

Notes: All variables are defined in Table 1. Standard errors clustered by firm and year in parentheses. ***, **, and * indicate significance at 1%, 5%, and 10% respectively.

Table 7: Logistic Regressions with the dependent variable *MAN_REPORT*

	I	II	III	IV	V
Constant	-2.178	-2.928	-2.431	-2.281	-2.189
	(1.973)	(2.002)	(1.976)	(1.901)	(1.898)
SMOOTH	0.321				
	(0.225)				
DECR1		0.706***			
		(0.263)			
DECR2			1.033***		
			(0.398)		
BENCHM1				3.149***	
				(1.152)	
BENCHM2					2.788**
					(1.293)
MANDIFRS	-14.159***	-15.716***	-15.568***	-14.168***	-14.156***
	(0.555)	(0.565)	(0.597)	(0.537)	(0.540)
ETR	0.632	1.366	1.246	1.177	1.129
	(1.259)	(1.343)	(1.329)	(1.077)	(1.091)
SIZE	-0.219*	-0.206*	-0.203	-0.192	-0.190
	(0.123)	(0.125)	(0.126)	(0.121)	(0.122)
AUD	0.049	0.072	0.078	0.092	0.011
	(1.010)	(1.034)	(1.047)	(1.013)	(1.002)
ARSCORE	4.835*	3.914*	4.079*	4.523*	4.429*
	(2.542)	(2.335)	(2.388)	(2.316)	(2.304)
LEV	-2.345	-2.300	-2.408	-1.961	-1.980
	(1.851)	(1.858)	(1.886)	(1.835)	(1.820)
IFRSFIRST	-0.703**	-0.548	-0.575*	-0.722**	-0.701**
	(0.338)	(0.334)	(0.332)	(0.331)	(0.334)
IND	-0.056	-0.062	-0.053	-0.042	-0.041
	(0.132)	(0.138)	(0.136)	(0.134)	(0.135)
TREND	1.452***	1.600***	1.549***	1.427***	1.423***
	(0.084)	(0.081)	(0.084)	(0.086)	(0.086)
Pseudo R^2	0.116	0.120	0.123	0.118	0.113
N	520	520	520	520	520
Wald Chi^2	1,160.84	1,373.82	1,781.75	1,488.59	1,283.09

Notes: All variables are defined in Table 1. Standard errors clustered by firm in parentheses. Year dummies included but not reported. ***, **, and * indicate significance at 1%, 5%, and 10% respectively.

Table 8: Undesirable GAAP ETR condition, dependent variable *NUMBER*

	I	II	III	IV	V
Constant	0.027**	0.028**	0.028**	0.027**	0.027**
	(0.012)	(0.012)	(0.013)	(0.013)	(0.012)
VOLETR	-0.005**				
	(0.002)				
INCR1		-0.002***			
		(0.000)			
INCR2			-0.001		
			(0.001)		
ABOVE_BENCHM1				-0.001	
				(0.001)	
ABOVE_BENCHM2					-0.001
					(0.001)
MANDIFRS	-0.000	-0.001	-0.000	-0.000	-0.000
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
ETR	0.004	0.004	0.002	0.004	0.005
	(0.005)	(0.006)	(0.005)	(0.006)	(0.005)
SIZE	-0.001**	-0.001**	-0.001**	-0.001**	-0.001**
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
AUD	-0.013	-0.013	-0.013	-0.013	-0.013
	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)
ARSCORE	0.030**	0.028*	0.029**	0.029**	0.029**
	(0.014)	(0.014)	(0.014)	(0.014)	(0.014)
LEV	-0.004	-0.005	-0.005	-0.006	-0.006
	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)
IFRSFIRST	-0.001	-0.001	-0.001	-0.001	-0.001
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
IND	0.001	0.000	0.000	0.000	0.000
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
TREND	0.000	0.000	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
R^2	0.117	0.099	0.093	0.093	0.094
N	520	520	520	520	520
F-value	5.23	4.26	3.88	4.17	4.02

Notes: The variable *INCR1* is an indicator variable that equals one if the GAAP ETR increased in the current relative to the previous year, *INCR2* equals one if the GAAP ETR increased in the current and previous year. The indicator variable *VOLETR* equals one if the GAAP ETR lies within the two highest deciles of the GAAP ETR standard deviation in the whole sample. *ABOVE_BENCHM1* (*ABOVE_BENCHM2*) is an indicator variable that equals one if the GAAP ETR exceeds the lagged industry (size quintile) mean GAAP ETR by more than ten percent. All other variables are defined in Table 1. Standard errors clustered by firm and year in parentheses. ***, **, and * indicate significance at 1%, 5%, and 10% respectively.

