Discussion Paper No. 12-051

Book-tax Conformity: Empirical Evidence from Germany

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Non-Technical Summary

Book-tax conformity is an old issue in Germany. For more than one hundred years the determination of corporate taxable income has been characterized by the so-called *Maßgeblichkeitsprinzip*, which governs the traditionally close relationship between financial and tax accounting. While there have been calls for more book-tax conformity in the U.S., there are, however, several reasons why Germany and other European countries are moving towards a two-book approach, under which the two income measures are largely independent. Although the academic attention has – not least through the recent debate on the Accounting Law Modernization Act (BilMoG) – focused on these developments, next to nothing is known about the actual differences between book and taxable income in Germany.

To close this gap in the literature, we use a unique matched tax return - financial statement dataset to examine the magnitude and sources of book-tax differences in Germany. For the first time, the dataset enables us to evaluate the extent to which financial and tax accounting differ based on actual tax returns rather than on estimated taxable income. In doing so, we are not only able to provide explanations for the observed reporting gap, but also to investigate whether book-tax differences reflect corporate reporting behavior.

Despite the close link between financial and tax accounting, we find that corporate taxable income and income reported to shareholders diverge considerably. Overall, tests indicate that taxable income exceeds annual net income before taxes reported to shareholders, on average, by approximately 10%. Given this, we continue and examine the relation between firm specific book-tax differences and publicly available financial statement variables using a model that controls for various other tax and non-tax factors known to be associated with book-tax differences. The regression results suggest book-tax differences are largely attributable to legal differences between financial and tax accounting. In contrast to the U.S., where book-tax differences are assumed to reflect tax planning, we cannot provide evidence that earnings management or tax aggressive reporting adds to the reporting gap. Further analyses show, however, that firms actively engaged in corporate restructuring - an area where conformity between financial and tax accounting is generally not required - exhibit larger book-tax differences than other firms. We interpret this result as evidence of firms willing to give up the administrative advantages of a system of close relationship between financial and tax accounting in order to achieve desired tax or financial accounting results, if book-tax conformity is not required. Thus, the results not only provide insights into the relatively unexplored area of behavioral response to changes in the degree of book-tax conformity, but also add a new perspective to the discussion surrounding the implementation of the BilMoG-Act in 2010.

Das Wichtigste in Kürze

Das Verhältnis der handels- und steuerrechtlichen Gewinnermittlung wird in Deutschland seit mehr als einem Jahrhundert durch den Grundsatz der sogenannten Maßgeblichkeit der Handels- für die Steuerbilanz geprägt. Nicht zuletzt durch das Gesetz zur Modernisierung des Bilanzrechts (BilMoG) ist jedoch eine stärkere Abkopplung der steuerlichen von der handelsrechtlichen Gewinnermittlung, eine Neuausrichtung des deutschen Bilanzsteuerrechts sowie ein verstärktes akademisches Interesse an Fragen der steuer- und handelsrechtlichen Bilanzpolitik zu beobachten. Da steuerliche Informationen in der Regel öffentlich nicht zugänglich sind, liegen – im Gegensatz zu zahlreichen U.S.-Studien - empirisch abgesicherte Erkenntnisse zu den tatsächlichen Wertrelationen zwischen der handels- und steuerrechtlichen Rechnungslegung in Deutschland bisher jedoch nicht vor.

Basierend auf einem anonymisierten Datensatz bestehend aus handels- und steuerrechtlichen Informationen von 135 Unternehmen für das Wirtschaftsjahr 2009, ist es Zielsetzung dieser Untersuchung diese Forschungslücke zu schließen und erstmals empirisch gesicherte Erkenntnisse über die tatsächlichen Wertunterschiede zwischen beiden Rechnungslegungskreisen zu generieren. Dazu werden nicht nur Differenzen zwischen dem handels- und steuerrechtlich ausgewiesenen Gewinn quantifiziert, sondern insbesondere auch die Frage untersucht, inwieweit diese Wertunterschiede auf bilanzpolitisches Unternehmensverhalten zurückzuführen sind.

Die Ergebnisse zeigen, dass trotz der engen Verbindung zwischen handels- und steuerrechtlicher Gewinnermittlung in Deutschland von einer einheitlichen Gewinnermittlung - auch vor dem BilMoG - nicht gesprochen werden kann. Vielmehr übersteigt das steuerliche Ergebnis das handelsrechtliche Ergebnis durchschnittlich um ca. 10%. Dabei werden die Wertunterschiede zwischen beiden Rechnungslegungskreisen im Wesentlichen durch gesetzlich vorgeschriebene Abweichungen verursacht. Handelsrechtliche Bilanzpolitik oder steuerplanerische Überlegungen haben - soweit messbar - hingegen keinen Einfluss auf die Ergebnisdifferenzen. Größere Wertunterschiede sind jedoch für Unternehmen festzustellen, die in der Vergangenheit steuerlich restrukturiert wurden. Diesbezüglich sieht das deutsche Umwandlungssteuerrecht eine Maßgeblichkeit der Handels- für die Steuerbilanz grundsätzlich nicht vor. Obwohl dieses Ergebnis mit Vorsicht zu interpretieren ist, lässt es somit vermuten, dass nach der Einschränkung des Maßgeblichkeitsprinzips durch das BilMoG im Jahr 2010 mit einer stärkeren Eigenständigkeit des Tax Accounting sowie einer zunehmenden Handels- und Steuerbilanzpolitik in Deutschland zu rechnen ist.

Book-tax conformity: Empirical evidence from Germany

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Abstract: We use a unique matched tax return - financial statement data set to examine the magnitude and sources of book-tax differences in Germany. For the first time, the data set enables us to evaluate the extent to which financial and tax accounting differ in Germany in the most accurate manner. Despite the close link between financial and tax accounting in Germany, we find that corporate taxable income and income reported to shareholders diverge considerably. Regression results suggest that this reporting gap is largely attributable to legal differences between financial and tax accounting and we cannot provide evidence that tax aggressive reporting adds to it. However, further analyses show that firms actively engaged in corporate restructuring exhibit larger book-tax differences than other firms. We interpret this result as evidence of firms willing to give up the administrative advantages of a one-book accounting system in order to achieve desired tax or financial accounting result, if book-tax conformity is not required. Thus, the results not only provide insights into the relatively unexplored area of behavioral response to changes in the degree of book-tax conformity, but also add a new perspective to the discussion surrounding the implementation of the German Accounting Law Modernization Act (BilMoG) in 2010.

JEL Classification: H20, H25, M41

Keywords: book-tax conformity; book-tax differences; tax planning

Data Availability: Confidential tax return data are obtained from Ernst & Young GmbH, Germany, and are not publicly available. Because tax return data are confidential and protected under Sec. 9 BOStB, all statistics are presented in aggregate. Any opinions are those of the authors and do not necessarily reflect the views of Ernst & Young GmbH, Germany

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1 Introduction

Book-tax conformity is an old issue in Germany. For more than one hundred years the determination of corporate taxable income has been characterized by the so-called *Maßgeblichkeitsprinzip* (authoritative principle, Sec. 5 (1) 1 EStG), which governs the traditionally close relationship between financial and tax accounting in Germany.[1] In this regard, literature often points to Germany and the U.S. as countries not only adhering opposite positions (*Schön*, 2004, p. 430.), but also as important examples for two ongoing trends in the linkage between financial and tax accounting (*Shaviro*, 2009, p. 155). While there have been calls for a one-book system in the U.S. (e.g. *Desai*, 2005), there are several reasons why Germany and other European countries are moving towards a two-book approach, under which the two income measures are largely independent.[2] Clearly, German tax law still requires corporations to determine corporate taxes based on its individual financial statement prepared under German GAAP. However, tax accounting is not - and never has been - necessarily the same as financial accounting. Anecdotal evidence (e.g. *Herzig/Briesemeister*, 2010, pp. 63-64) even suggests that the reporting gap has increased during the last two decades. For example, *Schön* (2005, p. 116) reports on an increase in differences between book and taxable income due to the change of paradigm in German GAAP, e.g. following the introduction of the IFRS. Although the academic attention has – not least through the recent debate on the German Accounting Law Modernization Act (BilMoG) – focused on these differences between book and taxable income in Germany, the empirical literature is rather small. While empirical investigations have found significant interactions between book-tax differences and, for example, tax avoidance (e.g. *Blaylock/Shevlin/Wilson*, 2012) or tax sheltering (e.g. *Wilson*, 2009) in the U.S., little is known about the actual magnitude and sources of the reporting gap in Germany.

