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# International Financial Reporting Standards and Earnings Quality: The Myth of Voluntary vs. Mandatory Adoption

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WORKING PAPER SERIES


Center for Entrepreneurial and Financial Studies

**International Financial Reporting Standards and Earnings Quality: The Myth of Voluntary vs. Mandatory Adoption**

**Abstract:**

We revisit evidence whether incentives or IFRS drive earnings quality changes, analyzing a large sample of German firms in the period from 1998 to 2008. Consistent with previous studies we find that voluntary and mandatory adopters differ distinctively in terms of essential firm characteristics and that size, leverage, age, bank ownership and ownership concentration influenced the decision to voluntarily adopt IFRS. However, regardless of the decision to voluntarily adopt IFRS, we find that conditional conservatism increased under IFRS for both groups of adopters, while evidence does not suggest an increase in value relevance under IFRS. Results on earnings management in the post-adoption period are mixed. While income smoothing decreases for voluntary but not for mandatory adopters, discretionary accruals only decrease for mandatory but not for voluntary adopters. However, further analyses suggest that the capital market environment and the economic cycle during the adoption period seem to be a more powerful explanation for this evidence than voluntary or mandatory IFRS adoption. Therefore, we conclude that incentives to voluntarily adopt IFRS did not unambiguously dominate accounting standards in determining earnings quality in the case of German firms.

**JEL Classification:** G14, M41, M43, M44, M47

**Keywords:** IAS regulation, earnings management, earnings quality, corporate ownership structures.

## 1. Introduction

According to EC regulation 1606/2002 companies in the European Economic Area are obliged to release their consolidated financial statements under International Financial Reporting Standards (IFRS)[1] for fiscal years starting from January 1st 2005 onwards.[2] This regulation was among the factors that turned IFRS into the most widely accepted set of accounting standards in the world. However, some companies adopted IFRS on a voluntary basis or in compliance with stock exchange regulation before EC regulation became effective. Some German global players already adopted IFRS or US GAAP on a voluntary basis in the early 90s but were required to continue reporting under HGB. The increasing demand for public equity financing and subsequently international accounting standards was met by the Capital Raising Facilitating Act (*Kapitalaufnahmeerleichterungsgesetz – KapAEG*) which became effective from 1998. This regulation allowed German parent companies to substitute consolidated financial statements under HGB by financial statements prepared according to IFRS or US GAAP. This regulation turned Germany into the country with the highest number of voluntary IFRS adopters within the European Union.[3] Although the question why these firms adopted IFRS and how voluntary vs. mandatory IFRS adoption influences earnings quality is of particular interest for the understanding of reporting incentives, it has not entirely been answered in academic literature so far.

Prior work suggests that size, international exposure, dispersion of ownership, and listing age were important drivers of voluntary IFRS adoption in Europe (Cuijpers/Buijink, 2005). Gassen and Sellhorn (2006) present comparable results for the particular case of Germany. As ownership structures have a strong influence on reporting incentives (i.e. Warfield et al. 1995; Fan/Wong, 2002; Wang, 2006; LaFond/Roychowdury, 2008), we presume they also should have an impact on the decision to voluntarily adopt IFRS. An analysis in this context for the German market is of particular interest due to its specifics regarding ownership concentration, bank influence and relatively low protection of minority shareholders.[4]

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1 IFRS refers to the set of standards issued by the International Accounting Standards Board (IASB). IAS were renamed to IFRS in 2001. We use the expression 'IFRS' for both sets of standards, IAS and IFRS.

2 German companies that are publicly traded both in the European Union and on a regulated third-country market and therefore apply another internationally accepted accounting standard (i.e. US GAAP) in their consolidated accounts were allowed to defer the application of IFRS until fiscal years starting from January 1st 2007 onwards.

3 Six other EC-countries introduced similar legislation on the adoption of IFRS or US-GAAP (Austria, Belgium, Finland, France, Italy, and Luxemburg) (cf. Gassen/Sellhorn, 2006, Delvaille et al. 2005). Outside the European Economic Area, Switzerland and China had a significant percentage of early voluntary IFRS adopters, cf. e.g. Barth et al. (2008).

