Do Fair Value and Historical Cost Accounting Matter for Conditional Conservatism? Evidence from German Firms

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Abstract

In this paper, we re-evaluate the hypothesis that historical cost accounting models, lead to more conditional conservatism than fair value based models. We test this hypothesis in a data set of public German firms that report according to German-GAAP and IFRS, respectively. The parallel use of the two accounting standards in Germany provides a unique opportunity to contribute to the academic discussion, as well as to the current policy debate on regulatory reform in Germany. We implement a wide range of test specifications, starting from the standard time series concept of conditional conservatism that was initially proposed by Basu's (1997), including (i) a threshold unit-root test specification; (ii) a multivariate approach to outlier detection and (iii) various forms of controlling for fixed effects. Overall, we find that the estimates vary across these estimation procedures. However, in our benchmark regressions, as well as in the original Basu (1997) setting, we do not find any evidence that the German GAAP firms are more conditionally conservative than the IFRS firms - a result that appears surprising in light of the more prudent regulation in the German GAAP, but is consistent with some earlier findings in the literature.

JEL Classification: M41, M48, C22, K22

Keywords: IFRS, German-GAAP, Timely loss recognition, Conservatism

1 Introduction

A large body of literature in empirical accounting research has been analyzing the effects of the introduction of the fair value based international financial accounting standards (IFRS) in different countries, with a focus on timely loss recognition and conservatism. For Germany, Hung and Subramanyam (2007) have shown that firms reporting according to the German GAAP - a historical cost accounting system - have a higher emphasis on income smoothing, compared to firms who report according to the IFRS, pointing out the lower variability of net income and a lower book value of equity [1]. More recently, there have also been debates in the field of economic policy, where the question has been raised whether the introduction of the IFRS in Germany and other countries have lead to less conservatism in accounting and thereby contributed to the instability of the economy and the severity of the 2008 financial crisis. The German council of economic advisors (Sachverstaendigenrat), for instance, has pointed out the pro-cyclical effects of fair-value accounting and called for stricter, and more prudent, regulation of financial institutions that parallel the IFRS[2]. Other studies, including Laux and Leuz (2010) and Veron (2008) have argued that the IFRS played only a minor role in the financial crisis. They argue that fair value changes on bank income and regulatory capital, both in booms and busts, were quantitatively not large enough to have played an important role in the crisis.

While most empirical studies for Germany provide information on which set of accounting standards safeguards best against the incidence of crisis (unconditional conservatism), the focus in our paper is on *conditional conservatism*, i.e. the question of how firms react ex-post to an unanticipated exogenous shock to net income. We take a standard measure of conditional conservatism - the asymmetric persistence of positive and negative shocks - to re-evaluate the hypothesis that German-GAAP firms are more conservative. The asymmetric persistence is an important measure of prudence, because under the principle of conservatism, unanticipated losses would be written off quickly, while unanticipated gains would require a higher degree of verification. The delayed translation of positive shocks into the books renders them more persistent in the data.

The parallel application of the IFRS[3] and German-GAAP among public firms gives us the

[1] Other related studies have compared different economies and their level of conservatism depending on the characteristics of law. A significant difference in the persistence of income between code-law countries and common law countries has been documented in (Bushman and Piotroski, 2006; Gassen, Fulbier and Sellhorn, 2006; Giner and Rees, 2001; Raonic, McLeay and Asimakopoulos, 2004). In contrast to these studies Ding, Jeanjean and Stolowy (2005) show that the influence of culture has a larger impact on the differences between domestic GAAP and IFRS than the origin of law. Although a higher earnings quality is expected in common-law countries Ball, Robin and Wu (2003) and Ding et al. (2007) also show that the implementation of IFRS by itself does not increase quality and it has to be controlled for the strength of the endorsement process, corporate finance, taxation, and the incentives of management and auditors.

[2] See the annual report 2008/9, Ziffern 257 to 300.

[3] The preparation of financial statements according to IFRS is obligatory for fiscal years beginning at 01/01/2005 for public firms with endorsement of EU-Directive 2002/1606/EC in Germany.

opportunity to assess the importance of accounting standards in a firm level data set, while controlling for various other influences, in cross section and over time. Our main empirical finding is that German GAAP firms were *not* more conditionally conservative than IFRS firms over our sample period. In most regressions, the asymmetric persistence in our two sets of firms is not statistically different from each other. In some regressions, the IFRS are even found more conservative, i.e. they display a larger difference in the persistence of positive and negative shocks. Furthermore, there does not appear to exist a trend towards less conditional conservatism over time. The pre-IFRS period in Germany, for all firms, is not significantly different from the period after 1998, where firms gradually started to introduce the IFRS.

In our empirical analysis, we performed an extensive sensitivity analysis of our main findings, starting from the time series specification for measuring conservatism that was first implemented in a seminal paper of Basu (1997). First, we apply an adjusted version of the Basu (1997) specification that uses *lagged levels* - rather than changes - as right hand side variable, similar to the threshold unit root test, developed by Enders and Granger (1998). In Brauer and Westermann (2010), we argue that this specification has several advantages, including a non-oscillating impulse response function to an unexpected shock in earnings and a return to a steady state in the long run.

Furthermore, we address the problems that are associated with the exclusion of outliers, by using the multivariate approach of Hadi (1994). We show that a careful outlier correction is very important in our data set. While the standard approach of excluding the 1% extreme observations appears insufficient to exclude all outliers, the exclusion of 5% extreme observation truncates to much from the initial scatter cloud of data points - in a non-random way that certainly affects the results of the subsequent regression analysis. The advantage of the Hadi (1994) approach is that the outliers are corrected, while leaving the original shape of the distribution unchanged, a property we believe might be important also in other firm level data sets.

Finally, while most papers in the literature have estimated the Basu (1997) regression with a common intercept[4], we find that - at least in our data set -, it is necessary to include fixed effects. In our panel regressions, we either include year and firm fixed effects or apply the Arellano and Bond (1991) estimator that, by differencing all variables in a first stage, also controls for firm fixed effects. In order to asses the importance of the various methodological changes, we start the empirical analysis by reporting the results from a standard Basu (1997) regression for comparison.

We find that these details of the regression specification have a considerable quantitative and sometimes qualitative impact on the results. However, also when implementing a variety of further robustness tests, including different lag structures, different measures of net income (with and without extraordinary items), different forms of controlling for fixed effects and for

[4] An exception is Gassen and Sellhorn (2006), who include year fixed effects.

treating outliers, we cannot provide any empirical evidence that German GAAP firms where more conditionally conservative.

In the light of the conservative German-GAAP this is a rather surprising result. The fundamental thought of German-GAAP is to protect creditor rights. As pointed out by Sinn (2010), it was introduced after the financial crisis in the 1870ies ("*crisis of the founders*"), where a speculative bubble increased the value of the assets. When the bubble burst, many banks and firms became bankrupt and were not able to repay the credit that was used to finance major investment projects during the industrial revolution. The historical cost accounting system of the German GAAP yields the strongest possible creditor protection, as the "Niederstwertprinzip" ensures that the lowest possible value is assigned to the asset. A discussion on the details in the differences between German GAAP and the IFRS is given in Hung and Subramanyam (2007). While Hung and Subramanyam (2007) has shown that the more prudent regulation is indeed reflected in a higher degree in unconditional conservatism, our findings indicate that conditional on an unexpected shock in earnings, both accounting systems display no significant difference in conservatism.

Our results, however, confirm some earlier findings for Germany. Gassen and Sellhorn (2006) addressed - among other issues - the timeliness of loss recognition in the two accounting systems in a related regression setup[5]. Our empirical analysis verifies these early results for a substantially larger sample and a wide range of reasonable alternative estimation procedures. The findings are also consistent with the evidence provided by Laux and Leuz (2010) who argues that the choice of accounting standards, only played a minor role for systemic risk and overall economic stability in the recent financial crisis.

Clearly our findings are not sufficient to rule out all concerns about fair value accounting. Albeit at the cost of transparency, the conservative German GAAP have certainly allowed firms to accumulate hidden reserves that can be used in time of crisis as a buffer to large external shocks and to prevent bankruptcy. From a policy perspective, however, our results imply that the current debate on the reform of accounting standards, might consider to focus on direct measures of crisis prevention, such as increasing capital ratios, international coordination and supervision of banks[6], rather than - again - changing the rules of accounting. A possible explanation for our findings is that these standards have already undergone substantial changes and have become increasingly similar in recent years. The *Bilanzrechtsmodernisierungsgesetz* (BilMoG) in Germany has just recently eliminated some remaining differences between the two standards, including the previously prohibited recognition of internally generated intangible assets, or the revaluation of assets above the value of the initial recognition.

The following section 2 describes our data set. Section 3 points out the specification of time series tests capturing timeliness in loss recognition used in the study. Section 4 presents

[5]They use an earning-returns regression, as well as a time series regression of the levels of net income on their lagged levels, including a dummy variable for negative lagged values in each regression.

[6]As suggested in Hellwig and Blum (1995) and Sinn (2003) and Sinn (2010).

the results and Section 5 summarizes the conclusions of this paper.