Based on a unique sample of more than 140 matched tax return and financial statements,[3] this study attempts to close this gap in research and, for the first time, provide empirically valid estimates of book-tax differences in Germany. While present literature is based on empirical data from Anglo-Saxon countries, this is – to our knowledge - the first study to use observed,

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1 For an overview of the historical developments see Pfaff/Schröer, 1996, pp. 963-967, Schön, 2005, pp. 116-117; Freidank/Velte, 2010, pp. 185-188.

2 See Schanz/Schanz, 2010, p. 313.

3 Confidential tax return data are obtained from Ernst & Young GmbH, Stuttgart, Germany and are not publicly available. Because tax return data are confidential and protected under Sec. 9 BOStB, all statistics are presented in aggregate. Any opinions are those of the authors and so do not necessarily reflect the views of Ernst & Young GmbH, Stuttgart, Germany.

rather than supposed, book-tax differences in a one-book system setting.[4] This being said, the data not only enables us to measure the reporting gap in Germany most accurately, but also to provide a comparative counterpoint to prior empirical U.S. In doing so, it evaluates the extent to which financial and tax accounting differ, identifies major sources of book-tax income differences and finally sheds light on the question of whether tax aggressive reporting adds to the reporting gap. Furthermore, the ability to analyze actual reported taxable income, as opposed to estimated income measures from publicly available financial statements or simulated tax income makes the results a valuable source of information in other research settings.[5] In other words, with access to actual tax return data, we are able to provide investors, analysts and researchers who lack that access to private tax information with insights on the degree and sources of book-tax differences in Germany and thus contribute to literature in at least two ways.

First, this study contributes to the stream of literature inferring firms' tax attributes or taxable income from publicly available financial statements in Germany (e.g. *Kager/Schanz/Niemann*, 2011 and *Finke/Heckemeyer/Reister/Spengel*, 2010, respectively). By providing explanations for the observed differences between both income measures, the intuitive motivation behind this is to help research without access to tax return data to obtain a better estimate of taxable income using publicly available information (*Frank*, 2009, p. 67). To this end, we follow *Plesko* (2007) and comprehensively analyze how well financial statement figures represent the corresponding tax values of a firm. We test for both book-tax balance sheet differences and book-tax income differences. In fact, tests indicate that both income measures are different and taxable income exceeds annual net income before taxes reported to shareholders, on average, by approximately 10%. Given this, we continue and examine the relation between these book-tax income differences and publicly available financial statement variables using a model that controls for various other tax and non-tax factors known to be associated with book-tax differences. We find that book-tax-differences are mainly associated with differences in accounting for provisions and important off-balance sheet adjustments, such as exempt dividend income or interest add-backs. As these findings hold when several robustness tests are performed, we are confident that the results provided are valid beyond the relative small number of firms included in the unique sample.

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4 Please note that Eberhartinger/Klostermann (2007) study the effects of a potential decisiveness of IFRS for the national tax base based on a small sample of 61 Austrian companies.

5 See for a discussion on the advantages and disadvantages of using tax return data, Manzon/Plesko, 2002, pp. 184-187; Graham/Mills, 2008, pp. 371-373.

Second, as the reporting gap may be due to factors other than legal differences, we investigate whether book-tax differences also reflect aggressive tax reporting. In line with *Frank/Lynch/Rego* (2009, p. 468), we define the latter as "a downward manipulation of taxable income through tax planning that may or may not be considered fraudulent tax evasion". In an attempt to measure tax aggressive reporting we argue that if proxies for tax planning are associated with book-tax differences after controlling for the most important legal differences between financial and tax accounting, then we can assume that the reporting gap is not only driven by such legal differences but also by other economic factors, e.g. tax aggressive reporting. Consistent with the legal framework in Germany, our findings suggest that the reporting gap in Germany is generally not attributable to tax aggressive reporting. However, we find a strong positive association between the reporting gap and those companies being involved in corporate restructurings; an area where conformity between financial and tax accounting is, in general terms, not required. While the interpretation of this finding requires caution, the results indicate that firms are willing to give up the administrative advantages of one-book accounting in order to achieve desired tax or financial accounting result, if book-tax conformity is not required. Thus, we may not only provide insights into the relatively unexplored area of behavioral response to switches in the degree of book-tax conformity,[6] but also add a new perspective to the German discussion surrounding the implementation of the BilMoG-Act in 2010 and, more general speaking, to the ongoing policy debate book-tax conformity in many other European countries and, of course, the U.S.

The remainder of the study is organized as follows: Section 2 reviews prior literature and the relationship between financial and tax reporting in Germany, while Section 3 describes the data used in the analyses. Section 4 presents an analysis of the matched tax return and financial statements data and tests the actual relation between tax and financial accounting measures of income. Next, the methodological approach is developed in Section 5 and the results are reported in Section 6. Conclusions are provided in Section 7.

2 Background

Financial and tax accounting in Germany: The framework for 2009

German corporations have to determine corporate income for two external purposes. The first is for financial accounting purposes and the second to determine corporate taxable income. Financial accounting involves maintaining individual financial statements, which are prepared

[6] Hanlon/Heitzman, 2010, p. 136.

under German GAAP to determine distributable profits and inform external parties. In addition, consolidated group accounts are required by joint stock corporations and other companies with limited liability.[7] Unlike individual financial statements, group accounts are, however, neither conformed to nor directly affected by taxation (*Sellhorn/Gornik-Tomaszewski*, 2006, p. 188; *Goncharov*/*Werner*, 2009, p. 10). Rather, their main objective is to provide information regarding firm performance relevant to shareholders and other interested external parties. In contrast, the objective of tax accounting is first and foremost to raise tax revenue and achieve economic goals, i.e. encourage or discourage certain behavior deemed (un-)desirable by policymakers. In other words, it reflects the economic objectives of revenue collection, equity, efficiency and simplicity (*Shackelford/Slemrod/Sallee*, 2011, p. 463).

Although the objectives of financial and tax accounts differ, there is a strong alignment between individual financial statements and the determination of taxable income in Germany. As mentioned above, this holds, however, only true for individual financial accounts. While tax accounts are, to a certain degree, conformed to individual financial statements, group accounts are not. [8] Thus, only individual accounts serve as the starting point for the determination of corporate taxable income. Due to the so-called *Maßgeblichkeitsprinzip* (authoritative principle, Sec. 5 (1) 1 EStG) taxable income has to be determined in accordance with German GAAP and the recognition and measurement policies applied in financial accounting must generally be incorporated into tax accounting. The linkage is even strengthened as the inverse of the authoritative principle applied until the fiscal year 2009[9], i.e. accounting choices exercised for tax accounting must similarly be exercised in individual financial statements.[10] Despite this close alignment between tax and financial accounting, income for tax and accounting purposes is not necessarily the same. Instead, there are several reasons why financial and tax accounting are different.[11] Most importantly, because the objectives of financial and tax accounting differ, specific tax regulations supersede financial accounting rules in several ways. For example, provisions are measured differently under tax law, e.g. it is required to discount provisions at a rate of 5.5% for tax purposes, which generally results in lower tax values (Sec. 6 (1) No. 3a EStG). Some other provisions are simply not allowed. Mainly due to

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7 For details see Ordelheide, 2001, pp. 1355-1440.

8 For an overview of the basic concept of determining corporate taxable income in Germany see, among others, Endres et al. (2007), European Commission (ed.), 2005, pp. 1-3; Eberhartinger, 1999, pp. 97-103.

9 Please note that the inverse authoritative principle was abolishment with the BilMoG-Act in 2010. For details see, among others, Herzig/Briesemeister/Schäperclaus, 2011, pp. 2-4.

10 For a detailed discussion on the reserve authoritative principle and its consequences for financial and tax accounting see Pfaff/Schröer, 1996, pp. 970-971.

11 See for a review Hanlon/Heitzman, 2010, p.130; Shackelford/Slemrod/Sallee, 2011, pp. 462-464.

budget restrictions, provisions for contingent liabilities, for instance, must be recognized for financial accounting purposes, but are prohibited for tax accounting since 1997 (Sec. 5 (4a) EStG). Similarly, any decline in the value of current assets is recognized immediately for financial accounting purposes, but disregarded for tax purposes unless the reduction in value is expected to be permanent (Sec. 6 (1) No. 2 EStG). While these examples refer to balance sheet adjustments that relate to timing differences in accrual accounting, it is important to note that corporate income determined on the tax balance sheet is, in a second step, modified by certain off balance sheet adjustments. In contrast to balance sheet adjustments, such off-balance sheet adjustments are not related to accounting accruals and generally present permanent book-tax differences, i.e. items are included or excluded in one measure of income but never in the other. Important off balance sheet adjustments resulting from different objectives include (partially) tax-exempt dividend income (Sec. 8b KStG), non-deductible interest expenses for trade tax purposes (Sec. 8 No. 1GewStG) and the tax loss relief (Sec. 10d EStG).

