Preliminary and Incomplete

Conforming corporate book income and corporate taxable income: evidence of possible information loss in the EU

Willem Buijink [*]
Christos Grambovas [#]

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[*]Department of Accountancy, FEB, Universiteit van Tilburg
[#]christos.grambovas@manchester.ac.uk, CAIR, Manchester Business School, University of Manchester:

Abstract

We examine the question of whether increased conformity between (consolidated) corporate book income and taxable income would lead to a loss of information to investors in the UK and Germany. Current European Commission initiatives to create a common corporate income tax base based on IFRSs may affect the reporting of book income in the future in the EU (European Union). Moreover, in the US several observers, dismayed by the discrepancies between corporate book income and corporate taxable income in the US, have begun to call for 'closing the book-tax accounting gap'. While these observers point at benefits resulting from such a step, it potentially has costs as well. This paper empirically investigates the potential information loss of aligning consolidated book income and taxable income in two large EU member states.

1. Introduction

This paper is motivated by two developments. The first development is European. The European Commission is currently studying the possibility of a common EU (European Union) consolidated corporate income tax base. The material available on the European Commission (EC) Taxation website suggests that serious thought is given to basing such a common corporate income tax base in the EU on IFRS based pre-tax book income. This may lead to an alignment between corporate book and taxable income across the EU.

The second development is increasing advocacy in the US for the abolishment of the non-alignment of corporate book income and corporate taxable income (Desai, 2006, Whitaker, 2005). The argument for corporate book-taxable income alignment is based on a double worry about corporate earnings management, managing book income upward, and corporate tax minimization, managing taxable income downwards. This discussion may easily carry over to Europe.

While a case for the benefits of using IFRS based pre-tax income for corporate income taxation, and for a greater alignment of book and taxable income to fight both earnings management and corporate tax evasion can be made, it also important to consider the potential costs of stricter alignment. This paper attempts to do that in the context of the EU by measuring the information loss that would potentially result from corporate book-taxable income conformity. Further, it should be noted that this study builds on, and adds to, earlier US research, most notably Hanlon, Kelley and Shevlin (2005) – HKS – and Hanlon and Shevlin (2005) – HS.

We focus on two EU member states, the UK and Germany. Both are large EU economies. But more importantly we also want to 'control' for within EU differences on the outcome of our analysis. The UK and Germany are institutionally different. In Germany at the individual company (legal entity) level there is book-tax conformity. The UK has greater share ownership dispersion and also more loan financing through the capital market (bonds). There are also corporate governance differences, notably more employee involvement in Germany. Moreover, Germany has a stakeholder

orientated system while the UK has a shareholder oriented market, which affects the power balance between individual and institutional shareholders.

We study the effect of book-tax conformity by looking at the relative information content of corporate book income and estimated corporate taxable income in the case of UK and German non-financial firms in the period 1998-2003. We find that in both Germany and the UK there is a loss of information when the corporate taxable income is considered as the income figure instead of the corporate book income.

2. Hypothesis development

Countries differ in the extent to which determination of a company's book income, reported in GAAP based financial statements, is different from the determination of the same company's taxable income for the same period. Why this is the case it is not clear. Nobes and Schwencke (2006) speculate about this in general and examine the case of Norway. Desai (2006) discusses the history of the difference between book and taxable income in the US

A standard defence, reason, for making a distinction between a company's (pre-tax) book and taxable income (non-alignment) is that the two income numbers simply serve different purposes. Both are summary measures of the financial performance of a firm. But book income of a corporation is calculated under (local) GAAP to help firm stakeholders to make decisions with regard to the company. Whereas that company's taxable income is determined by the tax authorities in order to raise government revenue equitably and/or to induce desirable company behaviour. Keeping these measures separate therefore has benefits.

However, given non-alignment, companies have incentives to report higher than 'true' (pre-tax) book income and lower than 'true' taxable income. Within limits of course, because both measures derive from the same underlying accrual based financial accounting system, and also because the tax authorities can also observe

book income (see Mills, 1998). Nonetheless, to the extent that this happens, it represents a potential cost of non-alignment.