2 The Data Set

2.1 Sample selection

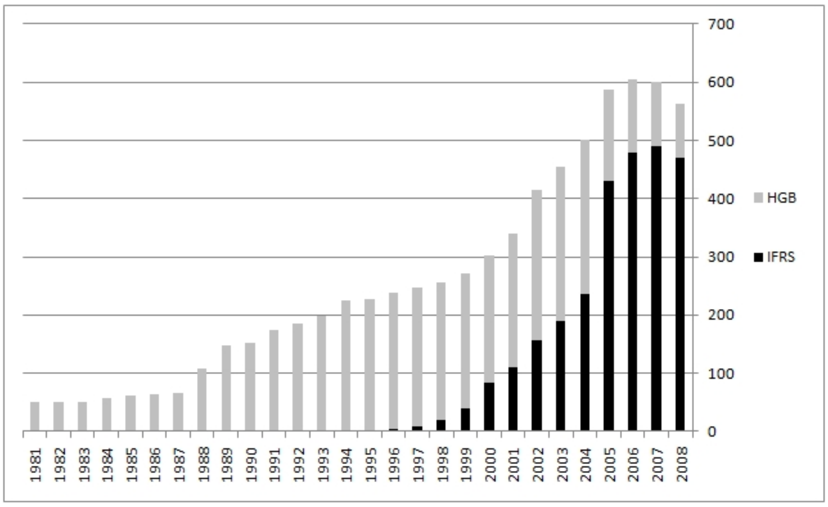

Figure 1: Histogram of IFRS- and German-GAAP firm-years

The data for our regression analysis are obtained from Worldscope and include firms that traded their shares at the Frankfurt stock exchange within the electronic trading platform Xetra. Data of banks, insurance companies or other financial institutions are not included in the data set. This selection leads to a sample of 758 firms that provide data for the period from 1981 to 2008. Firm-years in which fiscal years are not 12 months are also excluded, as well as firm-years with US-GAAP statements, financial statements that were not disclosed, or statements that could not be specified as prepared according to German-GAAP or IFRS. Other restrictions are not applied. German-GAAP statements that were prepared according to transitional provisions to the international standards are classified as German-GAAP firm-years. These restrictions lead to a sample of 7,199 firm-years of which 2,724 are IFRS-firm years and 4,475 are German-GAAP firm-years. The share of firms reporting according to the IFRS- and German-GAAP in each year is shown in Figure 1. The share of firms reporting according to the IFRS increases continuously from year to year. The first observations of IFRS firm-years are available in 1995. After 2005 the application of the IFRS became in principle mandatory for public firms for all firms. The number of observations of German-GAAP firms after 2005 mainly rely on the classification of financial statements that were prepared according to transitional provisions as German-GAAP firm-years. On the other hand, there is also a small sample of firms belonging to the Entry Standard of the Frankfurt stock exchange that is still allowed to disclose statements prepared according to German-GAAP after 2005.

In the regression analysis, we classify these firms, who have not yet adopted the IFRS, as German-GAAP firms.

2.2 Outlier detection

Due to possible errors in the data set, we conduct various form of outlier correction. In a first pass, 1% of the extremes of the distribution of each variable are deleted from the analysis. We also repeated the analysis omitting 5% of the lower and upper end of the distribution. Although this is a common approach in the literature we also implement the multivariate outlier approach by Hadi (1992, 1994)[7] detecting outliers at a significance level of 1% as well as 5%.

To illustrate the effects of the differences in outlier detection, the following figures display graphically the results of each of the two approaches.

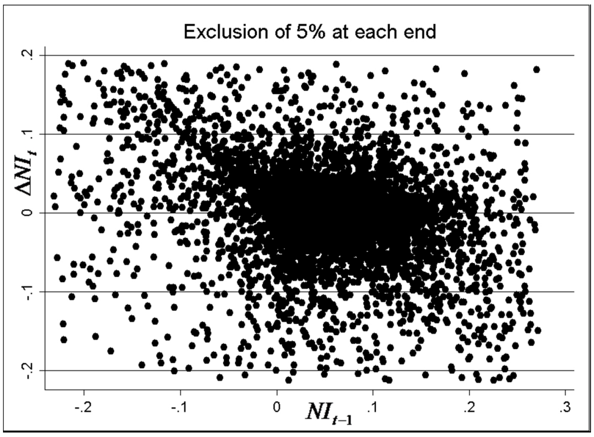

Figure 2: Exclusion of 5% of observations at the lower and upper end of the distribution of ΔNI_t and NI_{t-1}

Figure 2 demonstrates the effects of the standard outlier detection on the distributions of the dependent and independent variables in regressions. Excluding 5% of the observations at the extremes, we find that the original scatter plot is now roughly transformed into a rectangle. Within this rectangle there appears to be a downward slope of concentrative data points, but a regression line cannot easily be placed and a significant correlation is harder to identify. In particular, the data points in the lower left quadrant of the graph are likely to have an inappropriately large impact on the slope. Although there are relatively few, they are far away from the regression line and will have a quite a large impact in a least square estimation of the coefficient.

The outlier detection by Hadi (1994), by contrast, results in a scatterplot where a negative correlation of both variables is directly observable, as shown in Figure 3[8]. From the visual

[7] In the following, we refer to this approach as Hadi (1994).

[8] Alternatively, an additional analysis is performed using both procedures of outlier detection on raw financial data directly taken out of the database that has not been standardized in contrast to outlier detection of variables that are adjusted for regressions. Again, results remain unchanged.

inspection, the multivariate outlier correction is clearly the better solution in our data set. As a wide range of literature, including the Basu (1997) paper, uses the alternative to simply exclude the 1% or 5% extremes, we propose that this multivariate outlier approach has the potential to be an important robustness test for other studies in empirical accounting research.

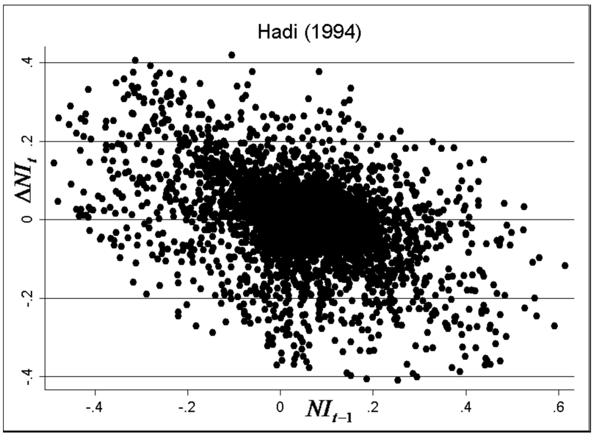

Figure 3: Outlier detection by Hadi (1994) at a significance level of 5%

3 Methodology

The time series model specifications in Basu (1997) and Ball and Shivakumar (2005) that distinguish between transitory and persistent components of accounting income have been used in a large body of literature over the past decade. Economic income is assumed to be completely transitory and independent of prior periods, whereas accounting income depends on prior periods trough the delayed translation into the accounts (Ball, Robin and Wu, 2003; Ball and Shivakumar, 2005). The literature has therefore aimed to document that under conservative behavior, negative changes in income are more transitory than positive changes.

The regression specification used in Ball and Shivakumar (2005) is:

$$\Delta NI_{i,t} = \alpha_0 + \alpha_1 D_{i,t-1} + \alpha_2 \Delta NI_{i,t-1} + \alpha_3 D_{i,t-1} * \Delta NI_{i,t-1} + \epsilon_{i,t}. \tag{1}$$

where NI_t is net income standardized with totals assets from $t-1, \Delta NI_{t-1}$ is the change in net income, and $D_{i,t-1}$ is a dummy variable that indicates whether the lagged changes are positive or negative. The standard interpretation is the following: $\alpha_2 = 0$ if deferred recognition of economic gains in accounting income lead to *persistence* of positive income shocks. Furthermore, $\alpha_2 + \alpha_3 < 0$ if economic losses are transitory components in accounting income. Concerning conservatism, $\alpha_3 < 0$, if losses are recognized more timely in accounting income than gains.

In addition to this standard setup, we also estimate a related regression specification suggested in Brauer and Westermann (2010), that is based on a threshold unit root test specification of Enders and Granger (1998).

$$\Delta NI_{i,t} = \beta_0 + \beta_1 D_{i,t-1} + \beta_2 NI_{i,t-1} + \beta_3 D_{i,t-1} * NI_{i,t-1} + \epsilon_{i,t}. \quad (2)$$

In Brauer and Westermann (2010), we argue that the estimation of the coefficients β_2 and β_3 in Regression 2 has several benefits compared to the estimation of α_2 and α_3 in the specification 1. In particular, a negative coefficient on the betas would imply a smooth (non-oscillating) impulse-response pattern after an unanticipated change in net income. The larger β, the faster is the revision to the mean. If $\beta_2+\beta_3$ is equal to zero, negative changes in income would be persistent. If $\beta_2 + \beta_3 < 0$ it would imply that in the long run the persistence of negative shocks would actually be equal to zero. Vice versa, positive income gains would be persistent if $\beta_2 = 0$ and transitory if $\beta_2 < 0$. Finally, losses would be recognized more timely than gains if $\beta_3 < 0$.

An important component in the two regressions is also the constant α_0 and β_0. Although most papers estimate the constant as a pooled intercept, the F-Statistics in our analysis indicate the need for firm level fixed effects in all regressions. In all tables, we report therefore alternatively the estimate of the intercept in the form of a pooled constant, as joint firm/year fixed effect or by using the Arellano and Bond (1991) systems estimator, that differences all data in the first step and therefore reduced the problem of firm specific the constants. The random effects model, on the other hand, was rejected by the Hausman (1978) specification test in all cases[9].

Table 1 furthermore display the F-statistics that allow us to assess which one of the fixed effects specifications is relevant. If the F-statistic, that tests for the joint exogeneity of all fixed effects, is insignificant, this constant is typically estimated using a common intercept. If it is significant, we interpret the regression results that include the fixed effects, when drawing inferences. Overall, we find substantially more evidence in favor of the fixed effects regression in the unit root-type specification, than in the original Basu (1997) regression. This finding is consistent with most of the literature that does not include fixed effects. Nevertheless, some of the Basu (1997) regressions also have significant fixed effects, and it is important to point out, that occasionally these fixed effects change the interpretation on the main variable of interest, α_3.

As a last step, we now need to split the regression into two parts, by adding another dummy variable that indicates whether firm-years are IFRS or German-GAAP firm-years. In regressions 3 and 4 this dummy variable is denoted by DS_i:

[9] Since OLS estimation is inappropriate when the residuals of the regressions are affected by serial correlation and heteroskedasticity. The appropriate estimation procedure for an dynamic panel data model is the generalized method of moments (GMM) if the residuals of an OLS estimation are affected by serial correlation and heteroskedasticity Baltagi (2008). We test for both biases by performing a Wooldridge (2002) test for serial correlation in panel data and the White (1980) test for heteroskedasticity and we find that our results are not influenced in all cases.