Beyond the differing objectives, another, at least a suspected, source of book–tax differences is opportunistic reporting under either or both systems. Although tax and financial accounting are closely tied, firms may engage in tax planning or tax aggressive reporting that lowers taxable income relative to book income. At the same time, financial accounting earnings may be managed upward, yielding financial statement income to increase relative to taxable income, if the firm does not pay tax on the managed earnings. In this regard, also the regulations of the German Tax Reorganization Act (UmwStG) become important. Despite the general authoritative principle linking financial and tax accounts, book-tax conformity is not required in privileged reorganizations.[12] In other words, while reorganizations may be accounted for at book-value for tax accounting purposes, a step-up to the fair market value might be possible in financial statements and vice versa. Thus, accounting for reorganization involves more managerial discretion and is an area potentially available for tax planning or earnings management.

Prior literature

As outlined above, there are different reasons why financial and tax accounting - although closely aligned - are different in Germany. Many studies have concluded that these differences have increased throughout the last decades (e.g. *Herzig/Briesemeister*, 2010, pp. 63-64) and called for a substitution of the one-book approach by a more independent set of tax ac-

[12] See Englisch, 2007, pp. 339-346; Bilitewski, 2007, p. 62; Dötsch/Pung, 2006, pp. 2705-2706.

counting regulations (e.g. *Weber-Grellet*, 2008, p. 2453). Despite the unanimous agreement of a growing gap between book and taxable income there is, however, little direct evidence on the actual degree of firm's book-tax conformity and the causes of taxable income being different from financial statement income. In other words, while there is an extensive debate on book-tax conformity,[13] little is known about the actual magnitude and the sources of the reporting gap in Germany. In this regard, *Breithecker/Klapdor/Passe* (2002) survey 22 accounting and tax firms on tax aggressive reporting and tax planning and find that German firms are rarely engaged in an active management of taxable income. *Zwirner* (2007) and *Kager/Schanz/Niemann* (2011) use information on deferred taxes to approximate differences between tax values and IFRS consolidated accounts. The latter find that the most important differences between IFRS consolidated accounts and tax reporting arise from intangibles and provisions. While not directly focusing on the reporting gap, *Finke/Heckemeyer/Reister/Spengel* (2010) examine book-tax differences in order to estimate taxable income from firm's individual financial statements. Finally, *Haller/Ferstl/Löffelmann* (2011) study the reporting behavior of German corporations based on individual financial statement disclosures of 300 non-listed firms for the years 2006-2008. Consistent with the anecdotal evidence and our expectations, they find that tax and financial accounting differ markedly. However, due to data limitations they cannot provide evidence on the actual magnitude and the origins of book-tax differences. In contrast to this lack of evidence in Germany, concerns over the growing divergence between book and taxable income and increasing sheltering activities of corporations have led to a widespread interest in the magnitude, sources and consequences of book-tax differences in the U.S. [14]

In particular, in light of the high profile cases of profitable firms reporting low taxable income (e.g. *Enron Corporation*, *Tyco International Ltd*. and *Xerox Corporation*)[15] U.S. research has developed a number of measures of book-tax differences to investigate the link between book and taxable incomes and sources of the reporting gap. Absent data on firms' tax return information *Manzon/Plesko* (2002), for instance, find that a small number of factors that reflect differences in accounting are responsible for a significant amount of book-tax differences. In doing so, they measure the reporting gap as the difference between domestic income and es-

[13] For a review of the discussion about the potential benefits and costs of book-tax conformity, see Atwood/Drake/Myers, 2010, pp. 113-114; McClelland/Mills, 2007, pp. 782-785.

[14] The divergence between tax and book income has been measured and analyzed in many different studies including Plesko (2000) or Desai (2003).

[15] See Desai, 2005, pp. 176-184 and for a more detailed discussion of the *Enron Corporation* case McGill/Outslay, 2002, pp. 1125-1136.

timated taxable income, defined as firm's reported tax expenses grossed up by the corporate tax rate; a measure that has been confirmed and enhanced in many subsequent studies (e.g. *Desai/Dharmapala* (2006)). In addition, we find a broad stream of literature that has used publicly available financial statement data to examine the relation of book-tax differences and firms' tax and financial reporting incentives. On the one hand, a variety of studies suggest a positive relation between the reporting gap and earnings management. For instance, *Hanlon* (2005) reports that firms with relatively large book-tax differences also have lower earnings persistence.[16] On the other hand, research also suggests that large book-tax differences signal tax planning and tax aggressive reporting (e.g. *Mills* (1998), *Desai* (2003) and *Heltzer* (2009)). Consistent with this suggestion, recent empirical investigations have found significant interactions between book-tax differences and tax avoidance (e.g. *Blaylock/Shevlin/Wilson*, 2012) or tax sheltering (e.g. *Wilson*, 2009). However, while research has not reached a consensus about the source of the reporting gap, it is - as reviewed by *Graham/Mills* (2008, p. 371) and pointed out by *Desai/Dharmapala* (2009, p. 178) – also well known that there are a number of caveats in estimating taxable income from financial statement information. As a result, there are concerns about the potential measurement error and the accuracy of financial statement based measures of the reporting gap. However, since tax return data are generally not observable, only a limited number of studies have overcome this concern by using actual tax return data to examine the magnitude and sources of book-tax differences. Examples include *Mills/Newberry/Tautman* (2002) or *Liswosky* (2009). In addition, *Plesko* (2007) uses a matched tax return-financial statement data set to examine the tradeoffs between financial and tax reporting. Consistent with the concerns about the growing divergence between book and taxable income and increasing sheltering activities, he finds that one major source of the reporting gap can be explained by the fact that managers are able to undertake upward management of book income without being subject to immediate tax payments.

3 Data and sample selection

In line with *Plesko* (2007), we examine the relation between financial and tax accounting by using an anonymous matched sample of firms' financial statements and tax returns for the tax year 2009 provided by *Ernst & Young GmbH,* Germany (EY). The dataset comprises individual financial statements prepared under German GAAP and the corresponding tax return data

[16] Other studies relating book-tax differences and earnings quality include Lev/Nissim (2004) or Mills/Newberry (2001).

including all necessary tax reconciliations and attachments. While present literature is based on empirical data from Anglo-Saxon countries, this is – to our knowledge - the first study to use observed, rather than supposed, book-tax differences in a one-book system setting.[17] This being said, the data not only enables us to measure the reporting gap in Germany most accurately, but also to provide a comparative counterpoint to prior empirical U.S. research. Moreover, as data is provided for at the entity-level, i.e. the starting point for the calculation of corporate taxable income, we are able to directly address book-tax conformity and the functioning of the authoritative principle in Germany. In addition, as different consolidation rules between individual financial statements and tax returns do not generally exist, one of the main disadvantages of using tax return information identified by *Graham/Mills* (2008, p. 372) or *Hanlon/Heitzman* (2012, p. 139) is avoided.

Table 1: Industry, size and geographic distribution of the final sample

Industry			**Postal code (1st digit)**			**Size (Sec. 267 HGB)**		
	Number	**Frequency**		**Number**	**Frequency**		**Number**	**Frequency**
Manufacturing	36	27.27%	0-1	13	9.85%	Small	36	27.27%
Construction	7	5.30%	2-3	22	16.67%	Medium	29	21.97%
Trade	31	23.48%	4-5	31	23.48%	Large	67	50.75%
Service and others	58	43.93%	6-7	50	37.88%			
			8-9	16	12.12%			
Total	132	100%	**Total**	132	100%	**Total**	132	100%

Note: Company size is defined according to total assets (financial accounting). In accordance with German GAAP, small corporations display total assets of not more than EUR 4,840,000. Corporations are classified as medium-sized if total assets range between EUR 4,840,000 and EUR 19,250,000. Total assets of large corporations exceed EUR 19,250,000.

Overall, the initial sample consists of 146 unique incorporated firms, i.e. there is only one observation for each corporate group. As partnerships and other limited liability companies are taxed as flow-through entities, only incorporated companies are included in the sample. Moreover, banks, insurance companies and other financial institutions were excluded from the dataset since different reporting requirements may apply. We exclude these observations with missing data on some tax attributes or important control variables. This elimination leaves a final sample of 132 firms. All firms included in this sample were chosen randomly by EY. In order to avoid biases due to location or specific tax planning schemes, consideration was, however, given to the industry, the company size and the location of firms in the sample. In detail, EY was asked to provide anonymous data for four different industry sectors, three different company sizes and different places of business of the considered firms. The latter guar-

[17] Please note that Eberhartinger/Klostermann (2007) study the effects of a potential decisiveness of IFRS for the national tax base based on a small sample of 61 Austrian companies.

antees that tax returns are prepared by different offices and tax advisors of EY Germany. Table 1 provides a description of the industry and territorial distribution as well as the firm size of companies included in the final sample. Furthermore, EY collected detailed data about the group structure, past reorganizations, or reporting requirements for each firm in the sample.[18]

4 The reporting gap: Magnitude and sources

In order to analyze the relation between tax and financial accounting and given the unique nature of the data, we begin by examining several book-tax balance sheet differences. As pointed out by *Kager/Schanz/Niemann* (2011, p. 91) tax values of corporate assets and liabilities can be relevant for various economic decisions and may serve as additional information on current and future firm performance. Moreover, book-tax balance sheet differences are of great value when identifying sources of book-tax income differences. As balance sheet differences report the cumulative effects of several reporting periods, they provide more information about past accounting decisions than differences in income measures, which primarily provide information on income differences for the current period.