Presumably, in the countries that we look at below perceived net benefits have in the UK led to non-alignment and perceived net-costs have led to alignment in Germany (but see Nobes and Schwencke, 2006, for an alternative story).

Two recent developments warrant further, preferably empirical, attention to the benefits and costs of the choice between non-alignment and alignment. The first development is within the EU efforts for corporate income tax harmonisation. An important first step here would be the creation of a common corporate income tax base across EU member states. The European Commission has recently taken the initiative to create a Study Group with a mandate to develop ideas for the creation of a common corporate income tax base in the EU. In the documentation available on the EC taxation website it is clear that basing such a common corporate income tax base on IFRSs is perceived as a prominent option. Indeed, from 2005 IFRSs basically constitute EU GAAP for listed EU companies. Using IFRSs to base a within-EU common corporate income tax base on, immediately raises the issue of (non-) alignment and the related benefits and costs.

The second development is a discussion taking place in the US. Observing a widening gap between aggregate corporate profits (book income) and corporate taxable income (as reported to the US tax authorities) has led to a suspicion the companies use the non-aligned corporate book-taxable income reporting system in the US opportunistically, i.e. that it generates both (book) earnings management and corporate taxable income avoidance. For forceful articulations of this view see Whitttaker (2005) and Desai (2006). This has led to several suggestions for remedies. One is to make companies also publish their corporate income tax returns (which are currently not available to outside stakeholders of companies). Another is to mandate more information on the reconciliation between book and taxable income in the published financial statements. A third idea is to do away with non-alignment altogether. The same concerns have so far not been raised within EU, but given within EU financial reporting 'accidents', the US discussion could easily find its way to the EU.

We feel that both developments create the need to generate more empirical evidence of the benefits and costs of (non-) alignment also in the EU. This paper focuses on the potential costs of non-alignment. Considering an introduction of alignment between book and taxable income, it can be expected that given the revenue/behaviour influencing role of corporate income taxation, aligned book income will become much like what currently is taxable income (see on this Hanlon, Shevlin, 2005, p.5).

Hence, to gauge the potential information loss (a cost) to outside stakeholders of alignment, below we attempt to document the relative information content, for one prominent, class of company stakeholders, investors, of company book income and taxable income.

We use UK and German data. Germany's corporate income taxation is aligned at the legal entity level, in the UK this is not the case. We look at consolidated book and taxable income. At the consolidated level book and taxable income are not aligned also in Germany, but effects of the underlying aligned system may be observable.

We expect that in both countries book income will exhibit larger relative information content then taxable income, and that the difference will be larger in the UK. That is, we predict that taxable income under non-alignment will be the less informative number.

3. Research Design and Data Selection

The main objective of this study is to assess which income measure explains better the security returns, i.e. whether book or taxable income are more relevant for investors. To this end we will examine the relative and the incremental information content of the two income measures to the market, by regressing the two figures on the cross-sectional variation of equity returns. First, we will assess the relative

information content by testing the importance of book and taxable income measures to investors, employing two separate models and comparing the results.

$$R_{it} = \alpha_0 + \alpha_1 \cdot \Delta CBI_{it} + \varepsilon_{it} \qquad (1)$$

$$R_{it} = \beta_0 + \beta_1 \cdot \Delta CTI_{it} + \varepsilon_{it} \qquad (2)$$

Model 1 assesses the importance of the change in the corporate book income between periods t and t-1 deflated by the beginning period market value (ΔCBI_{it}) of company i on the change in the equity price (R_{it}) of the same company i during the fiscal year t. Similarly, Model 2 assesses the importance of the change in the corporate taxable income between periods t and t-1 deflated by the beginning period market value (ΔCTI_{it}) of company i on the change in the equity price of the same company i during the fiscal year t. In models 1 and 2, α_0 and β_0 are the intercepts, α_1 and β_1 are the slope coefficients and the terms ε are the error terms.