Table 1: *Results of the F-statistics for fixed effects*

	$\Delta IX_{i,t}$		$\Delta NI_{i,t}$		$\Delta IXH_{i,t}$		$\Delta NIH_{i,t}$	
	FI	YR	FI	YR	FI	YR	FI	YR
Changes								
t-1	1,53**	7,51**	1,55**	5,96**	1,30**	7,46**	1,50**	6,46**
t-2	1,61**	5,97**	1,57**	4,78**	1,25**	6,19**	1,36**	5,61**
Levels								
t-1	3,38**	5,40**	2,95**	4,71**	2,80**	5,90**	2,61**	5,31**
t-2	3,30**	4,74**	3,14**	3,50**	2,77**	5,54**	2,41**	4,19**

Definition of variables: $\Delta IX_{i,t}$, change in income before extraordinary items for firm i from year $t-1$ to year t after standard outlier detection. $\Delta NI_{i,t}$, change in net income for firm i from year $t-1$ to year t after standard outlier detection. $\Delta IXH_{i,t}$, change in income before extraordinary items for firm i from year $t-1$ to year t after outlier detection by Hadi (1994). $\Delta NIH_{i,t}$, change in net income for firm i from year $t-1$ to year t after outlier detection by Hadi (1994). The regressions exclude extreme 1% on each side in the standard outlier detection. The outlier detection by Hadi (1994) correspondently contains a significance level of 1%.

$$\begin{aligned}\Delta NI_{i,t} &= \alpha_0 + \alpha_1 D_{i,t-1} + \alpha_2 \Delta NI_{i,t-1} + \alpha_3 D_{i,t-1} * \Delta NI_{i,t-1} + \alpha_4 DS_i + \\ &\quad \alpha_5 DS_i * D_{i,t-1} + \alpha_6 DS_i * \Delta NI_{i,t-1} + \alpha_7 DS_i * D_{i,t-1} * \Delta NI_{i,t-1} + \epsilon_{i,t}\end{aligned} \tag{3}$$

and

$$\begin{aligned}\Delta NI_{i,t} &= \beta_0 + \beta_1 D_{i,t-1} + \beta_2 NI_{i,t-1} + \beta_3 D_{i,t-1} * NI_{i,t-1} + \beta_4 DS_i + \\ &\quad \beta_5 DS_i * D_{i,t-1} + \beta_6 DS_i * NI_{i,t-1} + \beta_7 DS_i * D_{i,t-1} * NI_{i,t-1} + \epsilon_{i,t}.\end{aligned} \tag{4}$$

In each of the following sections, we will focus on one these dummy variables and will report whether there exists a difference in the timeliness of earnings between the two subgroups of firms. Table 2 gives an overview of the main hypothesis that can be tested in this regression setup:

Table 2: *Overview of the main hypotheses*

$\alpha_2 = 0$ $\beta_2 = 0$	H_0: positive changes in income are persistent for IFRS
$\alpha_2 + \alpha_3 = 0$ $\beta_2 + \beta_3 = 0$	H_0: negative changes in income are persistent for IFRS
$\alpha_2 + \alpha_6 = 0$ $\beta_2 + \beta_6 = 0$	H_0: positive changes in income are persistent for German-GAAP
$\alpha_2 + \alpha_3 + \alpha_6 + \alpha_7 = 0$ $\beta_2 + \beta_3 + \beta_6 + \beta_7 = 0$	H_0: negative changes in income are persistent for German-GAAP
$\alpha_3 = 0$ $\beta_3 = 0$	H_0: positive and negative shocks have the same degree of persistence for IFRS
$\alpha_3 + \alpha_7 = 0$ $\beta_3 + \beta_7 = 0$	H_0: positive and negative shocks have the same degree of persistence for German-GAAP
$\alpha_6 = 0$ $\beta_6 = 0$	H_0: the persistence of positive shocks is the same for IFRS and German-GAAP
$\alpha_7 = 0$ $\beta_7 = 0$	H_0: the persistence of negative shocks is the same for IFRS and German-GAAP

4 Results

This section reports the differences of the timeliness in loss recognition for public firms, preparing financial statements according to German-GAAP or IFRS. We compare the two time series models for estimating timeliness in loss recognition that we discussed above. In all subsequent regression tables, we show twelve different specifications: the columns (1-6) in each table use standard 1% outlier criterion and columns, while columns (7-12) use the Hadi (1994) multivariate outlier correction. Among each set we distinguish between data sets that include extraordinary items (columns 1-3 and 7-9) and data set where these extraordinary items were excluded (columns 4-6 and 10-12). Finally, for each data set, we run three regressions - *(i)* consistent with most of the literature, without including firm fixed effects (in regressions 1, 4,7 and 10), *(ii)* we include firms and year fixed effects (in regressions 2,5,8 and 11) and *(iii)* we use the Arellano and Bond estimator, that takes account of fixed effects by differencing the data set in a first step (in regressions 3,6,9 and 12).

In each of the following tables, we will typically consider the regressions (8) and (9) as our benchmark regressions. These regressions exclude extraordinary items in income, correct for outliers, using the Hadi (1994) approach and include fixed effects. The other regressions serve as a robustness tests and will be referred to only when we observe differences for the main result.

4.1 The original Basu (1997) Specification

Our first regression specification follows the main papers in the literature, estimating equation 3. The focus of interest is certainly the coefficient α_7 that measures the difference in the persistence of negative shocks between the two firm groups that are reporting according to the IFRS and German GAAP, respectively. We evaluate the overall plausibility of the regression we will also interpret the different hypothesis that are summarized in table 2.

Table 3 presents the results of our first set of regressions. Among the various options of controlling for fixed effects, we consider regressions (8, 9, 11 and 12) the most relevant, as the F-statistics indicate the significance of the fixed effects. Our first result is mixed evidence on the persistence of positive shocks for IFRS firms. While the regressions with a common intercept and those with firm and year fixed effects indicate that positive shocks are transitory (a significant coefficient on α_2) the Arellano and Bond (1991) estimate cannot reject the null of a persistent positive shocks. On the other hand, negative shock, as indicated by the sum of α_2 and α_3 are always clearly transitory in all specifications - a result that is quite familiar from the literature, both for positive and for negative shocks. For German GAAP firms, both positive and negative shocks are transitory, as indicated by the sum of α_2 and α_6, as well as the sum of α_2, α_3, α_6 and α_7, with a minor exception of regression 9, where the null of persistence of negative shocks cannot be rejected in our data set.

Among the set of IFRS firms, the coefficient α_3 indicates the difference between positive and negative shocks, which is statistically significant and suggests, that the firms are characterized by conditional conservatism, incorporating negative shocks more quickly than positive shocks in their balance sheets. Among the German GAAP firms, it is interesting that this observation is far less clear as coefficients α_3 plus α_7 are significant only in regression (10), but none of the other regression specifications. This would imply that IFRS firms are more conditionally conservative than the German GAAP firms, a finding that is confirmed when looking at α_7 individually, our main coefficient of interest that indeed confirms that there is a statistically significant difference in the degree of conservatism - with the IFRS firms being more conservative - in some regressions (3 and 12 at the 5% level and 2, 6 and 9 at the 10% level). In our benchmark regressions, however the difference with regard to conditional conservatism is insignificant, at least at the 5% levels. Overall, our main conclusion, that is strongly supported by the first set of results, is that there is no evidence that the historical cost accounting system of the German GAAP has not induced more conditionally conservative accounting in Germany, as might have been suspected, following our initial hypothesis.

4.2 An asymmetric threshold autoregressive (TAR) model

As a next step we turn to the threshold autoregressive model that has been initially developed by Enders and Granger (1998) and that has first been applied to accounting data by Brauer and Westermann (2010). In Table 4, we first conduct the regressions with the dummy for negative lagged *levels* of net income. As discussed in the previous section, the interpretation of the coefficients remains largely unchanged, as do most of the results that were reported above. In comparison to the findings with the Basu (1997) specification, β_2 is highly significant in all regressions, providing much clearer evidence that positive shocks are transitory for IFRS firms as well. This finding is consistent with Brauer and Westermann (2010), who documented in a Monte Carlo simulation that the standard Basu approach tends to overestimate the true persistence in the data, while the TAR models correctly identifies the true degree of persistence. The combination of coefficients β_2 and β_3; β_2 and β_3 and β_2, β_3, β_6 and β_7 further indicate that all shocks, positive or negative, IFRS or German GAAP, are transitory in all regression specifications of Table 4. Evidence on conservatism - as indicated by a statistically different response of positive and negative shocks - is somewhat more limited, than in the previous table. In our benchmark regressions (8 and 9), however, both β_3 and the sum of β_3 and β_7 are significant at the 5% level, indicating conditional conservatism. With regard to β_7, we again have the same finding that in none of the regressions the German GAAP firms are more conditionally conservative than the IFRS firms. In some regressions (although not in our benchmark), there is evidence that the asymmetry between positive and negative shocks was larger in the set of IFRS firms.

Our main finding is also confirmed in two further robustness tests. In Table 5 we use the *momentum*-TAR model, where the dummy captures the negative lagged *changes* in net income. In this table, none of the β_7 coefficients are significant at conventional levels. Finally, in Table 6, include the lagged changes of net income on the right hand side of the regression. This extension is comparable to a (symmetric) Dickey-Fuller Test, as a measure of persistence, that is typically extended to the Augmented Dickey-Fuller test in empirical macroeconomics and finance, by including lagged values on the right hand side as control variables. This additional control variable does not change the interpretation on any of the other coefficients. Its purpose is to make sure that the residuals are indeed free of serial correlation, an assumption made in any OLS regression. In this last table, we again find that the difference between the conditional conservatism between the two firms groups - as indicated by β_7 - is insignificant in all specifications.

Irrespective of the regression specification - lagged levels or lagged differences - we therefore cannot find that German-GAAP firms are reporting more conservatively than IFRS firms, a result that confirms previous findings by Gassen and Sellhorn (2006) who report similar results using the standard Basu (1997) approach of regressing earnings per share on returns.