In the first step of the analysis we, therefore, test how well the financial statement position reflects the tax book value of a firm. We follow *Plesko* (2007) and run simple t-tests for the hypotheses that the absolute differences between tax book values and financial statement values are statistically different from zero.[19] Subsequently, we also test for differences between the amount of book income reported to shareholders and the amount reported to tax authorities on the corporate tax returns. As described above, the tax return data contains two different measures of income: First, taxable income as determined by the tax balance sheet and second, corporate income subject to tax, i.e. the income shown on the tax balance sheet modified by certain off-balance sheet adjustments. In order to identify sources of book-tax differences and shed light on the question whether and to what extent the amount of income calculated for financial and tax accounting purposes is different, both measures are compared to the corresponding financial accounting measures of income.

[18] Descriptive statistics on these variables are reported in Table 5.

[19] As some of the variables have skewed distributions, we re-estimate all of the t-test reported using a nonparametric signed-rank test. The results are identical to those reported here.

4.1 Book-tax balance sheet differences

Table 2 presents the descriptive statistics and the distribution of relative book-tax balance sheet differences, i.e. the absolute difference divided by the financial statement value for the main balance sheet items and total assets.

Table 2: Book-tax balance sheet differences: Descriptive statistics

	Mean	Standard Deviation	Firms deviating	Percentiles			
				25%	50%	75%	90%
Fixed assets (Tax)	33,455,232	167,124,926	37,40%	0.00%	0.00%	1.43%	27.53%
Fixed assets (GAAP)	32,710,310	168,925,398					
Current assets (Tax)	28,089,905	53,959,574	75.56%	0.012%	0.34%	3.25%	6.36%
Current assets (GAAP)	27,916,944	53,912,238					
Total Assets (Tax)	61,643,247	188,315,030	86.26%	0.19%	2.54%	8.55%	30.67%
Total Assets (GAAP)	60,136,253	190,423,657					
Provisions (Tax)	8,107,761	24,882,685	75.56%	0.035%	2.92%	13.85%	50.70%
Provisions (GAAP)	9,114,816	26,220,620					
Accounts Payable (Tax)	25,471,969	138,009,915	24.62%	0.00%	0.00%	0.00%	0.31%
Accounts Payable (GAAP)	25,465,849	137,994,575					
Equity (Tax)	27,778,727	146,329,145	80.48%	0.33%	2.57%	18.52%	59.85%
Equity (GAAP)	25,428,601	99,398,192					

Note: This table presents descriptive statistics for the sample of 132 firms. All continuous variables are in EUR. The first and second column present the mean and the standard deviation of the book (GAAP) and tax variables, respectively. The third column presents the percentage of companies that report deviating amounts in their financial statements and tax accounts. The last four columns show the distribution of relative differences in the sample.

Given the comprehensive linkage of financial and tax accounting in Germany prior to the implementation of the BilMoG-Act, we expect that balance sheet values reported on firms' financial statements and the corresponding tax returns would be the same or, if they differed at all, the financial statement value of assets would exceed the tax return book assets. This would be more consistent with the incentives inherent in book-tax differences (*Mills/Newberry/Trautmann,* 2002, p. 1122). Instead, we find that fixed assets and current assets for tax purposes are, on average, greater than assets reported on financial statements. In detail, the mean of tax return fixed assets exceeds book fixed assets by 2.28% and tax return current assets exceed book current assets by 0.62%. Consequently, also book total assets are lower than those reported on the tax return (2.51%), but not statistically different. While these

results are in line with recent results for the U.S. provided by *Plesko* (2007, p. 14) and *Lisowsky* (2009, p. 43), *Zwirner* (2007) and *Kager/Schanz/Niemann* (2011, p. 101-112) report - at least for fixed assets - conflicting results for Germany. However, it has to be kept in mind that both studies rely on IFRS consolidated financial statements and approximated tax values based on deferred taxes, thus rendering a direct comparison difficult. Nevertheless, these findings suggest that book-tax differences inferred from consolidated financial statements may provide misleading results or measurement error when analyzing the actual degree of book-tax conformity in Germany. The hypothesis that the difference between book assets and tax assets is equal to zero can be rejected for current assets (t-value: 2.594). While this result is mainly explained by differences in the measurement of inventories and accounts receivable,[20] it is worth noting that fixed assets are not different from each other. The same holds also true for all sub-categories of fixed assets, i.e. tangible assets, intangible assets and financial assets. In contrast to findings in other legal settings where depreciation of fixed assets is recognized as one of the major instruments to manage taxable and book income in different directions, nearly 63% of the considered firms report exactly the same amount of fixed assets for both financial and tax accounting purposes. Moreover, there are 22 firms (16.67%) for which differences between book fixed assets and tax return fixed assets are smaller than 5%.

As discussed earlier, the recognition and measurement of provisions is considered to be one of the major balance sheet adjustments foreseen by tax law. Accordingly, we find that accounting for provisions is among the most significant factors in the divergence between balance sheet items reported under financial and tax accounting. On aggregate, provisions reported on financial statements exceed tax provisions by 11.05% and approximately 75% of the firms in the sample report different amounts for financial and tax accounting purposes. Moreover, in the last quarter of observations, differences in accounting for provisions are greater than 13.85%. As a result, the test of whether the difference between financial accounting provisions and provisions reported on tax returns is equal to zero is rejected (t-value: 2.601).

Last, in line with the findings of *Zwirner* (2007) and *Kager/Schanz/Niemann* (2011) for IFRS consolidated financial statements, differences between financial and tax accounting are rather small for accounts payable. Overall, only 24.62% of the considered firms report different amounts of accounts payable in their financial statements and tax accounts. Furthermore, we

[20] Separate t-test for inventories (t-value: 1.927) and accounts receivables (t-value: 1.991) show that both are statistically different.

find that only two out of the 132 firms in the final sample show book-tax differences in accounts payable exceeding 5%.

4.2 Book-tax income differences

Table 3 compares the amount of book income reported to shareholders and the amount reported to tax authorities on the corporate tax returns. As described in Section 2, we examine two book-tax income differences. The first is the difference between the annual net income (*ANI*) reported to shareholders and the corporate taxable income reported on the tax balance sheet. Second, we compare the difference between annual net income before taxes (*ANIBT*) with actual taxable income before tax loss offset. We use the pretax measure of book income to be consistent with taxable income, which is a pretax measure.[21] To this end, both income measures are determined before any income pooling for all entities of a tax group. This eliminates the effects of income pooling and allows focusing solely on accounting differences.

Table 3: Book-tax income differences: Descriptive statistics

	Mean	Standard Deviation	Firms deviating	Percentiles			
				25%	50%	75%	90%
Corporate Income (tax balance sheet)	2,149,545	12,076,737	80.74%	0.37%	4.77%	21.11%	77.92
Annual net income (*ANI*)	2,037,684	12,328,535					
Corporate taxable income	2,917,149	12,266,973	100%	3.72%	21.68	85.63%	188.13%
Annual net income before taxes (*ANIBT*)	2,646,049	13,105,838					

Note: This table presents descriptive statistics for the sample of 132 firms. All continuous variables are in EUR. The first and second column present the mean and the standard deviation of the book (GAAP) and tax variables. The third column presents the percentage of companies that report deviating amounts in their financial statements and tax accounts. The last four columns show the distribution of relative differences in the sample.