Then we will examine the incremental information content when changes in both corporate book income and corporate taxable income are included in the model to assess any potential loss of information by the use of only one measure. Model 3 reads as below:

$$R_{it} = \gamma_0 + \gamma_1 \cdot \Delta CBI_{it} + \gamma_2 \cdot \Delta CTI_{it} + \varepsilon_{it} \qquad (3)$$

The notation is as in Models 1 and 2 with γ_0 denoting the intercept and γ_1 and γ_2 the coefficients on book income and taxable income.

Data Selection

We obtain our data from the Worldscope database and we focus on listed UK and German firms in the period 1999 - 2003. We restrict our attention to non-financial firms. We use only locally domiciled firms (in the two countries) and remove firms that have voluntarily adopted IASB GAAP or US GAAP in their primary financial satements (Worldscope item WS.AcctgStandardsFollowed) as well as firms with stock exchange listings outside of the country of domicile (Worldscope item

WS.Exchange). We also only use firms that provide consolidated financial statements (for reasons explained above). A firm that meets all these requirements in each year in the period considered enters the sample. This process created a sample of 619 German and 2,892 UK firms.

We calculate corporate book income as consolidated pre-tax book income (Worldscope item WS.IncomeBefIncomeTaxes) minus minority interest (Worldscope item WS.MinorityInterestIncomeStmt). We estimate corporate taxable income as the consolidated current tax expense divided in each year by the top corporate income tax rate (STR; statutory tax rate) for the year in both countries. Table 1 give these top corporate tax rates by year and by country in the years considered. We arrive at the consolidated tax expense by subtracting the change in deferred taxes (Worldscope item WS.DeferredTaxesBalSht) from the total tax expense (Worldscope item WS.IncomeTaxes). In Worldscope the item that we use for deferred taxes represents the accumulation of taxes which are deferred as a result of timing differences between reporting sales and expenses for tax and financial reporting purposes and it is adjusted to include deferred tax debits.

Table 1 about here

In addition, it should be pointed out that reporting about corporate income tax in both countries is such that the tax expense excludes permanent book-tax differences but includes timing book-tax income differences. Hence the correction for the change deferred taxes to arrive at an estimate of taxed paid and of taxable income.

Note also that taxes actually paid for a given year may well differ from our estimate. But (see on this also HKS 2005), given the confidentiality of company tax returns investors also can only estimate taxes actually paid by a company for a given year and its taxable income. Hence, it makes sense to use the estimated (taxes paid and) taxable income number in our tests below.

Companies in our sample may operate in various countries and face different STRs. However, both the UK and Germany tax companies on world wide income, in which case the use of UK and German STRs top corporate income tax rate is sensible.

However, as a sensitivity analysis we will also redo our analyses for a subset of domestically operating firms in the two countries. We use international sales (Worldscope item WS.InternationalSales) to identify domestically operating companies. Finally, in the information content tests below we use market adjusted contemporaneous fiscal year end returns calculated by deducting beginning-period share price from end-period equity price with the result deflated by the former.

Furthermore, in large parts of the previous literature the common rule is to remove outliers at the 1% up and down of the sample. However, this would create discontinuity in the panel structure of our dataset (large number of panels-firms for a number of years) and it would restrict the panel estimation. Instead, following Grambovas, Giner and Christodoulou (2006), we have decided to eliminate outliers based on the behaviour of the firm-mean in each panel in such way that if the mean return and mean income measures for firm *i* and time *t* appear as a multivariate outlier, then we remove all the observations of the specific firm-panel. In order to achieve that we employ the Hadi multivariate outlier detection technique as it has been articulated by Hadi (1992 & 1994).

In section 4 we first present and analysis of the descriptive statistics and we present results with regard to the evolution in the book-taxable income gap in the UK and Germany over the period considered.