Table 3: Regression of change in earnings on lagged change in earnings for all firm-years

$\Delta NI_{i,t} = \alpha_0 + \alpha_1 D_{i,t-1} + \alpha_2 \Delta NI_{i,t-1} + \alpha_3 D_{i,t-1} * \Delta NI_{i,t-1} + \alpha_4 DS_i + \alpha_5 DS_i * D_{i,t-1} + \alpha_6 DS_i * \Delta NI_{i,t-1} + \alpha_7 DS_i * D_{i,t-1} * \Delta NI_{i,t-1} + \epsilon_{i,t}$

	$\Delta IX_{i,t}$			$\Delta NI_{i,t}$			$\Delta IXH_{i,t}$			$\Delta NIH_{i,t}$		
	-	FIYR	AB	-	FIYR	AB	-	FIYR	AB	-	FIYR	AB
	1	2	3	4	5	6	7	8	9	10	11	12
α_0	0.001	0.008	-	0.001	-0.008	-	-0.001	0.009	-	-0.002	-0.015	-
	(0.39)	(0.79)	(-)	(0.24)	(-0.61)	(-)	(-0.18)	(1.02)	(-)	(-0.82)	(-1.16)	(-)
$\alpha_1 D_{i,t-1}$	-0.021	-0.018	-0.005	-0.015	-0.013	-0.021	-0.011	-0.008	-0.004	-0.005	-0.003	-0.003
	(-3.26)	(-2.95)	(-0.49)	(-2.45)	(-2.08)	(-2.38)	(-2.22)	(-1.50)	(-0.42)	(-1.24)	(-0.71)	(-0.37)
$\alpha_2 \Delta NI_{i,t-1}$	-0.161	-0.204	-0.003	-0.183	-0.220	-0.035	-0.140	-0.178	0.023	-0.167	-0.150	0.062
	(-3.45)	(-3.14)	(-0.03)	(-3.35)	(-2.80)	(-0.39)	(-2.90)	(-2.71)	(0.24)	(-3.67)	(-2.70)	(0.74)
$\alpha_3 D_{i,t-1} * \Delta NI_{i,t-1}$	-0.156	-0.264	-0.411	-0.199	-0.236	-0.506	-0.133	-0.206	-0.280	-0.162	-0.337	-0.412
	(-1.87)	(-2.25)	(-2.54)	(-2.13)	(-1.59)	(-2.85)	(-1.83)	(-1.97)	(-1.67)	(-2.07)	(-3.16)	-2.49)
$\alpha_4 DS_i$	0.004	0.006	-0.004	0.003	0.001	-0.017	0.003	0.004	0.009	0.003	0.001	0.003
	(0.91)	(0.80)	(-0.26)	(0.71)	(0.17)	(-1.22)	(0.76)	(0.71)	(0.73)	(0.91)	(0.26)	(0.25)
$\alpha_5 DS_i * D_{i,t-1}$	0.004	0.001	-0.009	-0.001	-0.002	0.011	-0.001	-0.005	-0.007	-0.004	-0.006	-0.005
	(0.51)	(0.10)	(-0.72)	(-0.11)	(-0.32)	(1.11)	(-0.21)	(-0.83)	(-0.74)	(-0.82)	(-1.13)	(-0.51)
$\alpha_6 DS_i * \Delta NI_{i,t-1}$	-0.133	-0.172	-0.300	-0.088	-0.161	-0.186	-0.072	-0.079	-0.249	-0.030	-0.095	-0.318
	(-1.60)	(-1.84)	(-2.00)	(-0.99)	(-1.62)	(-1.22)	(-1.07)	(-0.98)	(-1.92)	(-0.46)	(-1.17)	(-2.74)
$\alpha_7 DS_i * D_{i,t-1} * \Delta NI_{i,t-1}$	0.173	0.303	0.555	0.066	0.173	0.463	0.092	0.143	0.390	0.015	0.200	0.504
	(1.38)	(1.95)	(2.52)	(0.48)	(1.05)	(1.74)	(0.95)	(1.15)	(1.94)	(0.14)	(1.49)	(2.39)
Obs.	5,337	5,337	4,596	4,805	4,805	4,103	5,177	5,177	4,441	4,638	4,638	3,932
R^2	0.052	0.082	-	0.076	0.099	-	0.037	0.069	-	0.060	0.085	-
$\alpha_2 + \alpha_3$	-0.317**	-0.468**	-0.414**	-0.382**	-0.456**	-0.541**	-0.273**	-0.384**	-0.257**	-0.329**	-0.487**	-0.350**
$\alpha_2 + \alpha_6$	-0.294**	-0.376**	-0.303**	-0.271**	-0.381**	-0.221*	-0.212**	-0.257**	-0.226**	-0.197**	-0.245**	-0.256**
$\alpha_2 + \alpha_3 + \alpha_6 + \alpha_7$	-0.277**	-0.337**	-0.159*	-0.404**	-0.444**	-0.264**	-0.253**	-0.320**	-0.116	-0.344**	-0.382**	-0.164*
$\alpha_3 + \alpha_7$	0.017	0.039	0.144	-0.133	-0.063	-0.043	-0.041	-0.063	0.110	-0.147*	-0.137	0.092

Definition of variables: $\Delta IX_{i,t}$, change in income before extraordinary items for firm i from year $t-1$ to year t after standard outlier detection. $\Delta NI_{i,t}$, change in net income for firm i from year $t-1$ to year t after standard outlier detection. $\Delta IXH_{i,t}$, change in income before extraordinary items for firm i from year $t-1$ to year t after outlier detection by Hadi (1994). $\Delta NIH_{i,t}$, change in net income for firm i from year $t-1$ to year t after outlier detection by Hadi (1994). $D_{i,t-1} = 1$ if $\Delta NI_{i,t-1} < 0$; =0 otherwise. $DS_i = 1$ if firm i is a public German-GAAP firm. $DS_i = 0$ if firm i is a public IFRS firm. All variables are standardized by total assets for firm i at the end of year $t-1$.

The regressions exclude extreme 1% on each side in the standard outlier detection. The outlier detection by Hadi (1994) correspondently contains a significance level of 1%.

White (1980) t-statistics in parentheses for the regressions with and without fixed effects. Windmeijer (2005) corrected z-statistics in parentheses for the regressions with the Arellano and Bond (1991) estimator.

Table 4: Regression of change in earnings on lagged levels of earnings for all firm-years

$\Delta NI_{i,t} = \beta_0 + \beta_1 D_{i,t-1} + \beta_2 NI_{i,t-1} + \beta_3 D_{i,t-1} * NI_{i,t-1} + \beta_4 DS_i + \beta_5 DS_i * D_{i,t-1} + \beta_6 DS_i * NI_{i,t-1} + \beta_7 DS_i * D_{i,t-1} * NI_{i,t-1} + \epsilon_{i,t}$

	$\Delta IX_{i,t}$			$\Delta NI_{i,t}$			$\Delta IXH_{i,t}$			$\Delta NIH_{i,t}$		
	-	FIYR	AB	-	FIYR	AB	-	FIYR	AB	-	FIYR	AB
	1	2	3	4	5	6	7	8	9	10	11	12
β_0	0.010	0.025	-	0.007	0.016	-	0.008	0.007	-	0.009	0.022	-
	(2.22)	(2.53)	(-)	(2.16)	(2.11)	(-)	(2.40)	(0.87)	(-)	(3.26)	(3.02)	(-)
$\beta_1 D_{i,t-1}$	-0.013	-0.011	-0.030	-0.026	-0.025	-0.023	-0.003	-0.006	-0.030	-0.025	-0.026	-0.019
	(-1.17)	(-1.13)	(-1.85)	(-2.64)	(-2.58)	(-4.39)	(-0.40)	(-0.69)	(-1.86)	(-3.25)	(-3.19)	(-3.23)
$\beta_2 NI_{i,t-1}$	-0.311	-0.579	-0.484	-0.319	-0.629	-0.474	-0.263	-0.500	-0.435	-0.323	-0.626	-0.520
	(-6.75)	(-11.80)	(-3.67)	(-6.36)	(-10.16)	(-3.47)	(-8.00)	(-10.97)	(-3.65)	(-8.61)	(-12.50)	(-4.14)
$\beta_3 D_{i,t-1} * NI_{i,t-1}$	-0.145	-0.345	-0.475	-0.191	-0.288	-0.619	-0.165	-0.363	-0.496	-0.287	-0.313	-0.461
	(-1.65)	(-3.74)	(-2.98)	(-2.14)	(-2.93)	(-3.49)	(-2.59)	(-4.54)	(-2.88)	(-4.28)	(-3.35)	(-2.53)
$\beta_4 DS_i$	0.003	0.004	-0.003	0.001	0.003	0.006	0.002	0.003	0.001	-0.002	-0.003	0.007
	(0.63)	(0.51)	(-0.22)	(0.26)	(0.41)	(0.52)	(0.63)	(0.43)	(0.08)	(-0.72)	(-0.57)	(0.72)
$\beta_5 DS_i * D_{i,t-1}$	0.006	-0.001	0.017	0.019	0.019	0.002	-0.001	-0.005	0.023	0.017	0.016	0.013
	(0.47)	(-0.09)	(0.98)	(1.65)	(1.48)	(0.17)	(-0.06)	(-0.50)	(1.38)	(1.92)	(1.65)	(1.43)
$\beta_6 DS_i * NI_{i,t-1}$	-0.011	0.085	-0.093	-0.077	0.091	-0.267	-0.021	0.055	-0.069	-0.029	0.092	-0.111
	(-0.20)	(1.47)	(-0.68)	(-1.04)	(1.01)	(-1.71)	(-0.49)	(1.12)	(-0.52)	(-0.55)	(1.52)	(-0.82)
$\beta_7 DS_i * D_{i,t-1} * NI_{i,t-1}$	0.174	0.115	0.256	0.236	0.150	0.593	0.110	0.031	0.244	0.229	0.110	0.393
	(1.52)	(0.87)	(1.46)	(1.93)	(1.03)	(2.87)	(1.35)	(0.32)	(1.25)	(2.54)	(0.96)	(1.99)
Obs.	6,125	6,125	5,299	5,563	5,563	4,760	6,026	6,026	5,197	5,407	5,407	4,608
R^2	0.149	0.160	-	0.154	0.163	-	0.168	0.181	-	0.196	0.207	-
$\beta_2 + \beta_3$	-0.456**	-0.924**	-0.959**	-0.510**	-0.917**	-1.093**	-0.428**	-0.863**	-0.931**	-0.610**	-0.939**	-0.981**
$\beta_2 + \beta_6$	-0.322**	-0.494**	-0.577**	-0.396**	-0.538**	-0.741**	-0.284**	-0.445**	-0.504**	-0.352**	-0.534**	-0.631**
$\beta_2 + \beta_3 + \beta_6 + \beta_7$	-0.293**	-0.724**	-0.796**	-0.351**	-0.676**	-0.767**	-0.339**	-0.777**	-0.756**	-0.410**	-0.737**	-0.699**
$\beta_3 + \beta_7$	0.029	-0.230*	-0.219*	0.045	-0.138	-0.026	-0.055	-0.332**	-0.252*	-0.058	-0.203*	-0.068

Definition of variables: $\Delta IX_{i,t}$, change in income before extraordinary items for firm i from year $t-1$ to year t after standard outlier detection. $\Delta NI_{i,t}$, change in net income for firm i from year $t-1$ to year t after standard outlier detection. $\Delta IXH_{i,t}$, change in income before extraordinary items for firm i from year $t-1$ to year t after outlier detection by Hadi (1994). $\Delta NIH_{i,t}$, change in net income for firm i from year $t-1$ to year t after outlier detection by Hadi (1994). $D_{i,t-1} = 1$ if $NI_{i,t-1} < 0$; =0 otherwise. $DS_i = 1$ if firm i is a public German-GAAP firm. $DS_i = 0$ if firm i is a public IFRS firm. All variables are standardized by total assets for firm i at the end of year $t-1$.