Several things stand out in Table 3: First, for more than 80% of the observations annual net income and corporate income for tax purposes differ, indicating that the benefits of preparing only one set of accounts (*Einheitsbilanz*) became more or less obsolete during the last decades. Of course, firms may still file only the financial statements combined with a tax reconciliation statement. However, approximately 39% of the firms included in the final sample report a separate tax-balance sheet. Second, annual net income reported to shareholders is lower than the amount reported on the tax balance sheet (5.29%). This pattern prevails to the

[21] Please note that taxes other than profit taxes ("*Steuern vom Einkommen und Ertrag"*) have been deducted from *ANIBT* as those other taxes (e.g. real estate taxes) are generally deductible from corporate taxable income.

comparison of annual net income before taxes with corporate taxable income, where corporate taxable income represents the combined tax base of corporate income tax and trade tax on income. In contrast to evidence provided by recent U.S. studies (e.g. *Plesko*, 2007, pp. 15-16; *Lisowsky*, 2009, p. 43),[22] taxable income before loss offset in Germany is, on average, 10.24% higher than annual net income before taxes. Notably, off-balance sheet adjustments, e.g. interest add-backs and tax exempt dividends, increase the reporting gap, on average, by approximately five percentage points. However, one has to keep in mind that the effects of the corporate tax loss relief system have not been considered so far. Separate calculations show that the mean corporate taxable income after loss offset decreases to EUR 2,836,832. Nevertheless, corporate taxable income after loss offset still exceeds annual net income before taxes, on average, by 6.54%. While the hypothesis whether the difference between taxable income and the amount reported to shareholders can be rejected for both income measures (t-values: 1.908 / 1.568), this finding is puzzling, given the inherently conflicting motivations in managing book and taxable income. Thus, it serves as a first indication that the major part of the reporting gap is not caused by optimistic reporting under either financial or tax accounting, but rather by different tax and financial accounting regulations.

5 Explaining the reporting gap: Multivariate analyses

Up to this point, we have examined how well financial statement values represent the tax characteristics of a firm. In particular, we find that income reported to shareholders is statistically different from taxable income. While these results suggest that taxable income cannot directly be inferred from annual income reported on financial statements without measurement error, the findings provide no clear evidence about the origins of book-tax differences in Germany. In this section, we therefore examine the relation between book-tax differences and publicly available financial statement variables using a model that controls for various tax and non-tax factors known to be associated with book-tax differences. The main objective of these tests is to identify the most important sources of differences between both measures of income and to contribute to an enhanced understanding of book-tax differences in Germany in order "to help constituents obtain a better estimate of taxable income using publicly available information" (*Frank*, 2009, p. 67). Put another way, we aim to provide those interested in inferring taxable income from financial statements with information about the main sources of book-tax differences, which may be beneficial in avoiding much of the potential measurement

[22] Please note that Graham/Ready/Shackelford (2011, p. 77) report that (estimated) taxable income exceeds financial accounting income in 2001 and 2008, both recessionary years.

error. Moreover, considering variables known to be related to tax planning activities also allows us to investigate whether book-tax differences are caused mainly by known differences between financial and tax accounting or stem from tax aggressive reporting.

5.1 Research design

The relationship between book-tax differences and some (publicly) available variables is examined by running the following cross-sectional regression by firm *f*, where the dependent variable of interest is the book-tax differences (*BTD)* and the remaining variables are discussed in Table 4:

$$\begin{aligned}\ln(\text{BTD})_f = {} & \alpha + \beta_1 \ln(\text{Provisions}_f) + \beta_2 \ln(\text{Capital intensity}_f) + \beta_3 \ln(\text{CATA}_f) + \\ & \beta_4 \text{ Loss carryforward}_f + \beta_5 \#\text{subisdiaries}_f + \beta_6 \ln(\text{Leverage}_f) + \\ & \beta_7 \text{ PTROA}_f + \beta_8 \text{ Group taxation}_f + \beta_9 \text{ Parent company}_f + \\ & \beta_{10} \text{ Reorganization}_f + \beta_{11} \ln(\text{FirmSize}_f) + \varepsilon_f\end{aligned}$$

The regression model tests the relationship between book-tax differences (*BTD)* and certain financial ratios, various tax variables and some firm characteristics that have been suggested by prior literature to be associated with tax planning activities. To this end, *BTD* is modeled as the absolute difference between annual net income before taxes and corporate taxable income as reported on the tax return.

Due to the skewed distribution of *BTD*, we use, however, the log normal of *BTD* in order to address the possibility that violations of the normality assumption could drive the results of the applied ordinary least squares (OLS) regression. In order to increase the interpretability of the results, we also use the log normal for all included balance sheet ratios.[23] While this commonly applied data transformation results in a model with more constant error variance, it leads, for technical reasons, to a further reduction of the sample size to 130 observations.

In terms of the explanatory variables, we first include four different financial ratios in an attempt to operationalize the numerous balance sheet adjustments discussed above. More specifically, we expect a strong positive relationship between *BTD* and *provisions*, defined as the amount of total provisions scaled by total assets, as various non-discretionary balance sheet adjustments exist in the area of accounting for provisions under German tax law. In addition,

[23] Please note that all model specifications have also been run with non-transformed balance sheet ratios. The core results remain unchanged and all significance levels consistent with those reported below, unless otherwise reported.

we predict a positive relationship between the share of current assets in total assets (*CATA)* and *BTD,* since the univariate analysis has shown that current assets for financial and tax accounting purposes are statistically different from each other. By contrast, fixed assets reported on firms' financial statements and tax returns are not statistically different. Nevertheless, we include *capital intensity* as well, because depreciation of fixed assets is generally recognized as one of the major instruments when managing taxable and book income in different directions. Still, we do not have unambiguous expectations regarding the sign of the relationship.

Table 4: Explaining the reporting gap: Variables

Variable		Expectation
Balance sheet adjustments		
Provisions	Ratio of provisions to total assets	+
Capital intensity	Ratio of fixed assets to total assets	--
CATA	Ratio of current assets to total assets	+
Off balance sheet adjustments		
Loss-carryforward	Dummy variable showing if a firm has a loss-carryforward (1) or not (0)	+
# subsidiaries	Dummy variable showing if a firm has more than 5 subsidiaries (1) or not (0)	+
Leverage	Ratio of accounts payable to total assets	+
Measures of "tax planning"		
PTROA	Ratio of annual net income before taxed to total assets	0
Group taxation	Dummy variable showing if a firm files consolidated tax returns (1) or not (0)	0
Parent Company	Dummy variable showing whether the parent company is foreign (1) or domestic/n.a. (0)	0
Reorganization	Dummy variable showing if a firm has been reorganized (1) within the last 5 years or not (0)	+
Firm characteristics		
Firm size	Total assets reported on the financial statements	+
ε	Robust standard errors (Eicker-Huber-White)	

Note:. +, 0 and – denote the expected relationship between the dependent variable *BTD* and the independent variables as explained below.

Second, several tax specific variables are included to control for the main off-balance sheet adjustments as described above. Specifically, we expect a strong positive relationship between *BTD* and *loss-carryforward,* where *loss-carryforward* equals "1" if the firm either reports an existing loss-carryforward for corporate income tax and/or for trade tax purposes and "0" otherwise. Next, the number of subsidiaries *(# subsidiaries*) captures the effects of the partial tax exemption (95%) of dividends received. In short, as received dividends are generally excluded from taxable income while included in book income, we predict a positive association between *BTD* and those firms with numerous subsidiaries. Despite the fact that the comparison

of accounts payable for financial reporting and tax shows that the values are not statistically different, we also include *leverage*, defined as the ratio of the firm's total accounts payable to total assets, to capture the effects of interest add-backs for trade tax purposes and the non-deductibility of interest expenses under the earning stripping regulation. Hence, a positive relationship is also expected between *leverage* and *BTD*.

Third, we also include attributes that are assumed to be associated with tax planning in order to identify whether *BTD* is driven by aggressive tax reporting, which is consistent with the idea that book-tax differences in individual financial statements are associated with tax planning, rather than with incentives to manage financial earnings. We argue that if, after controlling for the most important legal differences between financial and tax accounting, proxies for tax planning are associated with higher *BTD*, then we can assume that *BTD* is not only driven by legal differences between financial and tax accounting but also by other economic factors, e.g. tax aggressive reporting. To this end, we assume that firms which are more likely to be engaged in any kind of tax planning are also more likely to take advantage of opportunities to manage taxable income. In other words, if firms are actually engaged in tax aggressive reporting, then the coefficients on the estimates of tax planning activity are expected to be significant. Otherwise, we have to conclude that book-tax differences in Germany are rather not caused by opportunistic reporting.