4. Results

4.1. Descriptive results

In Table 2, below, one can observe the descriptive statistics of the variables we examine in this study. The mean and the median of the corporate book income measure are higher than the relevant figures of the corporate taxable income measure in both countries. This was expected as the two figures are used for different purposes and the management of the companies may be tempted to report higher book income (to attract investors) and lower taxable income (to avoid taxation) as it is described above. It appears that for German companies the average spread between the two

income measures is much higher than the equivalent spread for the UK companies (note the difference in the currencies of the reported figures – euros and pounds). At the same time the standard deviation of both income figures is higher in the case of Germany, indicating the higher variation within the sample for reported and taxable income when comparing with the UK. Finally, it should be noticed that on average German companies have higher equity returns than companies based in the UK.

Table 2 about here

Furthermore, in Table 3 the annual descriptive statistics are presented. It can be seen that the total corporate book income is in most of the cases higher than the total corporate taxable income resulting to a positive total (and mean) spread between the two. However, in four cases the total taxable income is higher which leads to a negative spread. Although not expected, the relevant result may be explained by specific events that have occurred in this particular period. For example, in the case of Germany in 1999 the negative spread might be the result of the burst of the stock exchange bubble that took place during that year, while the negative spread for the UK companies in 2001 may be related to the financial crisis that followed the 11th of September events (as it is also suggested by HKS 2005, p.19). Both events may have resulted to a 'big-bath', i.e. the reporting of much lower book income figures than expected 'blamed' on the crises in an effort to promote higher future earnings.

Table 3 about here

In the last column of Table 3 one can observe the ratio between the total corporate book income and the total corporate tax income. In two cases we have a negative ratio that is produced when the two income measures have a different sign. These two years (both for German companies) report low positive book income figures and at the same time negative taxable income figures. This may imply the existence of earnings management where the reported book income figures were managed to be just above zero and the taxable income figures just below zero for reason discussed above and developed widely in the earnings management literature, especially for the case of Germany. When we compare the absolute ratios in Germany and the UK with the results reported by HKS (1995) for the US we can see that the

UK and US results appear to be very similar while the ratios reach much higher figures in Germany.

Finally, the correlation matrices, presented in Table 4 below, show the low correlation between the returns and the income measures. The level of correlation appears to be similar in the UK and the US, when we compare our results with those of HKS 2005. On the other hand, for German companies equity returns and corporate income is less correlated. The two income measures are more correlated with each other without, however, reaching high levels of correlation.

Table 4 about here

4.2. Methodology Selection

Before engaging in the tests regarding the relevant and incremental information content the appropriate methodology should be selected. The choice of pooled OLS techniques appears to be problematic since the structure of the sample is such that we have different companies (panels) for a number of years. If we just pool the whole sample and test it we would ignore the specific firm characteristics that are very important in order to obtain and explain the results. Therefore, we should employ panel data methodology that would account for differences among firms and differences during time. Baltagi (2005) lists a number of reasons why one should use panel data techniques with the most relevant in our case being that panel data: are "controlling for individual [firm] heterogeneity", "give more variability, less collinearity among the variables, more degrees of freedom and more efficiency" (pp. 4-5).

In addition to our intuition of employing panel data methodology due to the structure of our sample we will perform tests and diagnostics in order to examine whether the panel data methods are indeed superior to the pooled OLS estimation. Initially, we test the potential choice between OLS and panel data methodologies by employing the idiosyncratic standard deviation σ_μ from the random effects panel data model that we choose to test using the Swamy and Arora (1972) estimator of

component variances. According to this diagnostic when $\sigma_\mu^2 = 0$ the panel data methodology is not superior to the pooled OLS, when $\sigma_\mu^2 > 0$ the panel data (random effects) methodology is preferred and when $\sigma_\mu^2 \rightarrow 1$ the fixed effects panel data methodology is the most appropriate. The results are presented in Table 5 below for tests including both period (WE) and cross-sectional (BE) random effects.