The regressions exclude extreme 1% on each side in the standard outlier detection. The outlier detection by Hadi (1994) correspondently contains a significance level of 1%.

White (1980) t-statistics in parentheses for the regressions with and without fixed effects. Windmeijer (2005) corrected z-statistics in parentheses for the regressions with the Arellano and Bond (1991) estimator.

Table 5: Regression of change in earnings on lagged levels of earnings for all firm-years (adjusted dummy variable)

$\Delta NI_{i,t} = \beta_0 + \beta_1 D_{i,t-1} + \beta_2 NI_{i,t-1} + \beta_3 D_{i,t-1} * NI_{i,t-1} + \beta_4 DS_i + \beta_5 DS_i * D_{i,t-1} + \beta_6 DS_i * NI_{i,t-1} + \beta_7 DS_i * D_{i,t-1} * NI_{i,t-1} + \epsilon_{i,t}$

	$\Delta IX_{i,t}$			$\Delta NI_{i,t}$			$\Delta IXH_{i,t}$			$\Delta NIH_{i,t}$		
	-	FIYR	AB	-	FIYR	AB	-	FIYR	AB	-	FIYR	AB
	1	2	3	4	5	6	7	8	9	10	11	12
β_0	0.018	0.053	-	0.012	0.032	-	0.019	0.053	-	0.012	0.025	-
	(4.18)	(4.73)	(-)	(2.99)	(1.89)	(-)	(5.95)	(6.01)	(-)	(4.49)	(1.34)	(-)
$\beta_1 D_{i,t-1}$	-0.014	-0.024	-0.006	-0.011	-0.017	-0.011	-0.012	-0.014	-0.001	-0.004	-0.006	-0.009
	(-2.48)	(-4.21)	(-0.89)	(-2.08)	(-3.08)	(-1.72)	(-2.66)	(-3.25)	(-0.14)	(-1.10)	(-1.84)	(-1.65)
$\beta_2 NI_{i,t-1}$	-0.333	-0.731	-0.676	-0.359	-0.789	-0.778	-0.308	-0.630	-0.416	-0.338	-0.679	-0.642
	(-9.83)	(-16.21)	(-8.33)	(-8.37)	(-14.82)	(-8.00)	(-12.73)	(-15.51)	(-4.71)	(-11.95)	(-15.51)	(-7.62)
$\beta_3 D_{i,t-1} * NI_{i,t-1}$	-0.088	-0.023	-0.071	-0.099	0.041	-0.089	-0.121	-0.030	-0.114	-0.078	-0.024	-0.134
	(-1.46)	(-0.36)	(-1.12)	(-1.46)	(0.56)	(-1.31)	(-2.41)	(-0.54)	(-1.54)	(-1.42)	(-0.41)	(-1.69)
$\beta_4 DS_i$	-0.009	-0.011	-0.014	-0.008	-0.010	-0.008	-0.010	-0.011	0.005	-0.007	-0.007	0.003
	(-1.71)	(-1.32)	(-1.27)	(-1.67)	(-1.33)	(-0.84)	(-2.51)	(-1.88)	(0.59)	(-2.07)	(-1.22)	(0.37)
$\beta_5 DS_i * D_{i,t-1}$	0.010	0.016	0.004	0.005	0.011	0.008	0.006	0.008	0.000	0.000	0.002	0.008
	(1.48)	(2.49)	(0.50)	(0.85)	(1.74)	(1.18)	(1.24)	(1.61)	(0.05)	(-0.05)	(0.64)	(1.29)
$\beta_6 DS_i * NI_{i,t-1}$	0.061	0.143	0.099	0.055	0.165	0.057	0.058	0.115	-0.086	0.014	0.108	-0.070
	(1.47)	(2.76)	(1.02)	(1.01)	(2.42)	(0.49)	(1.88)	(2.66)	(-0.91)	(0.36)	(2.09)	(-0.70)
$\beta_7 DS_i * D_{i,t-1} * NI_{i,t-1}$	-0.008	-0.006	0.051	-0.069	-0.114	0.064	-0.001	0.004	0.138	-0.077	-0.019	0.160
	(-0.10)	(-0.07)	(0.55)	(-0.75)	(-1.18)	(0.62)	(-0.02)	(0.07)	(1.50)	(-1.12)	(-0.27)	(1.64)
Obs.	5,316	5,316	4,576	4,784	4,784	4,076	5,141	5,141	4,417	4,512	4,512	3,826
R^2	0.140	0.150	-	0.147	0.150	-	0.151	0.161	-	0.164	0.170	-
$\beta_2 + \beta_3$	-0.409**	-0.782**	-0.747**	-0.418**	-0.789**	-0.829**	-0.375**	-0.649**	-0.453**	-0.383**	-0.708**	-0.731**
$\beta_2 + \beta_6$	-0.255**	-0.579**	-0.541**	-0.293**	-0.640**	-0.740**	-0.210**	-0.494**	-0.497**	-0.320**	-0.585**	-0.775**
$\beta_2 + \beta_3 + \beta_6 + \beta_7$	-0.316**	-0.611**	-0.571**	-0.376**	-0.648**	-0.703**	-0.315**	-0.543**	-0.506**	-0.388**	-0.583**	-0.720**
$\beta_3 + \beta_7$	-0.061	-0.032	-0.030	-0.083	-0.008	0.037	-0.105**	-0.049	-0.009	-0.068	0.002	0.055

Definition of variables: $\Delta IX_{i,t}$, change in income before extraordinary items for firm i from year $t-1$ to year t after standard outlier detection. $\Delta NI_{i,t}$, change in net income for firm i from year $t-1$ to year t after standard outlier detection. $\Delta IXH_{i,t}$, change in income before extraordinary items for firm i from year $t-1$ to year t after outlier detection by Hadi (1994). $\Delta NIH_{i,t}$, change in net income for firm i from year $t-1$ to year t after outlier detection by Hadi (1994). $D_{i,t-1} = 1$ if $\Delta NI_{i,t-1} < 0$; =0 otherwise. $DS_i = 1$ if firm i is a public German-GAAP firm. $DS_i = 0$ if firm i is a public IFRS firm. All variables are standardized by total assets for firm i at the end of year $t-1$.

The regressions exclude extreme 1% on each side in the standard outlier detection. The outlier detection by Hadi (1994) correspondently contains a significance level of 1%.

White (1980) t-statistics in parentheses for the regressions with and without fixed effects. Windmeijer (2005) corrected z-statistics in parentheses for the regressions with the Arellano and Bond (1991) estimator.

Table 6: Regression of change in earnings on lagged levels of earnings for all firm-years (ADF-specification)

$\Delta NI_{i,t} = \beta_0 + \beta_1 D_{i,t-1} + \beta_2 NI_{i,t-1} + \beta_3 D_{i,t-1} * NI_{i,t-1} + \beta_4 DS_i + \beta_5 DS_i * D_{i,t-1} + \beta_6 DS_i * NI_{i,t-1} + \beta_7 DS_i * D_{i,t-1} * NI_{i,t-1} + \epsilon_{i,t}$

	$\Delta IX_{i,t}$			$\Delta NI_{i,t}$			$\Delta IXH_{i,t}$			$\Delta NIH_{i,t}$		
	-	FIYR	AB	-	FIYR	AB	-	FIYR	AB	-	FIYR	AB
	1	2	3	4	5	6	7	8	9	10	11	12
β_0	0.005	0.021	-	0.008	0.012	-	0.007	0.033	-	0.005	0.014	-
	(1.30)	(2.00)	(-)	(2.24)	(0.75)	(-)	(2.22)	(3.85)	(-)	(2.23)	(0.80)	(-)
$\beta_1 D_{i.t-1}$	-0.003	0.001	-0.003	-0.008	-0.011	0.015	0.002	0.000	0.031	-0.004	-0.005	0.014
	(-0.24)	(0.10)	(-0.19)	(-0.73)	(-1.00)	(0.87)	(0.31)	(-0.06)	(2.18)	(-0.61)	(-0.66)	(1.23)
$\beta_2 IX_{i.t-1}$	-0.236	-0.530	-0.343	-0.295	-0.645	-0.423	-0.217	-0.504	-0.364	-0.235	-0.577	-0.606
	(-5.26)	(-9.81)	(-3.44)	(-5.56)	(-8.89)	(-2.83)	(-6.41)	(-10.40)	(-3.40)	(-6.52)	(-9.54)	(-4.63)
$\beta_3 D_{i.t-1} * IX_{i.t-1}$	-0.191	-0.394	-0.639	-0.114	-0.228	-0.541	-0.214	-0.325	-0.230	-0.246	-0.224	-0.117
	(-2.00)	(-3.77)	(-4.52)	(-1.10)	(-1.87)	(-2.46)	(-3.08)	(-3.38)	(-1.33)	(-3.28)	(-2.28)	(-0.65)
$\beta_4 DS_i$	0.003	0.007	-0.002	-0.003	0.001	0.004	-0.002	-0.005	0.001	-0.002	-0.003	-0.003
	(0.56)	(0.88)	(-0.12)	(-0.73)	(0.12)	(0.31)	(-0.61)	(-0.89)	(0.07)	(-0.65)	(-0.69)	(-0.40)
$\beta_5 DS_i * D_{i.t-1}$	-0.004	-0.019	-0.005	0.005	0.000	-0.023	-0.002	-0.008	-0.029	-0.005	-0.001	-0.012
	(-0.31)	(-1.51)	(-0.27)	(0.41)	(-0.02)	(-1.21)	(-0.23)	(-0.73)	(-1.80)	(-0.55)	(-0.10)	(-0.90)
$\beta_6 DS_i * IX_{i.t-1}$	-0.012	0.051	-0.057	0.000	0.099	-0.154	0.017	0.102	0.015	-0.031	0.083	0.009
	(-0.21)	(0.83)	(-0.45)	(0.00)	(0.96)	(-0.86)	(0.38)	(1.99)	(0.12)	(-0.61)	(1.20)	(0.07)
$\beta_7 DS_i * D_{i.t-1} * IX_{i.t-1}$	0.117	-0.025	0.216	0.080	-0.021	0.353	0.086	-0.099	-0.250	0.029	0.016	-0.079
	(1.00)	(-0.19)	(1.26)	(0.59)	(-0.13)	(1.34)	(0.95)	(-0.85)	(-1.26)	(0.29)	(0.12)	(-0.37)
$\beta_8 \Delta IX_{i.t-1}$	-0.080	0.021	-0.010	-0.093	0.007	-0.023	-0.047	0.034	0.023	-0.076	-0.010	0.012
	(-3.45)	(0.83)	(-0.33)	(-3.47)	(0.28)	(-0.70)	(-2.55)	(1.77)	(0.84)	(-3.84)	(-0.45)	(0.39)
Obs.	5,316	5,316	4,576	4,784	4,784	4,076	5,141	5,141	4,41	4,512	4,512	3,826
R^2	0.148	0.150	-	0.151	0.150	-	0.156	0.165	-	0.175	0.178	-
$\beta_2 + \beta_3$	-0.427**	-0.924**	-0.982**	-0.409**	-0.873**	-0.964**	-0.431**	-0.829**	-0.594**	-0.481**	-0.801**	-0.723**
$\beta_2 + \beta_6$	-0.248**	-0.479**	-0.400**	-0.295**	-0.546**	-0.577**	-0.200**	-0.402**	-0.349**	-0.266**	-0.494**	-0.597**
$\beta_2 + \beta_3 + \beta_6 + \beta_7$	-0.322**	-0.898**	-0.823**	-0.329**	-0.795**	-0.765**	-0.328**	-0.826**	-0.829**	-0.483**	-0.702**	-0.793**
$\beta_3 + \beta_7$	-0.074	-0.419**	-0.423**	-0.034	-0.249*	-0.188	-0.128*	-0.424**	-0.480**	-0.217**	-0.208*	-0.196