However, this approach requires identifying explanatory variables that measure tax planning but that do not necessarily affect the amount of book-tax differences mechanically. As suggested by prior literature (e.g. *Wilson*, 2009, pp. 985-986; *Frank/Lynch/Rego*, 2009, p. 475), we, include the pre-tax return on assets *(PTROA*) as a proxy for incentives to manage taxable income. This is reasonable since profitable firms are expected to be more likely engaged in tax planning. Consistent with this argument, *Wilson* (2009, p. 987) finds a positive association between *PTROA* and tax sheltering and *Manzon/Plesko* (2002, p. 198) argue that profitable firms are able to plan taxes more efficiently compared to less profitable firms, resulting in greater book-tax differences. If large *BTD* is related to tax aggressive reporting, then the coefficient on *PTROA* should be positive and significant. In addition, we control for group taxation, i.e. pooling of taxable income and losses. Although book-tax differences resulting from income pooling are already explicitly accounted for in modeling *BTD*, we include *group taxation*, because we expect that firms forming a tax group are also more likely to take advantage of opportunities to manage taxable income. Last, we include two estimates of tax planning activity based on the anecdotal evidence provided by *Breithecker/Klapdor/Passe* (2002), who

surveyed 22 German accounting and tax firms on tax aggressive reporting and tax planning. First, as *Breithecker/Klapdor/Passe* (2002, pp. 43-44) report that German subsidiaries of foreign companies tend to have less incentives to manage taxable income, we control for the location of the parent company by including *parent company*, i.e. a dummy variable showing whether the parent company of the considered firm is domestic or foreign. Second, we include *reorganization,* where *reorganization* equals "1" if the firm has been involved in any kind of corporate restructuring during the last 5 years. In this regard, not only *Breithecker/Klapdor/Passe* (2002, p. 44) report that firms engage in tax planning through restructuring in order to achieve desired tax results. Despite the general authoritative principle linking financial and tax accounts one has to, however, keep in mind that book-tax conformity is not required in privileged restructuring operations.[24] In other words, while firm restructurings may be accounted for at book-value for financial accounting purposes, a step-up to the fair market value might be required or is possible for tax purposes, e.g. in order to set off the step-up profits against current or previous losses. At the same time, the German Tax Reorganization Act (UmwStG), provides – at least for domestic corporations - considerable opportunities for tax neutral restructurings, e.g. under Sec. 11 (2) UmwStG,[25] thus allowing firms to keep the book value or an intermediate value in its tax accounts while stepping up for financial accounting purposes (*Prinz*, 2007, p. 130). Consistent with the broad literature on reorganizations and tax planning,[26] we therefore expect a positive relation between *BTD* and *reorganization*. However, two things must be noted: First, any effects of *reorganizations* on *BTD* must not be interpreted as an indicator for continuous income management, but rather as a one-time accounting choice. Second, an unambiguous distinction between tax planning and non-discretionary book-tax differences is difficult, i.e. firms may be legally forced to report different values for tax and financial reporting. Hence, *reorganization* may only be a noisy proxy for general tax planning and the interpretation of results requires caution.

[24] See Englisch, 2007, pp. 339-346; Bilitewski, 2007, p. 62; Dötsch/Pung, 2006, pp. 2705-2706.
[25] See for an overview Kroener/Momen, 2012, pp. 71-79.
[26] See, for example, Prinz, 2007, p. 130; Orth, 2008, m.n. 500; Rödder/Schumacher, 2006, p. 1533.

5.2 Results

Descriptive Statistics

We begin the analysis by reporting descriptive statistics for the final sample in Table 5.

Table 5: Explaining the reporting gap: Descriptive statistics

Variable	Mean	Standard Deviation	Min	Max
Dependent variables				
Absolute book-tax difference (BTD)	1,541,577	6,333,533	102	65,481,240
BTD scaled by ANIBT	1.444	5.410	0.001	51.0607
BTD scaled by Total Assets	0.043	0.083	0.000	0.714
Balance sheet adjustments				
Provisions	0.164	0.169	0.002	0.794
Capital intensity	0.229	0.264	0	0.992
CATA	0.730	0.282	0	1
Off balance sheet adjustments				
Loss-carryforward	0.378	0.487	0	1
# subsidiaries	0.362	0.482	0	1
Leverage	0.454	0.298	0	1.075
Measures of "tax planning"				
PTROA	0.043	0.221	-1.002	1.594
Group taxation	0.244	0.431	0	1
Parent company	0.519	0.502	0	1
Reorganization	0.234	0.358	0	1
Firm characteristics				
Firm size	59,873,679	191,620,134	--	--

Note: Descriptive statistics are reported before data transformation. The min. and max. of firm size are not reported as individual firm data are highly confidential.

The mean book-tax difference is EUR 1,541,577 with a minimum *BTD* of EUR 102 and a maximum of EUR 65,481,240. Considering the scaled measure of *BTD* used in one of the robustness tests as discussed below, book-tax differences are, on average, approximately 4.3% of total assets. The spread between the minimum and maximum values is considerably high, which demonstrates the large heterogeneity in firms` reporting gap.[27]

Table 5 reports the main statistics for the independent variables. In terms of the asset structure, capital intensity is, on average, 23%, while current assets account for 72% of total assets.

[27] Please note that Table 3 provides more details on how book-tax differences are distributed within the sample.

Reporting on the capital structure, leverage and provisions have a mean of approximately 45% and 16%, respectively. Considering the other tax variables included in the model, nearly 38% of the firms in the sample report a tax loss-carryforward and approximately 36% have at least five subsidiaries.

In terms of the variables that proxy for tax planning, pretax return on asset *(PTROA)* has a mean of 4.33%. Although the sample period (fiscal year 2009) covers the recent economic downturn, average *PTROA* is positive. Overall, slightly less than one third of the sample observations report negative *PTROA.* Furthermore, approximately half of the firms included in the sample can be classified as a subsidiary of a foreign parent company and about 23% of the observations report a reorganization during the past five years. Finally, the share of observations which belongs to a tax group, i.e. firms that pool income for tax and financial statement purposes, is nearly 25% of the firms included in the final sample. At the same time, about 56% of the firms in the sample are required to prepare or report their result in consolidated group accounts.

Regression Results

Table 6 presents the results from OLS regressions. To estimate the extent to which *BTD* can be explained by institutional factors, i.e. legal differences between financial and tax accounting, we follow *Manzon/Plesko* (2002, p. 208) and first present two model specifications including only those variables that are expected to be associated with legal differences between both measures of income. As mentioned above, these institutional variables reflect both balance sheet and off balance sheet adjustments which generate temporary as well as permanent differences between taxable income and income reported to shareholders.

In the first specification (column (1)), we find a strong relationship between *BTD* and *provisions*, but no significant relationships with the other two financial ratios. Not surprisingly, we also document a positive significant relationship between *BTD* and the control variable *firm size*. After controlling for firm characteristics, the estimated coefficient on *provisions* is positive, indicating that book-tax differences are significantly greater for firms with higher ratios of provisions to total assets. This result is consistent with the univariate analyses presented above and, once again, indicates that the measurement and recognition of provisions is one, if not the most, important factor in the divergence between tax and financial reporting. In this regard, important examples include provisions for contingent losses which may not be recognized for tax purposes (Sec. 5 (4a) EStG) as well as the tax-specific measurement criteria for

pension provision under Sec. 6a EStG. Unlike the differences in current assets, for which we cannot find a significant effect on *BTD*, differences in the recognition and measurement of provisions directly translate into income differences between both accounting measures and, therefore, should be accounted for when inferring taxable income from financial statement information.

When the measures of off-balance sheet adjustments are added in Specification (2), the results reported above remain unchanged. However, the additional variables provide further insights into what drives book-tax differences in Germany. Notably, the R^2 from estimating Specification (2) increases by more than 0.12, indicating that the relatively few tax variables measuring off-balance sheet adjustments explain a substantial portion of the reporting gap. First, the presence of a loss-carryforward is strongly positively related to *BTD*, consistent with the expectation that the loss-relief system adds significantly to the reporting GAAP. In addition *# subsidiaries* is positively related to *BTD*, suggesting that firms with more subsidiaries and, therefore, a higher share of tax-exempt dividend income in total annual net income have a greater wedge between book and taxable income. Accordingly, we suggest taking the tax-exemption of dividend income (Sec. 8b KStG) into consideration and partially deducting earnings on investments from *ANIBT* when estimating taxable income from financial statements. The same holds true for permanent differences arising from add-backs of interest payments on debt. Even though the recognition and measurement of accounts payables as discussed in Section 3 does not yield significant differences in the book and tax balance sheet values, *leverage* is significantly related to the reporting gap. The positive relationship between *leverage* and *BTD* is consistent with the expectations that the partial non-deductibility of interest payments for trade tax purposes as well as the non-deductibility of interest payments under the earnings stripping regulation (Sec. 4h EStG in conjunction with Sec. 8a KStG) adds significantly to the reporting gap.