Table 5 about here

The results of the tests, presented in Panel A of the table, suggest the superiority of the panel data methods to the pooled OLS in all cases, as the standard deviation σ_μ appears to be in all cases above zero. Therefore, we will use the panel data methodology for our study. At this point we should choose the most appropriate panel data technique and namely to choose between fixed and random effects. In the former case, the unobservable firm-specific effects are assumed to be fixed when in the latter case they are assumed to be random. In order to assess which of the two methodologies is the appropriate for our sample, we will perform the Hausman (1978) χ^2–test that examines the null hypothesis of no difference between the random and fixed effects estimators. The rejection of the null indicates the superiority of the fixed effects methodology. The results can be seen in Panel B of the table 5 above and they include both period (WE) and cross-sectional (BE) fixed and random effects. We observe that in most cases the null hypothesis is rejected and thus, the fixed effects methodology is preferable to the random effects one.

Furthermore, we present at Panel C of table 5 the adjusted R^2s and the Schwarz Information Criteria[1] as diagnostics for a choice between the Between fixed effects methodology (that assesses the panel specific characteristics) and the Within fixed effects methodology (that examines the characteristics within panels over time). For comparison and verification reasons we present the relevant diagnostics from the pooled OLS tests as well. We see that in five out of the six cases the adjusted R^2s are higher and in all cases the Schwarz criteria are lower for the within-effects estimation. Therefore, we select the fixed effects methodology as the appropriate one and in

[1] Note that the Schwarz Information Criterion suggests the superiority of a test/model when the statistic is lower and it can be employed only in cases where the dependent variable is the same among tests/models and the same sample is tested.

particular the within-effects estimation. Next, we will perform the selected estimation techniques for the total sample, while we will also present annual results based on cross-sectional least squares methods in order to examine the relative and incremental information content in our study.

4.3. Relative information content tests

The results of the within-effects tests on the relative information content are presented in Table 6, below. The results indicate the importance of both income measures in both countries. The coefficients on corporate income (accounting and taxable) are higher for UK firms than for German firms with the one on taxable income higher than the one on book income in both countries. Comparing the adjusted R^2s and the Schwarz information criteria it appears that Model 2 outperforms Model 1 suggesting the high importance of taxable income to the investors.

Table 6 about here

In Table 7, below, one can observe the annual results of the cross-sectional least squares tests on the relative information content. In the case of Germany few coefficients are statistically significant and the adjusted R^2s fall dramatically probably due to the least-squares technique employed and the smaller samples. On the contrary, for the UK the results appear to verify the general results presented in table 6 with both book and taxable income statistically significant in all occasions.

Table 7 about here

4.4. Incremental information content tests

Further, we turn on the analysis of the incremental information content with the results of the within-effects estimation for the total samples in both countries presented in Table 8. The evidence supports the existence of an information loss in the case of total alignment between the two income measures as both book and

taxable income are important for German and UK companies. Once more, the coefficients on the income measures for UK firms are higher than the coefficients on the same measures for German firms.

Table 8 about here

In order to analyse more the aforementioned result we perform annual cross-sectional least squares tests to assess the incremental information content for the cases of Germany and the UK. The relevant results are presented in Table 9, below. The results follow a similar pattern as in the case of the annual tests for the relative information content. Most coefficients are statistically insignificant for the case of Germany while they are statistically significant for the UK. The UK results justify the within-effects total results and provide further evidence of the information loss in the case of total alignment of corporate book and taxable income.

Table 9 about here

4.5. Sensitivity analysis

Finally, we perform sensitivity tests in order to examine specific aspects of the analysis that might have influenced the reported results above. We run the same tests dividing the sample into two large parts based on the international involvement or not of the companies under discussion. We define international involvement (as we have already excluded interlisted firms) by the existence of foreign sales. The results for the two groups in both countries are presented in Table 10, below.

Table 10 about here

5. Concluding remarks

This study owes its motivation to two relevant developments. Namely, the European Commission's discussion on a common EU consolidated corporate income tax base and the increasing advocacy in the US for the abolishment of the non-alignment of corporate book income and corporate taxable income. We choose to add to the literature by studying the two largest EU economies that would be leading in the relevant developments.

The evidence supports the existence of potential information loss in the case of a complete alignment between the two income measures. The results are important both for Germany and the UK, however, there is more solid evidence of incremental information loss in the latter case.

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Tables and Graphs

Table 1. Statutory Tax Rates for Germany and the UK.