Definition of variables: $\Delta IX_{i,t}$, change in income before extraordinary items for firm i from year $t-1$ to year t after standard outlier detection. $\Delta NI_{i,t}$, change in net income for firm i from year $t-1$ to year t after standard outlier detection. $\Delta IXH_{i,t}$, change in income before extraordinary items for firm i from year $t-1$ to year t after outlier detection by Hadi (1994). $\Delta NIH_{i,t}$, change in net income for firm i from year $t-1$ to year t after outlier detection by Hadi (1994). $D_{i,t-1} = 1$ if $NI_{i,t-1} < 0$; =0 otherwise. $DS_i = 1$ if firm i is a public German-GAAP firm. $DS_i = 0$ if firm i is a public IFRS firm. All variables are standardized by total assets for firm i at the end of year $t-1$.

The regressions exclude extreme 1% on each side in the standard outlier detection. The outlier detection by Hadi (1994) correspondently contains a significance level of 1%.

White (1980) t-statistics in parentheses for the regressions with and without fixed effects. Windmeijer (2005) corrected z-statistics in parentheses for the regressions with the Arellano and Bond (1991) estimator.

4.3 Conservatism over time

The regressions in the sections above, already include year fixed effects as well as firm fixed effects in order to capture a possible trend towards more (or less) conservatism over time that might be correlated with the introduction of the IFRS. In Figure 1 we saw that there has been clear time trend towards the introduction of the IFRS, a process that started in the late 1990ies and was nearly completed by the year 2005. In this section, we perform another robustness test, where we investigate whether firms in the pre-IFRS period were more conservative than in the period were firms gradually started to introduce the IFRS. This robustness test also helps to asses whether firms that report according to the German GAAP have become less conservative, after the use of the IFRS as an alternative accounting system has become an option. The tables that are displayed in the appendix to this paper, follow the same structure as the previous two sections, but use a different definition of the dummy variable. Instead of distinguishing between firm-years that report according to the IFRS and those who use the German GAAP, we now distinguish between firm-years before and after the year 1998, the year in which a substantial number of firms reported according the IFRS for the first time (30 firms). Overall, the results are very similar to the previous sections. As the difference between the pre and post 1998 period is statistically insignificant in nearly all regressions[10], we conclude that the IFRS firms are neither less conditionally conservative (as shown in the previous sections), nor have they indirectly contributed to a trend towards less conservatism for the whole set of firms in our sample.

5 Conclusions

The recent financial crisis has triggered a discussion on economic policy in Germany (as well as other countries) that already has been an important part of accounting research for several years. Do the fair value based IFRS erode the incentives for conservative accounting that were inherent in the old 'Handelsgesetzbuch' in Germany? Are they, at least in part, responsible for the severity of the 2008 financial crisis? To contribute to finding an answer to these questions, we used a large firm level data set of public German firms that allows us to uncover the impact of financial standards, due to their parallel use over several years in Germany.

Although part of our findings are somewhat unstable with regard to alternatives in the estimation procedure, we find compelling evidence that German-GAAP firms have not been more conditionally conservative, than firms reporting according to IFRS. None of our regressions indicate that the asymmetric persistence between positive and negative shock has been more pronounced in the set of firms reporting according to the German- GAAP. In most regressions, this difference between the two accounting standards is insignificant. Depending on the specification of the regression we even find that the opposite relationship holds in some

[10] Occasionally significant coefficients do not point systematically in one or the other direction.

cases.

With regard to policy discussion on the reform of accounting standards, our findings clearly provide only one particular aspect of conservatism. It shows how firms react ex post to an unanticipated shock in earnings. In a broader discussion of the issue, one would certainly need to take into account other aspects, in particular the unconditional conservatism that has been documented previously in the literature. However our findings indicate that the empirical arguments in favor of a return to the more prudent historical cost accounting systems appear to be more complex than often assumed in public policy discussions on this issue.

Our paper also addresses some econometric issues of the time series approach to measuring conservatism in accounting income. We find that some of the results are sensitive to reasonable alternative specifications of the regression. In the sensitivity analysis, we find that changes in the specification, such as the method of outlier correction, the inclusion of firm fixed effects, and variation in the time series approach, have substantial impact on the results of the empirical exercise. This lack of robustness highlights the need to find an optimal specification that adequately fits the data and provides a toolkit for applied accounting research on persistence in income. In our view, a multivariate outlier correction, an inclusion of fixed effects and classical unit-type test specification would be an important part of this toolkit.

Appendix

Table 7: Regression of change in earnings on lagged change in earnings for all firm-years (Basu (1997)-specification)

$$\Delta NI_{i,t} = \alpha_0 + \alpha_1 D_{i,t-1} + \alpha_2 \Delta NI_{i,t-1} + \alpha_3 D_{i,t-1} * \Delta NI_{i,t-1} + \alpha_4 DS_i + \alpha_5 DS_i * D_{i,t-1} + \alpha_6 DS_i * \Delta NI_{i,t-1} + \alpha_7 DS_i * D_{i,t-1} * \Delta NI_{i,t-1} + \epsilon_{i,t}$$

	$\Delta IX_{i,t}$			$\Delta NI_{i,t}$			$\Delta IXH_{i,t}$			$\Delta NIH_{i,t}$		
	-	FIYR	AB	-	FIYR	AB	-	FIYR	AB	-	FIYR	AB
	1	2	3	4	5	6	7	8	9	10	11	12
α_0	0.003	-0.009	-	0.003	-0.003	-	0.000	-0.001	-	-0.002	-0.011	-
	(1.06)	(-1.12)	(-)	(1.01)	(-0.46)	(-)	(0.05)	(-0.20)	(-)	(-0.83)	(-2.04)	(-)
$\alpha_1 D_{i,t-1}$	-0.020	-0.018	-0.013	-0.017	-0.016	-0.018	-0.011	-0.010	-0.003	-0.007	-0.006	-0.006
	(-4.20)	(-4.03)	(-1.91)	(-4.02)	(-3.78)	(-3.01)	(-3.16)	(-2.51)	(-0.57)	(-2.31)	(-1.71)	(-1.15)
$\alpha_2 \Delta NI_{i,t-1}$	-0.214	-0.288	-0.146	-0.222	-0.306	-0.015	-0.165	-0.214	-0.038	-0.176	-0.193	-0.015
	(-5.03)	(-5.04)	(-1.64)	(-4.74)	(-4.80)	(-0.19)	(-4.42)	(-4.16)	(-0.48)	(-4.90)	(-4.00)	(-0.19)
$\alpha_3 D_{i,t-1} * \Delta NI_{i,t-1}$	-0.093	-0.134	-0.088	-0.172	-0.146	-0.477	-0.107	-0.160	-0.073	-0.157	-0.259	-0.248
	(-1.35)	(-1.36)	(-0.61)	(-2.28)	(-1.28)	(-3.05)	(-1.92)	(-1.96)	(-0.55)	(-2.65)	(-3.00)	(-1.84)
$\alpha_4 DS_i$	0.000	0.018	0.106	-0.001	-0.008	0.075	0.002	0.013	0.082	0.004	-0.002	0.067
	(-0.06)	(1.93)	(5.38)	(-0.27)	(-0.65)	(3.55)	(0.67)	(1.63)	(4.54)	(1.27)	(-0.16)	(3.22)
$\alpha_5 DS_i * D_{i,t-1}$	0.007	0.006	0.002	0.006	0.007	0.011	0.000	-0.002	-0.007	-0.003	-0.003	-0.004
	(1.11)	(0.97)	(0.19)	(1.07)	(1.11)	(1.18)	(-0.08)	(-0.36)	(-0.86)	(-0.81)	(-0.58)	(-0.58)
$\alpha_6 DS_i * \Delta NI_{i,t-1}$	0.015	0.086	-0.075	0.007	0.082	-0.200	-0.028	-0.003	-0.245	-0.022	-0.031	-0.359
	(0.13)	(0.83)	(-0.44)	(0.05)	(0.71)	(-1.18)	(-0.29)	(-0.03)	(-1.63)	(-0.23)	(-0.32)	(-2.37)
$\alpha_7 DS_i * D_{i,t-1} * \Delta NI_{i,t-1}$	0.033	0.026	0.124	-0.002	-0.048	0.441	0.072	0.113	0.238	-0.012	0.137	0.459
	(0.21)	(0.20)	(0.52)	(-0.01)	(-0.32)	(1.56)	(0.57)	(0.73)	(1.11)	(-0.09)	(0.93)	(1.98)
Obs.	5.337	5.337	4.596	4.805	4.805	4.103	5,177	5,177	4,441	4,638	4,638	3,932
R^2	0.050	0.081	-	0.075	0.099	-	0.037	0.069	-	0.060	0.085	-
$\alpha_2 + \alpha_3$	-0.307**	-0.422**	-0.234**	-0.394**	-0.452**	-0.492**	-0.272**	-0.374**	-0.111	-0.333**	-0.452**	-0.263**
$\alpha_2 + \alpha_6$	-0.199	-0.202*	-0.221	-0.215	-0.224*	-0.215	-0.193*	-0.217*	-0.283*	-0.198*	-0.224*	-0.374*
$\alpha_2 + \alpha_3 + \alpha_6 + \alpha_7$	-0.259**	-0.310**	-0.185*	-0.389**	-0.418**	-0.251	-0.228**	-0.264**	-0.118	-0.367**	-0.346**	-0.163
$\alpha_3 + \alpha_7$	-0.060	-0.108	0.036	-0.174	-0.194	-0.036	-0.035	-0.047	0.165	-0.169	-0.122	0.211