Table 9: Undesirable GAAP ETR condition, dependent variable *PAGE*

	I	II	III	IV	V
Constant	0.637***	0.610***	0.614***	0.607**	0.612***
	(0.225)	(0.232)	(0.233)	(0.248)	(0.234)
VOLETR	0.066				
	(0.055)				
INCR1		0.036***			
		(0.013)			
INCR2			0.013		
			(0.031)		
ABOVE_BENCHM1				-0.007	
				(0.030)	
ABOVE_BENCHM2					-0.009
					(0.022)
MANDIFRS	-0.049	-0.036	-0.048	-0.048	-0.048
	(0.032)	(0.033)	(0.033)	(0.034)	(0.033)
ETR	-0.154	-0.166	-0.130	-0.107	-0.102
	(0.121)	(0.128)	(0.134)	(0.150)	(0.151)
SIZE	-0.001	-0.002	-0.001	-0.001	-0.001
	(0.011)	(0.011)	(0.011)	(0.011)	(0.011)
AUD	0.010	0.015	0.015	0.014	0.013
	(0.138)	(0.139)	(0.143)	(0.144)	(0.144)
ARSCORE	-0.312	-0.257	-0.277	-0.276	-0.276
	(0.248)	(0.240)	(0.241)	(0.249)	(0.244)
LEV	0.067	0.069	0.070	0.072	0.071
	(0.152)	(0.158)	(0.159)	(0.157)	(0.156)
IFRSFIRST	0.062***	0.053***	0.064***	0.064***	0.064***
	(0.016)	(0.015)	(0.012)	(0.012)	(0.012)
IND	0.003	0.004	0.003	0.003	0.003
	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)
TREND	-0.003	-0.004*	-0.003	-0.003	-0.003
	(0.003)	(0.002)	(0.003)	(0.003)	(0.003)
R^2	0.055	0.049	0.043	0.042	0.042
N	440	440	440	440	440
F-value	1.80	1.94	1.59	1.60	1.59

Notes: The variable *INCR1* is an indicator variable that equals one if the GAAP ETR increased in the current relative to the previous year, *INCR2* equals one if the GAAP ETR increased in the current and previous year. The indicator variable *VOLETR* equals one if the GAAP ETR lies within the two highest deciles of the GAAP ETR standard deviation in the whole sample. *ABOVE_BENCHM1* (*ABOVE_BENCHM2*) is an indicator variable that equals one if the GAAP ETR exceeds the lagged industry (size quintile) mean GAAP ETR by more than ten percent. All other variables are defined in Table 1. Standard errors clustered by firm and year in parentheses. ***, **, and * indicate significance at 1%, 5%, and 10% respectively.