Country	1998	1999	2000	2001	2002	2003
Germany	50.13	47.96	47.22	39.36	38.36	39.58
UK	31	31	30	30	30	30

Note: Statutory corporate income tax rates as of 1 January (average for Germany during split-rate years). Source: http://www.kpmg.no/pages/202415.html

Table 2. Descriptive Statistics (Total samples).

	Corporate Book Income	Corporate Taxable Income	Spread between CBI & CTI	Returns	ΔCBI	ΔCTI
Panel A: Germany (958 obs.)						
Mean	27,776,242	4,357,639	23,418,603	0.0228	0.0036	0.0041
Median	5,560,909	2,725,199	167,237	-0.0062	0.0029	0.0002
Maximum	10,600,000,000	3,970,000,000	9,000,000,000	2.1508	0.7895	0.3604
Minimum	-27,400,000,000	-11,700,000,000	-15,700,000,000	-0.9132	-0.6983	-0.4208
St.Deviation	1,040,000,000	574,000,000	736,000,000	0.3765	0.1604	0.0750
Skewness	-17.0062	-17.4293	-4.6581	1.2299	0.5985	0.0055
Panel B: UK (4409 obs.)						
Mean	24,863,939	21,908,921	2,955,018	0.0057	0.0008	-0.0053
Median	2,751,000	1,016,657	41,387	-0.0539	0.0046	0.0000
Maximum	2,950,000,000	4,880,000,000	2,890,000,000	2.4595	1.0011	0.4062
Minimum	-14,000,000,000	-2,520,000,000	-16,800,000,000	-0.9945	-0.9934	-0.4266
St.Deviation	328,000,000	236,000,000	409,000,000	0.5149	0.1730	0.0838
Skewness	-23.7385	10.8081	-26.5923	1.2227	-0.0214	-0.4189

Note: Corporate book income (CBI) is defined as consolidated pre-tax book income minus minority interest. We estimate corporate taxable income (CTI) as the consolidated current tax expense (total tax expense minus the change in deferred taxes) divided in each year by the top corporate income tax rate. The Returns are defined as the annual average change in share prices and □CBI and □CTI denote the change in CBI and CTI between the current and the previous period divided by the beginning period market value. The German figures are in euros and the UK figures are in pounds.

Table 3. Descriptive Statistics (Annual).

Year	N	Total CBI	Total CTI	Total Spread	Mean Spread	CBI/CTI
Panel A: Germany (m. euros)						
1999	216	9,390	10,200	-810	-3.8	0.921
2000	186	22,900	6,960	15,940	85.9	3.290
2001	189	12,900	-5,140	18040	95.5	-2.510
2002	164	-23,400	-7,750	-15,650	-95.3	3.019
2003	203	4,740	-117	4,857	23.9	-40.513
Panel B: UK (m. pounds)						
1999	860	40,700	33,000	7,700	8.9	1.233
2000	790	32,700	28,400	4,300	5.4	1.151
2001	901	15,800	25,500	-9,700	-10.7	0.620
2002	931	1,660	5,930	-4,270	-4.6	0.280
2003	927	18,800	3,770	15,030	16.3	4.987

Note: N is the number of observations in each year. Total CBI and Total CTI are the aggregates of corporate book income and corporate taxable income respectively. Spread is the difference between CBI and CTI.

Table 4. Correlation Matrix.

Panel A: Germany			
	ΔCBI	ΔCTI	Returns
ΔCBI	1	0.2548	0.1478
ΔCTI	0.2548	1	0.1111
Returns	0.1478	0.1111	1
Panel B: UK			
	ΔCBI	ΔCTI	Returns
ΔCBI	1	0.3638	0.2276
ΔCTI	0.3638	1	0.1947
Returns	0.2276	0.1947	1

Note: The notation is as in Table 2.