Definition of variables: $\Delta IX_{i,t}$, change in income before extraordinary items for firm i from year $t-1$ to year t after standard outlier detection. $\Delta NI_{i,t}$, change in net income for firm i from year $t-1$ to year t after standard outlier detection. $\Delta IXH_{i,t}$, change in income before extraordinary items for firm i from year $t-1$ to year t after outlier detection by Hadi (1994). $\Delta NIH_{i,t}$, change in net income for firm i from year $t-1$ to year t after outlier detection by Hadi (1994). $D_{i,t-1} = 1$ if $\Delta NI_{i,t-1} < 0$; =0 otherwise. $DS_i = 1$ if firm-year i belongs to 1981-1997. $DS_i = 0$ if firm-year i belongs to 1998-2008. All variables are standardized by total assets for firm i at the end of year $t-1$.

The regressions exclude extreme 1% on each side in the standard outlier detection. The outlier detection by Hadi (1994) correspondently contains a significance level of 1%.

White (1980) t-statistics in parentheses for the regressions with and without fixed effects. Windmeijer (2005) corrected z-statistics in parentheses for the regressions with the Arellano and Bond (1991) estimator. **(*) Significance at the 1%(5%)-level.

Table 8: Regression of change in earnings on lagged levels of earnings for all firm-years

$\Delta NI_{i,t} = \beta_0 + \beta_1 D_{i,t-1} + \beta_2 NI_{i,t-1} + \beta_3 D_{i,t-1} * NI_{i,t-1} + \beta_4 DS_i + \beta_5 DS_i * D_{i,t-1} + \beta_6 DS_i * NI_{i,t-1} + \beta_7 DS_i * D_{i,t-1} * NI_{i,t-1} + \epsilon_{i,t}$

	$\Delta IX_{i,t}$			$\Delta NI_{i,t}$			$\Delta IXH_{i,t}$			$\Delta NIH_{i,t}$		
	-	FIYR	AB	-	FIYR	AB	-	FIYR	AB	-	FIYR	AB
	1	2	3	4	5	6	7	8	9	10	11	12
β_0	0.012	0.023	-	0.008	0.012	-	0.009	0.013	-	0.007	0.017	-
	(3.90)	(3.66)	(-)	(3.38)	(2.10)	(-)	(3.84)	(2.30)	(-)	(3.96)	(3.60)	(-)
$\beta_1 D_{i,t-1}$	-0.012	-0.014	-0.024	-0.018	-0.016	-0.032	-0.005	-0.011	-0.017	-0.015	-0.019	-0.019
	(-1.54)	(-1.73)	(-2.19)	(-2.67)	(-2.04)	(-3.03)	(-0.81)	(-1.70)	(-1.73)	(-2.96)	(-3.38)	(-2.17)
$\beta_2 NI_{i,t-1}$	-0.341	-0.590	-0.616	-0.361	-0.606	-0.706	-0.292	-0.520	-0.478	-0.340	-0.612	-0.672
	(-9.77)	(-13.70)	(-7.43)	(-8.79)	(-11.14)	(-6.48)	(-11.01)	(-13.43)	(-6.04)	(-11.19)	(-14.10)	(-7.88)
$\beta_3 D_{i,t-1} * NI_{i,t-1}$	-0.041	-0.272	-0.272	-0.079	-0.225	-0.210	-0.094	-0.334	-0.343	-0.146	-0.259	-0.182
	(-0.63)	(-3.45)	(-2.74)	(-1.16)	(-2.76)	(-1.48)	(-2.04)	(-5.34)	(-3.48)	(-2.88)	(-3.64)	(-1.53)
$\beta_4 DS_i$	-0.003	-0.022	0.033	-0.004	-0.001	0.000	-0.002	0.010	0.000	-0.003	-0.005	0.000
	(-0.81)	(-2.64)	(1.81)	(-1.07)	(-0.07)	(0.00)	(-0.46)	(1.28)	(0.00)	(-1.35)	(-0.78)	(0.00)
$\beta_5 DS_i * D_{i,t-1}$	0.011	0.007	0.017	0.017	0.011	0.027	0.004	0.004	0.011	0.004	0.011	0.019
	(0.98)	(0.65)	(1.24)	(1.66)	(1.02)	(1.76)	(0.41)	(0.37)	(0.83)	(0.44)	(1.22)	(1.47)
$\beta_6 DS_i * NI_{i,t-1}$	0.110	0.220	0.187	0.079	0.174	0.210	0.078	0.176	0.085	0.072	0.188	0.179
	(2.23)	(3.46)	(2.07)	(0.93)	(1.68)	(1.65)	(1.88)	(3.33)	(0.93)	(1.35)	(2.43)	(1.68)
$\beta_7 DS_i * D_{i,t-1} * NI_{i,t-1}$	-0.075	-0.030	-0.111	-0.006	0.005	-0.044	-0.071	-0.017	-0.031	-0.157	0.001	0.018
	(-0.59)	(-0.23)	(-0.68)	(-0.04)	(0.03)	(-0.21)	(-0.66)	(-0.15)	(-0.18)	(-1.39)	(0.01)	(0.08)
Obs.	6,125	6,125	5,299	5,563	5,563	4,760	6,026	6,026	5,197	5,407	5,407	4,608
R^2	0.148	0.159	-	0.152	0.162	-	0.168	0.181	-	0.193	0.204	-
$\beta_2 + \beta_3$	-0.382**	-0.862**	-0.888**	-0.440**	-0.831**	-0.916**	-0.386**	-0.854**	-0.821**	-0.486**	-0.871**	-0.854**
$\beta_2 + \beta_6$	-0.231**	-0.370**	-0.429**	-0.282**	-0.432**	-0.496**	-0.214**	-0.344**	-0.393**	-0.268**	-0.424**	-0.493**
$\beta_2 + \beta_3 + \beta_6 + \beta_7$	-0.347**	-0.672**	-0.812**	-0.367**	-0.652**	-0.750**	-0.379**	-0.695**	-0.767**	-0.571**	-0.682**	-0.657**
$\beta_3 + \beta_7$	-0.116	-0.302**	-0.383**	-0.085	-0.220	-0.254	-0.165	-0.351**	-0.374*	-0.303**	-0.258	-0.164

Definition of variables: $\Delta IX_{i,t}$, change in income before extraordinary items for firm i from year $t-1$ to year t after standard outlier detection. $\Delta NI_{i,t}$, change in net income for firm i from year $t-1$ to year t after standard outlier detection. $\Delta IXH_{i,t}$, change in income before extraordinary items for firm i from year $t-1$ to year t after outlier detection by Hadi (1994). $\Delta NIH_{i,t}$, change in net income for firm i from year $t-1$ to year t after outlier detection by Hadi (1994). $D_{i,t-1} = 1$ if $NI_{i,t-1} < 0$; $=0$ otherwise. $DS_i = 1$ if firm-year i belongs to 1981-1997. $DS_i = 0$ if firm-year i belongs to 1998-2008. All variables are standardized by total assets for firm i at the end of year $t-1$.

The regressions exclude extreme 1% on each side in the standard outlier detection. The outlier detection by Hadi (1994) correspondently contains a significance level of 1%.

White (1980) t-statistics in parentheses for the regressions with and without fixed effects. Windmeijer (2005) corrected z-statistics in parentheses for the regressions with the Arellano and Bond (1991) estimator. **(*) Significance at the 1%(5%)-level.

Table 9: Regression of change in earnings on lagged levels of earnings for all firm-years (adjusted dummy variable)

$\Delta NI_{i,t} = \beta_0 + \beta_1 D_{i,t-1} + \beta_2 NI_{i,t-1} + \beta_3 D_{i,t-1} * NI_{i,t-1} + \beta_4 DS_i + \beta_5 DS_i * D_{i,t-1} + \beta_6 DS_i * NI_{i,t-1} + \beta_7 DS_i * D_{i,t-1} * NI_{i,t-1} + \epsilon_{i,t}$