Table 10: Undesirable GAAP ETR condition, dependent variable *MAN_REPORT*

	I	III	IV	V	VI
Constant	-1.162	-0.622	-0.475	-0.731	-0.604
	(1.958)	(2.004)	(1.976)	(2.019)	(1.978)
VOLETR	-1.334***				
	(0.415)				
INCR1		-0.706***			
		(0.263)			
INCR2			-0.314		
			(0.363)		
ABOVE_BENCHM1				-0.118	
				(0.294)	
ABOVE_BENCHM2					-0.029
					(0.297)
MANDIFRS	-15.358***	-15.716***	-14.204***	-14.939***	-14.935***
	(0.656)	(0.561)	(0.538)	(0.547)	(0.546)
ETR	1.143	1.366	0.729	0.831	0.643
	(1.193)	(1.343)	(1.325)	(1.463)	(1.394)
SIZE	-0.221*	-0.206*	-0.215*	-0.210*	-0.212*
	(0.120)	(0.125)	(0.122)	(0.122)	(0.122)
AUD	0.174	0.072	0.085	0.070	0.079
	(0.968)	(1.034)	(1.039)	(1.049)	(1.044)
ARSCORE	4.613*	3.914*	4.215*	4.284*	4.225*
	(2.393)	(2.335)	(2.332)	(2.395)	(2.353)
LEV	-2.000	-2.300	-2.240	-2.283	-2.265
	(1.760)	(1.858)	(1.874)	(1.873)	(1.865)
IFRSFIRST	-0.697*	-0.548	-0.751**	-0.721**	-0.716**
	(0.363)	(0.334)	(0.336)	(0.335)	(0.335)
IND	-0.032	-0.062	-0.057	-0.051	-0.055
	(0.128)	(0.138)	(0.135)	(0.133)	(0.134)
TREND	1.578***	1.600***	1.444***	1.512***	1.510***
	(0.088)	(0.079)	(0.080)	(0.081)	(0.082)
Pseudo R^2	0.144	0.120	0.106	0.105	0.104
N	520	520	520	520	520
Wald Chi^2	949.46	1,395.77	1,273.35	1,576.45	1,333.45

Notes: The variable *INCR1* is an indicator variable that equals one if the GAAP ETR increased in the current relative to the previous year, *INCR2* equals one if the GAAP ETR increased in the current and previous year. The indicator variable *VOLETR* equals one if the GAAP ETR lies within the two highest deciles of the GAAP ETR standard deviation in the whole sample. *ABOVE_BENCHM1* (*ABOVE_BENCHM2*) is an indicator variable that equals one if the GAAP ETR exceeds the lagged industry (size quintile) mean GAAP ETR by more than ten percent. All other variables are defined in Table 1. Standard errors clustered by firm in parentheses. Year dummies included but not reported. ***, **, and * indicate significance at 1%, 5%, and 10% respectively.

Table 11: GAAP ETR deviations from the statutory tax rate, dependent variable *NUMBER*

	I	II	III	IV	V
Constant	0.028**	0.028**	0.028**	0.028**	0.028**
	(0.012)	(0.012)	(0.012)	(0.012)	(0.012)
SMOOTHa	0.001				
	(0.001)				
DECR1a		0.002***			
		(0.000)			
DECR2a			0.004***		
			(0.001)		
BENCHM1a				0.008	
				(0.007)	
BENCHM2a					0.007
					(0.007)
MANDIFRS	-0.000	-0.001	-0.001	-0.000	-0.000
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
ETR_RES	0.001	0.003	0.004	0.003	0.003
	(0.005)	(0.005)	(0.005)	(0.006)	(0.006)
SIZE	-0.001**	-0.001**	-0.001**	-0.001**	-0.001**
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
AUD	-0.013	-0.013	-0.013	-0.013	-0.013
	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)
ARSCORE	0.031**	0.028**	0.028*	0.029**	0.029**
	(0.015)	(0.014)	(0.014)	(0.014)	(0.014)
LEV	-0.006	-0.005	-0.005	-0.005	-0.005
	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)
IFRSFIRST	-0.001	-0.001	-0.001	-0.001	-0.001
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
IND	0.000	0.000	0.000	0.000	0.000
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
TREND	0.000	0.000	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
R^2	0.100	0.097	0.104	0.096	0.094
N	520	520	520	520	520
F-value	4.42	4.00	4.36	4.01	3.91

Notes: The variables *SMOOTHa*, *DECR1a*, *DECR2a*, *BENCHM1a*, and *BENCHM2a* are calculated analogously to the variables defined in Table 1, using *ETR_RES* instead of *ETR*. All other variables are defined in Table 1. Standard errors clustered by firm and year in parentheses. ***, **, and * indicate significance at 1%, 5%, and 10% respectively.