Table 5. Methodology Selection.

$$R_{it} = \alpha_0 + \alpha_1 \cdot \Delta CBI_{it} + \varepsilon_{it} \quad (1)$$

$$R_{it} = \beta_0 + \beta_1 \cdot \Delta CTI_{it} + \varepsilon_{it} \quad (2)$$

$$R_{it} = \gamma_0 + \gamma_1 \cdot \Delta CBI_{it} + \gamma_2 \cdot \Delta CTI_{it} + \varepsilon_{it} \quad (3)$$

Panel A: Choice between Panel Data and OLS Methodologies

		Model 1: σ_μ	Model 2: σ_μ	Model 3: σ_μ
Germany	BE	0.400	0.365	0.364
	WE	0.410	0.363	0.361
UK	BE	0.801	0.510	0.502
	WE	0.795	0.493	0.485

Panel B: Choice between Random and Fixed Effects Panel Data Methodologies

Hausman Test		Model 1		Model 2		Model 3	
		χ^2	Prob.	χ^2	Prob.	χ^2	Prob.
Germany	BE	6.183	0.013	12.482	0.000	15.076	0.001
	WE	0.483	0.487	0.542	0.462	5.036	0.081
UK	BE	1.881	0.170	4.927	0.026	4.789	0.091
	WE	0.641	0.424	3.051	0.081	2.552	0.279

Panel C: Statistics Comparison between OLS and Fixed Effects Methodologies

		Model 1		Model 2		Model 3	
		R^2	SC	R^2	SC	R^2	SC
Germany	OLS	0.3	1.114	1.1	0.885	2.6	0.877
	BE	9.6	2.612	5.8	2.593	6.4	2.592
	WE	5.1	1.083	7.0	0.849	8.3	0.841
UK	OLS	1.5	2.408	3.8	1.475	6.6	1.447
	BE	2.7	4.493	1.8	3.561	4.8	3.533
	WE	4.1	2.388	8.4	1.433	11.2	1.403

Note: The idiosyncratic random standard deviation σ_μ provides us with a statistic to choose between Panel Data and Ordinary Least Squares (OLS) methodology, as when $\sigma_\mu^2 = 0$ then the Panel Data methodology is equivalent to the pooled OLS, when $\sigma_\mu^2 > 0$ the Panel Data methodology is preferred (when $\sigma_\mu^2 \rightarrow 1$ the Fixed Effects Panel Data methodology is the most appropriate). The Between Fixed Effects (BE) methodology assesses the panel specific characteristics and the Within Fixed Effects (WE) methodology examines the characteristics within panels over time. The Hausman (1978) test examines the null hypothesis of no difference between the Random and Fixed Effects estimators. The rejection of the null indicates the superiority of the Fixed Effects methodology. The R^2 is the adjusted R^2 in percentages and SC is the Schwarz Information Criterion which suggests the superiority of a test/model when the statistic is lower (employed only in cases where the dependent variable is the same and the same sample is tested). The notation in the Models 1,2 and 3, above, is as in Table 2.

Table 6. Within Fixed Effects tests on Relative Information Content (Total).

$$R_{it} = \alpha_0 + \alpha_1 \cdot \Delta CBI_{it} + \varepsilon_{it} \quad (1)$$

$$R_{it} = \beta_0 + \beta_1 \cdot \Delta CTI_{it} + \varepsilon_{it} \quad (2)$$

		Model 1			Model 2		
Countries	N	ΔCBI	R^2	SC	ΔCTI	R^2	SC
Germany	958	0.070**	5.1	*1.083*	0.514***	7.0	*0.849*
UK	4409	0.528***	4.1	*2.388*	1.069***	8.4	*1.433*

Note: R_{it} is the average change in share price for company i in the fiscal year t. ΔCBI_{it} is the change in corporate book income for company i during the fiscal year t divided by the beginning period market value and ΔCTI_{it} is the change in corporate taxable income for company i during the fiscal year t divided by the beginning period market value. SC is the Schwarz information criterion and R^2 is the adjusted R^2 in percentage. ***, ** and * denote significance at a 1%, 5% and 10% confidence levels respectively.