Table 6: Explaining the reporting gap: OLS regression results

Dependent Variable ln(BTD)				Without Outliers	Scaled by *ANIBT*	Scaled by Total Assets
	(1)	(2)	(3)	(4)	(5)	(6)
Balance sheet adjustments						
ln (Provisions)	0.648***	0.565***	0.565***	0.496***	0.406***	0.499***
	(0.112)	(0.131)	(0.129)	(0.151)	(0.127)	(0.107)
ln (Capital intensity)	1.572	1.463	2.001	1.570	0.600	1.546
	(1.637)	(1.655)	(1.715)	(1.961)	(2.739)	(1.537)
ln (CATA)	-1.800	0.026	0.465	-0.352	-0.769	1.381
	(1.731)	(1.825)	(1.853)	(2.201)	(3.103)	(1.812)
Off-balance sheet adjustments						
Loss-carryforward		1.072***	1.214***	1.438***	1.283***	1.048***
		(0.359)	(0.336)	(0.356)	(0.335)	(0.299)
# of subsidiaries		1.173***	1.125***	1.138***	0.739**	0.604*
		(0.371)	(0.372)	(0.394)	(0.373)	(0.324)
ln (Leverage)		0.348***	0.356***	0.412***	0.303*	0.317***
		(0.120)	(0.125)	(0.132)	(0.158)	(0.116)
Measures of "tax planning"						
PTROA			0.0730	-0.547	-0.739	-0.350
			(0.563)	(0.628)	(0.726)	(0.630)
Group taxation			0.546	-0.0724	-0.347	-0.471
			(0.486)	(0.429)	(0.444)	(0.343)
Parent company			0.662	0.616	0.250	0.271
			(0.434)	(0.417)	(0.372)	(0.303)
Reorganization			0.892**	0.816*	0.957	0.555
			(0.431)	(0.415)	(0.602)	(0.417)
Firm Characteristics						
ln (Firm size)	0.610***	0.558***	0.528***	0.560***	-0.134	-0.051*
	(0.109)	(0.109)	(0.122)	(0.111)	(0.114)	(0.028)
_cons	4.038*	3.323	2.920	2.917	1.245	-3.882***
	(2.210)	(2.366)	(2.385)	(2.219)	(3.007)	(1.242)
Observations	130	130	130	115	130	130
R^2	0.414	0.536	0.556	0.584	0.287	0.360

Note: This table presents the regression results using OLS where the dependent variable in Specification (1)–(4) is ln(BTD), i.e. the natural logarithm of the absolute differences between corporate taxable income reported on the tax returns and annual net income before taxes (financial accounting). In Specification (5) BTD is scaled by annual net income before taxes. In Specification (6) BTD is scaled by total assets and firm size is measured as the natural logarithm of annual sales. The remaining variables are as defined in Table 4 and winsorized at the 5% level in Specification (4). Robust standard errors are reported in parentheses below the coefficient estimates. *, ** and *** represent significance levels at 0.10, 0.05 and 0.01 levels, respectively.

Turning the attention to the question whether *BTD* may also be driven by aggressive tax reporting, we add the measure of profitability *PTROA*, which is frequently used in literature to proxy tax planning activity, and other firm characteristics associated with tax planning in Specification (3). To begin with, the signs and significance levels of the coefficients of the legal variables are largely unchanged when the new variables are included. At the same time, we find no significant relationship between the book-tax gap and tax planning activity variables in the full model specification. While *reorganization* is only marginally significant in certain specifications,[28] none of the other considered tax planning variables is significantly related to the reporting gap. The results support the notion that there are little opportunities to manage taxable income while not reducing book income, at least as far as we can estimate opportunistic reporting. In contrast to the U.S., where book-tax differences are assumed to reflect tax planning (e.g. *Armstrong/Bloouin/Larcker,* 2011, p. 9), large book-tax differences in Germany are not likely related to tax aggressive reporting. Accordingly, literature that uses book-tax differences as explanatory variables is advised to not put too much reliance on prior findings under different legal settings, but rather to consider that book-tax differences are the result of legal differences between financial and tax accounting, which cause accounting practice in Germany to be far away from a common measure of income.

Robustness tests and extension

In order to determine the robustness of the core model and ameliorate the effect of influential observations, we run three simple robustness tests. While all continuous variables are winsorized at the 5% level in Specification (4), we re-examine our measurement choice of BTD in Specification (5) and (6). In the primary analyses we measured *BTD* using the absolute amount of book-tax differences. Even though controlling for firm size, the use of an absolute number may potentially lead to some undesirable consequences. For this reason we scale *BTD* by annual net income before taxes and in line with prior research (e.g. *Mills*, 1998) by total assets, respectively. In order to minimize bias to the estimated effect of *firm size* that results from errors in measuring the true scale variable, we use the log normal of sales (*Umsatzerlöse)* as *firm size* measure when *BTD* is scaled by total assets in Specification (6).

The results of the robustness tests are largely consistent with those reported for the core model and support the findings that legal differences between financial and tax accounting are the major source of differences between financial and tax accounting in Germany. The coeffi-

[28] Please note that the impact of *reorganization* on *BTD* will be discussed in more detail in the supplemental analyses.

cients on *provisions* as well as the three measures for off-balance sheet adjustments are positive and consistently significant. All tax planning variables remain - or in case of *reorganization* turn - insignificant. Yet, *firm size* is significant in Specification (6). While prior research associates firm size with tax sheltering (*Wilson*, 2009, p. 987) or tax-avoidance (*Rego*, 2003, p. 820), i.e. the costs of tax planning decrease with the size of the firm, we document a negative relationship between scaled *BTD* and *firm size.* Although consistent with taxable income exceeding financial statement income in Germany, we rather not interpret this finding as evidence for any influence of tax planning on the reporting gap, but refer to a more technical reason. In short, given that small absolute *BTD* can turn to high ratios of *BTD* to total assets for firms reporting considerable low total assets, we assume a strong influence of such small firms, thus explaining the negative association between *firm size* and scaled *BTD.*

Up to this point, we implicitly assumed that the incentives to manage taxable or financial statement income are the same for all firms. Given that firms are - under the conditions of Sec. 264 (3) HGB - exempt from disclosing individual financial statements when disclosing consolidated group accounts, one may, however, expect that firms being released from the disclosure requirements have different incentives to manage income in their individual financial statements. In particular, this should hold true for those firms that report IFRS group accounts, as there is no legal link between individual financial statements prepared under German GAAP and IFRS group accounts. While we assume that there is less motivation to manage earnings reported on individual financial statements for these firms, we expect more tax-induced differences between the two income measures.[29] In an (untabulated) extension to the core model we, therefore, control for *group account,* where *group account* equals "1" if the firm is required to disclose consolidated IFRS group accounts and "0" otherwise, and also include interactions of *group account* with the variables that proxy for tax planning activity. In this regard, differences to the results reported in Table 6 will be interpreted as evidence that firms have different incentives to manage income and that tax aggressive reporting may add to the reporting gap for certain types of firms. However, the results of the extended model are substantially the same as those reported above. First, the coefficients, significance levels and signs of the core explanatory variables remain largely unchanged. In line with the previous robustness test, only *reorganization* turns insignificant. Second, the estimated coefficient of the dummy variable *group account* is positive but not significant. Moreover, we find that the interactions are not significant and coefficient are not very different from the standalone vari-

[29] See for a similar argumentation Haller/Ferstl/Löffelmann, 2011, p. 889.

ables, indicating that the reporting gap for firms reporting consolidated IFRS group accounts does not differ from book-tax differences reported by other firms. Given that the results of the core model failed to detect an influence of aggressive reporting on the reporting gap, this is not surprising and consistent with our interpretation that legal differences rather than incentives to manage income are the major source of book-tax differences in Germany.

To conclude, we cannot provide evidence that firms which are more likely to engage in tax planning report significantly different *BTD* than other firms. Consistent with the German accounting framework for 2009, we therefore conclude that tax aggressive reporting - as far as we can estimate opportunistic reporting - does not significantly add to the overall reporting gap.

Supplemental analyses

BTD is a measure which includes both balance sheet and off balance sheet adjustments – the latter are not related to accounting accruals - and may be a noisy proxy to test for opportunistic or tax aggressive reporting. To mitigate this concern, we re-examine our measurement choice of BTD in supplemental tests and run the previously discussed regressions for the dependent variable *BSBTD*, defined as the absolute differences between corporate income reported on firms' tax balance sheet and annual net income (*ANI)*. In doing so, all firms reporting no differences between the two measures of income are omitted from the sample. This is done, since firms reporting zero differences are obviously not engaged in any form of income management yielding differences in taxable income and income reported to shareholders. This elimination leaves a sample of 108 observations.

As before, the first two model specifications reported in Table 7 examine the relationship between *BSBTD* and known differences on financial and tax accounting. Using *BSBTD* as the dependent variable, we document a strong relationship between the reporting gap and *provisions,* i.e. the coefficient of *provisions* remains significantly positive. That is, differences in the recognition and measurement of provisions directly translate to income differences. Consequently, research should be careful in estimating taxable income from financial statements for those firms reporting a relatively high ratio of provisions to total assets. Consistent with *BSBDT* measuring book-tax differences before off-balance sheet adjustments, all other variables that control for legal differences between financial and tax accounting turn insignificant.