Table 12: GAAP ETR deviations from the statutory tax rate, dependent variable *PAGE*

	I	II	III	IV	V
Constant	0.569**	0.565**	0.569**	0.573***	0.570***
	(0.225)	(0.223)	(0.223)	(0.210)	(0.200)
SMOOTHa	-0.011				
	(0.017)				
DECR1a		-0.028*			
		(0.015)			
DECR2a			-0.036		
			(0.027)		
BENCHM1a				-0.455***	
				(0.110)	
BENCHM2a					-0.543***
					(0.125)
MANDIFRS	-0.050	-0.044	-0.046	-0.045	-0.041
	(0.034)	(0.034)	(0.035)	(0.032)	(0.034)
ETR_RES	-0.115	-0.145	-0.141	-0.252**	-0.292***
	(0.119)	(0.128)	(0.129)	(0.105)	(0.107)
SIZE	-0.001	-0.001	-0.001	-0.004	-0.006
	(0.011)	(0.011)	(0.011)	(0.011)	(0.010)
AUD	0.016	0.014	0.013	0.009	0.026
	(0.143)	(0.142)	(0.143)	(0.140)	(0.127)
ARSCORE	-0.301	-0.268	-0.275	-0.276	-0.284
	(0.257)	(0.243)	(0.241)	(0.231)	(0.224)
LEV	0.079	0.073	0.068	0.031	0.029
	(0.156)	(0.158)	(0.158)	(0.150)	(0.146)
IFRSFIRST	0.062***	0.057***	0.057***	0.062***	0.055***
	(0.013)	(0.015)	(0.016)	(0.017)	(0.016)
IND	0.003	0.003	0.003	0.001	0.001
	(0.010)	(0.010)	(0.010)	(0.009)	(0.009)
TREND	-0.001	-0.001	-0.001	0.001	0.002
	(0.005)	(0.004)	(0.004)	(0.005)	(0.005)
R^2	0.043	0.046	0.045	0.081	0.087
N	440	440	440	440	440
F-value	1.50	1.77	1.82	3.44	3.55

Notes: The variables *SMOOTHa, DECR1a, DECR2a, BENCHM1a*, and *BENCHM2a* are calculated analogously to the variables defined in Table 1, using *ETR_RES* instead of *ETR*. All other variables are defined in Table 1. Standard errors clustered by firm and year in parentheses. ***, **, and * indicate significance at 1%, 5%, and 10% respectively.

Table 13: GAAP ETR deviations from the statutory tax rate, dependent variable *MAN_REPORT*

	I	II	III	IV	V
Constant	-0.472	-0.308	-0.265	-0.465	-0.436
	(1.847)	(1.872)	(1.850)	(1.830)	(1.826)
SMOOTHa	0.323				
	(0.227)				
DECR1a		0.510*			
		(0.262)			
DECR2a			0.855**		
			(0.411)		
BENCHM1a				3.160**	
				(1.271)	
BENCHM2a					3.201**
					(1.380)
MANDIFRS	-14.158***	-14.376***	-13.923***	-14.165***	-14.152***
	(0.555)	(0.551)	(0.556)	(0.539)	(0.541)
ETR_RES	0.644	1.125	1.061	1.346	1.381
	(1.260)	(1.362)	(1.328)	(1.105)	(1.110)
SIZE	-0.219*	-0.212*	-0.214*	-0.191	-0.184
	(0.123)	(0.124)	(0.124)	(0.121)	(0.123)
AUD	0.045	0.101	0.119	0.090	-0.007
	(1.009)	(1.044)	(1.045)	(1.023)	(1.005)
ARSCORE	4.838*	4.053*	4.244*	4.525**	4.455*
	(2.544)	(2.366)	(2.360)	(2.299)	(2.287)
LEV	-2.348	-2.274	-2.314	-1.965	-1.954
	(1.851)	(1.865)	(1.866)	(1.837)	(1.816)
IFRSFIRST	-0.703**	-0.605*	-0.599*	-0.730**	-0.709**
	(0.338)	(0.336)	(0.332)	(0.331)	(0.335)
IND	-0.056	-0.054	-0.045	-0.043	-0.043
	(0.132)	(0.137)	(0.134)	(0.134)	(0.135)
TREND	1.446***	1.440***	1.394***	1.422***	1.419***
	(0.088)	(0.087)	(0.086)	(0.089)	(0.089)
Pseudo R^2	0.116	0.112	0.114	0.117	0.115
N	520	520	520	520	520
Wald Chi^2	1,142.32	1,228.21	1,116.58	1,531.19	1,279.94

Notes: The variables *SMOOTHa*, *DECR1a*, *DECR2a*, *BENCHM1a*, and *BENCHM2a* are calculated analogously to the variables defined in Table 1, using *ETR_RES* instead of *ETR*. All other variables are defined in Table 1. Standard errors clustered by firm in parentheses. Year dummies included but not reported. ***, **, and * indicate significance at 1%, 5%, and 10% respectively.