Table 7. Cross-sectional Least Square tests on Relative Information Content (Annual)

$$R_{it} = \alpha_0 + \alpha_1 \cdot \Delta CBI_{it} + \varepsilon_{it} \quad (1)$$

$$R_{it} = \beta_0 + \beta_1 \cdot \Delta CTI_{it} + \varepsilon_{it} \quad (2)$$

			Model 1			Model 2		
		N	ΔCBI	R^2	SC	ΔCTI	R^2	SC
Germany	1999	216	0.450**	2.5	*0.819*	-0.005	0.0	*0.849*
	2000	186	0.185	0.3	*0.468*	0.327	0.1	*0.470*
	2001	189	0.320**	1.0	*0.882*	0.741**	1.7	*0.875*
	2002	164	0.148	0.0	*0.478*	0.036	0.0	*0.483*
	2003	203	0.418**	3.0	*1.277*	1.073**	3.7	*1.271*
UK	1999	860	0.823***	5.0	*1.572*	1.955***	6.5	*1.556*
	2000	790	0.600***	2.3	*1.694*	1.176***	2.3	*1.694*
	2001	901	0.593***	4.6	*1.106*	1.080***	3.8	*1.115*
	2002	931	0.475***	4.8	*1.029*	0.550***	1.7	*1.062*
	2003	927	0.798***	8.9	*1.547*	1.134***	3.0	*1.609*

Note: Notation as in Table 5, above.

Table 8. Within Fixed Effects tests on Incremental Information Content (Total).

$$R_{it} = \gamma_0 + \gamma_1 \cdot \Delta CBI_{it} + \gamma_2 \cdot \Delta CTI_{it} + \varepsilon_{it} \qquad (3)$$

	N	Intercept	ΔCBI	ΔCTI	R^2	SC
Germany	958	0.020*	0.284***	0.360**	8.3	*0.841*
UK	4409	0.009	0.542***	0.659***	11.2	*1.403*

Note: Notation as in Table 5, above.

Table 9. Cross-sectional Least Square tests on Incremental Information Content (Annual).

$$R_{it} = \gamma_0 + \gamma_1 \cdot \Delta CBI_{it} + \gamma_2 \cdot \Delta CTI_{it} + \varepsilon_{it} \qquad (3)$$

	Years	N	Intercept	ΔCBI	ΔCTI	R^2	SC
Germany	1999	216	-0.004	0.540**	-0.515	2.7	*0.837*
	2000	186	0.028	0.157	0.249	0.1	*0.492*
	2001	189	0.000	0.216	0.599*	1.8	*0.896*
	2002	164	-0.120***	0.149	-0.008	0.0	*0.509*
	2003	203	0.168***	0.341	0.913**	5.5	*1.273*
UK	1999	860	0.145***	0.469***	1.465***	7.6	*1.551*
	2000	790	0.128***	0.421***	0.838***	3.2	*1.692*
	2001	901	-0.119***	0.445***	0.711***	5.9	*1.099*
	2002	931	-0.124***	0.427***	0.302**	5.2	*1.031*
	2003	927	0.028*	0.721***	0.609**	9.6	*1.545*

Note: Notation as in Table 5, above.

Table 10. Relative and Incremental Information Content for Firms with and without International Involvement.

$$R_{it} = \alpha_0 + \alpha_1 \cdot \Delta CBI_{it} + \varepsilon_{it} \quad (1)$$

$$R_{it} = \beta_0 + \beta_1 \cdot \Delta CTI_{it} + \varepsilon_{it} \quad (2)$$

$$R_{it} = \gamma_0 + \gamma_1 \cdot \Delta CBI_{it} + \gamma_2 \cdot \Delta CTI_{it} + \varepsilon_{it} \quad (3)$$

	Models 1 & 2						Model 3			
N	ΔCBI	R^2	SC	ΔCTI	R^2	SC	ΔCBI	ΔCTI	R^2	SC
Panel A: Firms with Int. Involvement										
Germany										
UK										
Panel B: Firms with no Int. Involvement										
Germany										
UK										

Note: Notation as in Table 5, above. Firms that report international sales are selected as firms with international involvement.