Table 7: Explaining the reporting gap: Supplemental analyses

Dependent Variable ln(BSBTD)				**Without Outliers**	**Scaled by *ANIBT***	**Scaled by Total Assets**
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**
Balance sheet adjustments						
ln (Provisions)	0.552***	0.512***	0.489**	0.378*	0.267	0.327*
	(0.192)	(0.189)	(0.192)	(0.215)	(0.187)	(0.172)
ln (Capital intensity)	1.473	0.441	0.356	1.061	-1.088	-0.0663
	(1.873)	(1.838)	(1.923)	(3.097)	(2.506)	(1.806)
ln (CATA)	-1.244	-1.383	-1.069	-1.565	-2.389	0.0244
	(1.782)	(1.643)	(1.724)	(3.200)	(2.775)	(1.795)
Off-balance sheet adjustments						
Loss-carryforward		0.546	0.686	0.781	0.489	0.496
		(0.468)	(0.468)	(0.491)	(0.482)	(0.423)
# of subsidiaries		0.584	0.545	-0.0238	0.345	0.0892
		(0.503)	(0.521)	(0.527)	(0.494)	(0.479)
ln (Leverage)		0.135	0.132	0.127	0.0702	0.0667
		(0.142)	(0.135)	(0.148)	(0.158)	(0.112)
Measures of "tax planning"						
PTROA			-0.280	-0.342	-0.00866	-0.785
			(1.168)	(1.167)	(0.919)	(0.989)
Group taxation			0.715	-0.0209	-0.287	-0.431
			(0.661)	(0.633)	(0.601)	(0.465)
Parent company			0.0419	-0.118	-0.180	-0.401
			(0.599)	(0.591)	(0.491)	(0.484)
Reorganization			1.830***	2.390***	2.579***	1.912***
			(0.558)	(0.618)	(0.779)	(0.625)
Firm Characteristics						
ln (Firm size)	0.512***	0.437***	0.425**	0.429***	-0.243*	-0.0747**
	(0.138)	(0.161)	(0.169)	(0.162)	(0.129)	(0.0312)
_cons	4.763*	5.452*	5.298*	5.533*	3.535	-3.262**
	(2.502)	(2.781)	(2.788)	(3.083)	(2.870)	(1.336)
Observations	108	108	108	97	108	108
R^2	0.277	0.326	0.361	0.295	0.177	0.187

Note: This table presents the regression results using OLS where the dependent variable in Specification (1)–(4) is ln(BSBTD), i.e. the natural logarithm of the absolute differences between corporate taxable income reported on the tax balance sheet and annual net income (financial accounting). In Specification (5) BSBTD as is scaled by annual net income before taxes. In Specification (6) BSBTD is scaled by Total Assets and firm sized is measured as the natural logarithm of annual sales. The remaining variables are as defined in Table 4 and winsorized at the 5% level in Specification (4). Robust standard errors are reported in parentheses below the coefficient estimates. *, ** and *** represent significance levels at 0.10, 0.05 and 0.01 levels, respectively.

These results remain largely unchanged if the variables associated with tax planning are included (Specification (3)), if outliers are eliminated (Specification 4) and if scaled *BSBTD* are considered in Specification (5) and (6). Again, we document a strong negative relation between *BSBTD* and *firm size* when scaling *BSBTD* by total assets.

Looking at the measures of tax planning, the results indicate a significant influence of *reorganization* on *BSBTD*. While the more general measures of tax planning remain insignificant, the coefficient on *reorganization* is significantly positive in all model specifications, indicating that firms which have been involved in corporate restructuring exhibit significantly greater book-tax differences than others. This result is consistent with our expectations, the findings of the core model as reported in Table 6 (Specification 3) and are not surprising given the considerable opportunities for non-conform reporting in corporate reorganizations. Overall, it suggests that book-tax differences are higher when book-tax conformity is reduced. As discussed above, the findings need, however, careful interpretation for several reasons. First, it has to be kept in mind that an unambiguous distinction between aggressive reporting and non-discretionary book-tax differences is difficult as firms may be legally forced to report different values for tax and financial reporting after corporate restructuring. Hence, *reorganization* may only be a noisy proxy for tax-induced differences between the two income measures. Nevertheless, given the widely recognized opportunities to plan taxes or financial statement earnings in the course of corporate reorganizations and, of course, the source of our sample, we expect that the positive relation between *BSTBD* and *reorganization* is – at least to some degree - explained by some sort of opportunistic reporting.

Second, assuming that such accounting incentives lie at the root of the observed relation between *BSBTD* and *reorganization*, the economic motivation behind it is ambiguous. One explanation is earnings management. To this end, firms clearly have incentives to step-up the acquired assets to their fair market value for financial accounting purposes, while, if possible, opting to continue with book-values for tax purposes, e.g. in order to avoid immediate taxation of hidden reserves. However, another explanation is tax planning. Even in privileged reorganizations, i.e. assets can be accounted for at present book-value for tax purposes, there are incentives to step-up in the acquired assets. For example, firms may choose to step-up assets along with a corresponding depreciation base to reduce future tax payments or to set off the step-up profit against current or previous losses. Similar to previous literature, we cannot determine which of these factors – for some firms the factors may even operate simultaneously - generate the observed book-tax differences. Irrespective of the economic motivation we

can, however, conclude that firms are willing to give up the administrative advantage of a one-book system in order to achieve desired tax or financial accounting results, if book-tax conformity is not required. In other words, we interpret the positive relation between *BSBTD* and *reorganization* as an indicator that the benefits from non-conformity outweigh the additional compliance burden of keeping two books for tax and financial accounting. Indeed, this finding is valid only in case of corporate restructuring in our setting. However, it indicates how firms may react to switches in the degree of book-tax conformity and, therefore, has important implications for the question of what would happen if Germany continues moving towards a two-book approach, under which the two income measures are largely independent.

6 Conclusion

This study examines book-tax differences in Germany to provide evidence on the magnitude and sources of the reporting gap and contribute to the ongoing policy debate on book-tax conformity. Despite the close link between financial and tax accounting in Germany, we document that corporate taxable income and the amount reported to shareholders diverge a great deal. Furthermore, regression results that control for firm size and different determinates of tax planning provide robust evidence that legal and known differences between financial and tax accounting lie at the root of this reporting gap. While reporting significant relationship between firms' book-tax differences and, for example, the ratio of provisions to total assets, the study cannot provide evidence that opportunistic tax reporting adds to the reporting gap. In supplementary analysis, the study shows, however, that those firms being involved in corporate restructurings report significantly higher book-tax differences than other firms. Although the interpretation of this result requires caution, it indicates that firms are willing to give up the administrative advantage of a one-book system in order to achieve desired tax or non-tax results, if book-tax conformity is not required. Thus, we may provide new insights into the relatively unexplored area of behavioral response to changes in the degree of book-tax conformity, while also adding a new perspective on the discussion surrounding the economic implications of the *BilMoG-Act* in Germany, in particular, and book-tax conformity, in general.[30]

Beyond this finding, the study also provides useful insight for future empirical research: To our knowledge, this study is the first examination of confidential tax data in Germany. The

[30] See for a discussion of the implication of the BilMoG-Act on tax aggressive reporting, Ortmann-Babel/Bolik, 2010, pp. 2099-2103; Ortmann-Babel/Bolik/Gageur, 2009, pp. 934-938.

data examined in this paper has the invaluable advantage of being based on actual tax returns rather than on estimated taxable income. Therefore, it allows not only to measure the reporting gap in Germany most accurately, but also to distinguish types and sources of book-tax differences. However, as with most empirical studies, the data has some shortcomings and there are at least two caveats with respect to our results. First, our sample is relatively small, covers only one reporting period and includes only firms known to have demanded professional tax advice. Accordingly, the results may not generalize to the entire German business population or other reporting periods. Second, we cannot directly observe aggressive tax reporting and the measures of tax planning undoubtedly include measurement errors. Hence, the study is only a first, but important, step in adequately addressing the relationship between book-tax differences and opportunistic reporting in Germany. At the same time, there are some unique and important lessons to be learnt for future research: Researchers that aim to infer firms' tax characteristics from publicly available data will find suggestions on which legal differences between financial and tax accounting to incorporate into models that estimate taxable income. In addition, literature that uses book-tax differences as explanatory variables is advised to not put too much reliance on prior findings under different legal settings, but rather to be careful when interpreting book-tax differences in Germany. In contrast to the U.S., where book-tax differences are assumed to reflect tax planning (e.g. *Armstrong/Bloouin/Larcker,* 2011, p. 9), large book-tax differences in Germany are not likely to be related to tax aggressive reporting, but are rather the results of legal differences between financial and tax accounting.

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