4 For a detailed overview on the German financial and corporate governance system, cf. Krahnen/Schmidt (2004).

The consequences of voluntary IFRS adoption have been subject to numerous studies in recent years. Within these studies much attention has been paid to the association between accounting standards and financial reporting outcomes like earnings quality (i.e. Barth et al., 2008; Van Tendeloo/Vanstraelen, 2005; Hung/Subramanyam, 2007). Thereby, it has commonly been argued that IFRS adoption leads to reduced information asymmetries between investors and companies through increased disclosure and provides higher accounting quality. However, previous studies have shown that the adoption of accounting standards that are supposed to be of high quality is a necessary but not a sufficient condition for high quality financial reporting (Ball et al. 2003). This is in line with the argument that the application of a uniform set of accounting standards does not automatically produce consistent financial reporting (i.e. Leuz et al., 2003; Ball, 2006) but that corporate incentives and the capital market environment are also important drivers.

In this context, mandatory IFRS adoption has frequently been referred to as an ideal research setting to evaluate the relative influence of standards vs. incentives as determinants of accounting quality. This is because mandatory users of IFRS are expected to differ decisively from voluntary IFRS adopters in terms of size, capital structure, ownership structure and financial reporting sophistication (Schipper, 2005). In a cross-country study Ahmed et al. (2009) provide evidence that mandatory IFRS adoption does not unambiguously improve accounting quality. They benchmark a sample of firms from 21 countries that adopted IFRS in 2005 to a sample from 17 countries that did not adopt IFRS. Christensen et al. (2008) use a sample of German firms and find less income smoothing and more timely loss recognition under voluntary but not under mandatory IFRS adoption. They conclude that the incentive to voluntarily adopt IFRS dominates the effect of accounting standards in determining earnings quality. However, with a sample period from 1993 to 2006 their sample covers only few IFRS observations for the group of mandatory adopters.

With this study we shed light on consequences of voluntary vs. mandatory IFRS adoption in Germany on income smoothing, discretionary accruals, conditional conservatism and value relevance. On the basis of the regulatory setting in Germany we are able to divide voluntary and mandatory adopters according to their incentives to voluntarily adopt IFRS and to directly observe changes in earnings quality around IFRS adoption for both groups. With a sample period from 1998 to 2008 we include a sufficient number of observations in order to observe earnings quality changes not only under voluntary but also under mandatory IFRS adoption. As the German capital market has evolved significantly during our observation period, observations for the pre- and post-adoption periods fall into different capital market

environments for voluntary and mandatory adopters. This is why additional analyzes are required.

Concerning the process of voluntary IFRS adoption, we find in line with previous studies that size, international exposure, listing age, financial leverage and industry affiliation were important drivers of voluntary IFRS adoption in Germany. Analysing the particular influence of ownership structures suggests that ownership concentration as well as bank ownership were among the factors that had a significant negative impact on the decision to voluntarily adopt IFRS.

In a second step we analyze consequences of voluntary vs. mandatory IFRS adoption, which leads to ambiguous evidence on earnings management. Like previous studies we find that income smoothing decreases under voluntary but not under mandatory IFRS adoption. Discretionary accruals decrease under mandatory but not under voluntary IFRS adoption. However, additional analyses suggest that these results are mainly caused by financial market developments rather than IFRS standards or voluntary adoption. Conditional conservatism increases under IFRS for voluntary as well as for mandatory adopters, while value relevance did not change significantly under IFRS, for voluntary or for mandatory adopters. These results show that neither voluntary nor mandatory IFRS adoption lead unambiguously to higher earnings quality and that capital market phases are an important determinant of earnings quality within our sample period.

The rest of the paper is organized as follows. Section 2 gives an overview on accounting internationalization in Germany and reviews existent literature on determinants and consequences of IFRS adoption. Section 3 describes data and research design while section 4 presents the results of our analyses. Within section 5 we summarize our results and provide directions for future research.