Table 14: Tobit Regressions with the dependent variable *NUMBER*

	I	II	III	IV	V
Constant	0.019***	0.017**	0.019***	0.020***	0.020***
	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)
SMOOTH	0.002***				
	(0.001)				
DECR1		0.003**			
		(0.001)			
DECR2			0.004***		
			(0.001)		
BENCHM1				0.010	
				(0.006)	
BENCHM2					0.006
					(0.007)
MANDIFRS	-0.009***	-0.010***	-0.010***	-0.009***	-0.009***
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
ETR	0.003	0.006	0.006	0.005	0.004
	(0.005)	(0.005)	(0.005)	(0.005)	(0.006)
SIZE	-0.001***	-0.001***	-0.001***	-0.001***	-0.001***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
AUD	-0.014***	-0.014***	-0.014***	-0.014***	-0.014***
	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)
ARSCORE	0.037***	0.033***	0.033***	0.035***	0.034***
	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)
LEV	-0.006	-0.006	-0.006	-0.005	-0.005
	(0.005)	(0.005)	(0.005)	(0.005)	(0.006)
IFRSFIRST	-0.001	-0.000	-0.000	-0.001	-0.001
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
IND	0.000	0.000	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
TREND	0.002***	0.002***	0.001***	0.001***	0.001***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
N	520	520	520	520	520
F-value	3.29	3.21	3.35	3.09	3.02

Notes: Tobit regression with dependent variable left-censored at zero. All variables are defined in Table 1. Year-fixed effects included but not reported. Robust standard errors in parentheses. ***, **, and * indicate significance at 1%, 5%, and 10% respectively.

Table 15: Tobit Regressions with the dependent variable *PAGE*

	I	II	III	IV	V
Constant	0.625***	0.660***	0.635***	0.651***	0.646***
	(0.127)	(0.127)	(0.126)	(0.120)	(0.120)
SMOOTH	-0.011				
	(0.009)				
DECR1		-0.038*			
		(0.021)			
DECR2			-0.050**		
			(0.022)		
BENCHM1				-0.419***	
				(0.120)	
BENCHM2					-0.485***
					(0.138)
MANDIFRS	0.032	0.049	0.043	0.027	0.026
	(0.044)	(0.045)	(0.046)	(0.043)	(0.043)
ETR	-0.121	-0.162	-0.157	-0.224**	-0.251**
	(0.103)	(0.108)	(0.107)	(0.102)	(0.107)
SIZE	0.000	-0.000	-0.001	-0.003	-0.004
	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)
AUD	0.018	0.018	0.017	0.011	0.026
	(0.065)	(0.066)	(0.066)	(0.064)	(0.061)
ARSCORE	-0.302**	-0.257*	-0.264**	-0.278**	-0.285**
	(0.137)	(0.133)	(0.132)	(0.126)	(0.124)
LEV	0.073	0.066	0.066	0.027	0.023
	(0.084)	(0.084)	(0.084)	(0.083)	(0.082)
IFRSFIRST	0.050	0.040	0.039	0.047	0.041
	(0.045)	(0.044)	(0.045)	(0.043)	(0.043)
IND	0.004	0.005	0.005	0.002	0.001
	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)
TREND	-0.012	-0.015*	-0.012	-0.009	-0.007
	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)
N	440	440	440	440	440
F-value	1.00	1.24	1.35	1.96	1.90

Notes: Tobit regression with dependent variable left-censored at zero and right-censored at one. All variables are defined in Table 1. Year-fixed effects included but not reported. Robust standard errors in parentheses. ***, **, and * indicate significance at 1%, 5%, and 10% respectively.