	$\Delta IX_{i,t}$			$\Delta NI_{i,t}$			$\Delta IXH_{i,t}$			$\Delta NIH_{i,t}$		
	-	FIYR	AB	-	FIYR	AB	-	FIYR	AB	-	FIYR	AB
	1	2	3	4	5	6	7	8	9	10	11	12
β_0	0.009	0.028	-	0.006	0.026	-	0.009	0.026	-	0.007	0.014	-
	(2.61)	(4.49)	(-)	(1.97)	(4.67)	(-)	(3.78)	(4.97)	(-)	(3.27)	(3.17)	(-)
$\beta_1 D_{i,t-1}$	0.002	-0.013	0.001	0.000	-0.012	-0.002	0.004	-0.009	0.001	0.003	-0.003	-0.002
	(0.41)	(-2.97)	(0.15)	(-0.02)	(-3.08)	(-0.41)	(1.29)	(-2.48)	(0.25)	(1.20)	(-1.09)	(-0.56)
$\beta_2 NI_{i,t-1}$	-0.277	-0.680	-0.647	-0.306	-0.721	-0.774	-0.246	-0.614	-0.500	-0.313	-0.657	-0.747
	(-8.42)	(-16.03)	(-9.60)	(-7.22)	(-14.50)	(-7.67)	(-9.98)	(-16.23)	(-7.44)	(-10.54)	(-14.98)	(-9.34)
$\beta_3 D_{i,t-1} * NI_{i,t-1}$	-0.110	-0.080	-0.064	-0.111	-0.055	-0.042	-0.113	-0.037	-0.008	-0.088	-0.050	0.019
	(-2.30)	(-1.88)	(-1.20)	(-1.91)	(-1.00)	(-0.60)	(-3.15)	(-0.94)	(-0.16)	(-2.11)	(-1.12)	(0.33)
$\beta_4 DS_i$	0.003	0.001	0.000	0.001	-0.009	0.000	0.001	0.003	0.000	0.000	-0.002	0.051
	(0.51)	(0.06)	(0.00)	(0.11)	(-0.60)	(0.00)	(0.14)	(0.37)	(0.00)	(0.11)	(-0.12)	(2.14)
$\beta_5 DS_i * D_{i,t-1}$	-0.002	0.012	0.002	-0.001	0.009	0.001	-0.003	0.010	0.002	-0.005	0.001	0.003
	(-0.29)	(1.96)	(0.22)	(-0.16)	(1.53)	(0.12)	(-0.52)	(1.69)	(0.22)	(-1.20)	(0.18)	(0.44)
$\beta_6 DS_i * NI_{i,t-1}$	0.063	0.246	0.182	0.001	0.137	0.111	0.053	0.243	0.106	0.007	0.156	0.163
	(1.19)	(3.99)	(2.34)	(0.01)	(1.51)	(1.17)	(1.24)	(3.85)	(1.22)	(0.11)	(1.71)	(1.41)
$\beta_7 DS_i * D_{i,t-1} * NI_{i,t-1}$	0.039	0.019	0.019	0.090	0.112	0.076	0.013	-0.034	-0.019	0.072	0.114	-0.013
	(0.49)	(0.26)	(0.21)	(0.77)	(0.93)	(0.67)	(0.22)	(-0.51)	(-0.24)	(0.82)	(1.16)	(-0.14)
Obs.	5,316	5,316	4,576	4,784	4,784	4,076	5,141	5,141	4,417	4,512	4,512	3,826
R^2	0.142	0.151	-	0.144	0.150	-	0.151	0.159	-	0.161	0.170	-
$\beta_2 + \beta_3$	-0.387**	-0.760**	-0.711**	-0.417**	-0.776**	-0.816**	-0.359**	-0.651**	-0.508**	-0.401**	-0.707**	-0.728**
$\beta_2 + \beta_6$	-0.214**	-0.434**	-0.465**	-0.305**	-0.584**	-0.663**	-0.193**	-0.371**	-0.394**	-0.306**	-0.501**	-0.584**
$\beta_2 + \beta_3 + \beta_6 + \beta_7$	-0.285**	-0.495**	-0.510**	-0.326**	-0.527**	-0.629**	-0.293**	-0.442**	-0.421**	-0.322**	-0.437**	-0.578**
$\beta_3 + \beta_7$	-0.071	-0.061	-0.045	-0.021	0.057	0.034	-0.100*	-0.071	-0.027	-0.016	0.064	0.006

Definition of variables: $\Delta IX_{i,t}$, change in income before extraordinary items for firm i from year $t-1$ to year t after standard outlier detection. $\Delta NI_{i,t}$, change in net income for firm i from year $t-1$ to year t after standard outlier detection. $\Delta IXH_{i,t}$, change in income before extraordinary items for firm i from year $t-1$ to year t after outlier detection by Hadi (1994). $\Delta NIH_{i,t}$, change in net income for firm i from year $t-1$ to year t after outlier detection by Hadi (1994). $D_{i,t-1} = 1$ if $\Delta NI_{i,t-1} < 0$; =0 otherwise. $DS_i = 1$ if firm-year i belongs to 1981-1997. $DS_i = 0$ if firm-year i belongs to 1998-2008. All variables are standardized by total assets for firm i at the end of year $t-1$.

The regressions exclude extreme 1% on each side in the standard outlier detection. The outlier detection by Hadi (1994) correspondently contains a significance level of 1%.

White (1980) t-statistics in parentheses for the regressions with and without fixed effects. Windmeijer (2005) corrected z-statistics in parentheses for the regressions with the Arellano and Bond (1991) estimator. **(*) Significance at the 1%(5%)-level.

Table 10: Regression of change in earnings on lagged levels of earnings for all firm-years (ADF-specification)

$\Delta NI_{i,t} = \beta_0 + \beta_1 D_{i,t-1} + \beta_2 NI_{i,t-1} + \beta_3 D_{i,t-1} * NI_{i,t-1} + \beta_4 DS_i + \beta_5 DS_i * D_{i,t-1} + \beta_6 DS_i * NI_{i,t-1} + \beta_7 DS_i * D_{i,t-1} * NI_{i,t-1} + \beta_8 \Delta NI_{i,t-1} + \epsilon_{i,t}$

	$\Delta IX_{i,t}$			$\Delta NI_{i,t}$			$\Delta IXH_{i,t}$			$\Delta NIH_{i,t}$		
	-	FIYR	AB	-	FIYR	AB	-	FIYR	AB	-	FIYR	AB
	1	2	3	4	5	6	7	8	9	10	11	12
β_0	0.007	0.009	-	0.007	0.015	-	0.006	0.010	-	0.004	0.007	-
	(2.29)	(1.29)	(-)	(2.63)	(2.57)	(-)	(2.36)	(1.86)	(-)	(2.43)	(1.76)	(-)
$\beta_1 D_{i,t-1}$	-0.008	-0.014	-0.004	-0.007	-0.016	-0.005	0.003	-0.006	0.017	-0.009	-0.008	0.004
	(-1.05)	(-1.81)	(-0.37)	(-1.02)	(-2.16)	(-0.45)	(0.47)	(-1.03)	(1.75)	(-1.78)	(-1.67)	(0.48)
$\beta_2 NI_{i,t-1}$	-0.261	-0.563	-0.416	-0.307	-0.632	-0.735	-0.222	-0.502	-0.303	-0.253	-0.572	-0.628
	(-7.36)	(-11.71)	(-3.77)	(-6.82)	(-10.34)	(-5.94)	(-8.17)	(-13.14)	(-2.94)	(-8.54)	(-11.67)	(-5.53)
$\beta_3 D_{i,t-1} * NI_{i,t-1}$	-0.135	-0.414	-0.480	-0.073	-0.269	-0.196	-0.144	-0.388	-0.461	-0.260	-0.268	-0.157
	(-2.01)	(-5.03)	(-3.87)	(-0.99)	(-2.86)	(-1.38)	(-2.78)	(-5.38)	(-3.48)	(-4.53)	(-3.56)	(-1.08)
$\beta_4 DS_i$	-0.002	0.008	0.000	-0.006	-0.009	0.000	-0.001	0.011	0.000	-0.002	-0.002	0.000
	(-0.41)	(0.88)	(0.00)	(-1.67)	(-0.66)	(0.00)	(-0.26)	(1.31)	(0.00)	(-0.91)	(-0.10)	(0.00)
$\beta_5 DS_i * D_{i,t-1}$	0.011	0.014	0.003	0.010	0.017	0.010	-0.009	0.007	-0.017	0.006	0.009	0.010
	(0.99)	(1.19)	(0.21)	(0.95)	(1.59)	(0.82)	(-0.94)	(0.66)	(-1.23)	(0.75)	(1.18)	(0.93)
$\beta_6 DS_i * NI_{i,t-1}$	0.089	0.213	0.138	0.124	0.222	0.354	0.060	0.179	-0.011	0.055	0.172	0.248
	(1.76)	(2.89)	(1.24)	(1.53)	(1.97)	(2.47)	(1.52)	(2.87)	(-0.09)	(1.00)	(1.85)	(1.75)
$\beta_7 DS_i * D_{i,t-1} * NI_{i,t-1}$	-0.006	0.088	-0.047	-0.068	0.037	-0.152	-0.167	0.105	0.040	0.066	0.171	-0.043
	(-0.05)	(0.65)	(-0.30)	(-0.47)	(0.24)	(-0.74)	(-1.52)	(0.73)	(0.18)	(0.57)	(1.15)	(-0.18)
$\beta_8 \Delta NI_{i,t-1}$	-0.080	0.027	-0.013	-0.095	0.009	0.005	-0.046	0.039	0.017	-0.077	-0.008	0.001
	(-3.47)	(1.10)	(-0.43)	(-3.63)	(0.35)	(0.15)	(-2.45)	(2.06)	(0.66)	(-3.86)	(-0.39)	(0.02)
Obs.	5,316	5,316	4,576	4,784	4,784	4,076	5,141	5,141	4,417	4,512	4,512	3,826
R^2	0.148	0.150	-	0.151	0.150	-	0.156	0.162	-	0.175	0.178	-
$\beta_2 + \beta_3$	-0.396**	-0.977**	-0.896**	-0.380**	-0.901**	-0.931**	-0.366**	-0.890**	-0.764**	-0.513**	-0.840**	-0.785**
$\beta_2 + \beta_6$	-0.172**	-0.350**	-0.278**	-0.183**	-0.410**	-0.381**	-0.162**	-0.323**	-0.314**	-0.198**	-0.400**	-0.380**
$\beta_2 + \beta_3 + \beta_6 + \beta_7$	-0.313**	-0.676**	-0.805**	-0.324**	-0.642**	-0.729**	-0.473**	-0.606**	-0.735**	-0.392**	-0.497**	-0.580**
$\beta_3 + \beta_7$	-0.141	-0.326**	-0.527**	-0.141	-0.232	-0.348*	-0.311**	-0.283*	-0.421*	-0.194	-0.097	-0.200

Definition of variables: $\Delta IX_{i,t}$, change in income before extraordinary items for firm i from year $t-1$ to year t after standard outlier detection. $\Delta NI_{i,t}$, change in net income for firm i from year $t-1$ to year t after standard outlier detection. $\Delta IXH_{i,t}$, change in income before extraordinary items for firm i from year $t-1$ to year t after outlier detection by Hadi (1994). $\Delta NIH_{i,t}$, change in net income for firm i from year $t-1$ to year t after outlier detection by Hadi (1994). $D_{i,t-1} = 1$ if $NI_{i,t-1} < 0$; $=0$ otherwise. $DS_i = 1$ if firm-year i belongs to 1981-1997. $DS_i = 0$ if firm-year i belongs to 1998-2008. All variables are standardized by total assets for firm i at the end of year $t-1$.

The regressions exclude extreme 1% on each side in the standard outlier detection. The outlier detection by Hadi (1994) correspondently contains a significance level of 1%.

White (1980) t-statistics in parentheses for the regressions with and without fixed effects. Windmeijer (2005) corrected z-statistics in parentheses for the regressions with the Arellano and Bond (1991) estimator. **(*) Significance at the 1%(5%)-level.

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