Table 16: Fixed-effects estimation with the dependent variable *NUMBER*

	I	III	IV	V	VI
Constant	0.020***	0.020***	0.019***	0.021***	0.022***
	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)
SMOOTH	0.000				
	(0.000)				
DECR1		0.001			
		(0.001)			
DECR2			0.002**		
			(0.001)		
BENCHM1				-0.006	
				(0.005)	
BENCHM2					-0.013**
					(0.006)
ETR	0.001	0.002	0.003	0.000	-0.002
	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)
ARSCORE	0.012	0.010	0.011	0.009	0.008
	(0.009)	(0.008)	(0.008)	(0.008)	(0.008)
R^2	0.665	0.665	0.667	0.666	0.670
N	520	520	520	520	520

Notes: Firm- and year-fixed effects included but not reported. All variables are defined in Table 1. Robust standard errors in parentheses. ***, **, and * indicate significance at 1%, 5%, and 10% respectively.

Table 17: Fixed-effects estimation with the dependent variable *PAGE*

	I	III	IV	V	VI
Constant	0.476***	0.451***	0.465***	0.466***	0.444***
	(0.073)	(0.062)	(0.063)	(0.065)	(0.064)
SMOOTH	-0.016				
	(0.010)				
DECR1		-0.007			
		(0.016)			
DECR2			-0.032*		
			(0.019)		
BENCHM1				-0.134	
				(0.097)	
BENCHM2					0.021
					(0.113)
ETR	0.017	0.009	-0.010	-0.013	0.027
	(0.072)	(0.077)	(0.076)	(0.079)	(0.085)
ARSCORE	-0.209	-0.137	-0.152	-0.157	-0.136
	(0.180)	(0.155)	(0.154)	(0.155)	(0.154)
R^2	0.593	0.592	0.595	0.594	0.592
N	440	440	440	440	440

Notes: Firm- and year-fixed effects included but not reported. All variables are defined in Table 1. Robust standard errors in parentheses. ***, **, and * indicate significance at 1%, 5%, and 10% respectively.

Table 18: Logistic fixed-effects estimation with the dependent variable *MANREPORT*

	I	II	III	IV	V
Constant	-8.567**	-8.772**	-8.271**	-8.145**	-7.876**
	(3.869)	(3.565)	(3.680)	(3.768)	(3.789)
SMOOTH	1.128**				
	(0.562)				
DECR1		0.759**			
		(0.384)			
DECR2			1.032**		
			(0.483)		
BENCHM1				0.745	
				(2.273)	
BENCHM2					-3.491
					(2.897)
ETR	-0.818	0.142	-0.262	-0.937	-1.695
	(1.706)	(1.714)	(1.650)	(1.644)	(1.734)
ARSCORE	9.398*	8.774*	8.737*	8.630*	7.230
	(4.888)	(4.751)	(4.630)	(4.816)	(4.787)
Pseudo R^2	0.375	0.373	0.373	0.363	0.368
N	276	276	276	276	276
Wald Chi^2	85.56	105.15	83.78	86.88	100.14

Notes: Firm- and year-fixed effects included but not reported. All variables are defined in Table 1. Robust standard errors in parentheses. ***, **, and * indicate significance at 1%, 5%, and 10% respectively. Sample size is reduced to 276 observations due to missing time-series variance within the dropped firms.

Impressum:
Arbeitskreis Quantitative Steuerlehre, arqus, e.V.
Vorstand: Prof. Dr. Ralf Maiterth (Vorsitzender),
Prof. Dr. Kay Blaufus, Prof. Dr. Dr. Andreas Löffler
Sitz des Vereins: Berlin

Herausgeber: Kay Blaufus, Jochen Hundsdoerfer, Martin Jacob, Dirk Kiesewetter, Rolf J. König, Lutz Kruschwitz, Andreas Löffler, Ralf Maiterth, Heiko Müller, Jens Müller, Rainer Niemann, Deborah Schanz, Sebastian Schanz, Caren Sureth-Sloane, Corinna Treisch

Kontaktadresse:
Prof. Dr. Caren Sureth-Sloane, Universität Paderborn,
Fakultät für Wirtschaftswissenschaften,
Warburger Str. 100, 33098 Paderborn,
www.arqus.info, Email: info@arqus.info

ISSN 1861-8944