## 2. Conceptual underpinnings and previous literature

### 2.1 Financial reporting under the German institutional framework

Accounting quality can be regarded as a function of accounting standards, a country's legal and political system as well as reporting incentives. Among the most important reporting incentives are financial market development, capital structures, ownership structures and a country's tax system (Soderstrom/Sun, 2007). Germany is traditionally classified as a code-law country with weak investor protection and high benefits of private information (LaPorta et al., 1999 and 2000). Furthermore, the German capital market is characterized by the

following stylized factors: (i) stronger insider involvement (Leuz et al., 2003); (ii) financing structures relying on bank and internal financing (Gorton and Schmid, 2000; Dittmann et al., 2009); (iii) less developed markets for corporate control (Wenger/Kaserer, 1998; Köke, 2004); (iv) more conservative accounting systems (i.e. Daske et al., 2008); and (v) less pronounced enforcement of accounting standards (Hope, 2003).

The German corporate governance structure is reflected by its national accounting standards system, the German Commercial Code (HGB) which is a creditor- and stakeholder-orientated as well as a tax-influenced accounting system (i.e. Harris et al., 1994; Hung, 2001; Leuz/Wüstemann, 2004). Main objectives of this set of accounting standards are to preserve equity, protect creditors and facilitate the calculation of taxable accounting income (Van Tendeloo/Vanstraelen, 2005). Consequently, the HGB underlies a conservative approach concerning the recognition and measurement of assets and liabilities, an approach which relies on easy-to-verify information and which overall facilitates the generation of hidden reserves. In contrast, the International Financial Reporting Standards (IFRS) are a shareholder-orientated accounting system that is stemmed from common law country regimes like the US or the UK. Financial statements prepared under IFRS shall provide a true and fair view into the firm's financial and economic position and facilitate decision making for investors. This is why effects of IFRS adoption in non-Anglo-Saxon economies like Germany are of particular interest (Hung/Subramanyam, 2007).

Differences between HGB and IFRS have been examined in previous studies. One approach to assess the extent of differences between the two accounting systems is the use of reconciliations according to IFRS 1. Hung and Subramanyam (2007) find that switching from HGB to IFRS results in significant changes to deferred taxes, pensions, property, plant and equipment as well as loss provisions and higher cross-sectional variation in net income. Total assets and book value of equity are found to be significantly larger under IFRS than HGB. Similarly, Beckman et al. (2007) suggest that reconciling items show a tendency of German firms to write off assets immediately and to accrue provisions in excess of those allowed under international reporting standards. Both studies indicate that German firms tend to use hidden reserves in order to smooth earnings.

Increased financing needs of German firms are partly considered to be a result of the German reunification in 1990. As a consequence, a row of reforms, like the KapAEG (Capital Raising Facilitating Act) or the BilKoG (Accounting Enforcement Act) have been undertaken in order to move the German financial system into the direction of an arms-length transaction system (Leuz/Wüstemann, 2004) because investors have become an important user group of

financial statements. Furthermore, the German government undertook efforts in recent years in order to make the German corporate governance system more transparent to outside investors through increased disclosure (i.e. by the German Corporate Governance Code) and to improve enforcement of accounting standards (i.e. by setting up an enforcement institution under private law, the 'Deutsche Prüfstelle für Rechnungslegung', cf. section 342b HGB). However, recent evidence by Ernstberger et al. (2008) suggests that these regulatory efforts were unable to limit earnings management and only slightly improved stock market liquidity and equity valuation.[5]

### 2.2 Determinants of IFRS adoption: the impact of ownership structures

The understanding of incentives to adopt IFRS is crucial to evaluate the association between accounting standards and reporting outcomes. However, only few studies have focused on determinants of voluntary IFRS adoption, especially in code law countries. Gassen and Sellhorn (2006) show that size, international exposure and listing age had a positive influence, while a high percentage of closely held shares had a negative influence on the probability of voluntary IFRS adoption in Germany. This evidence is supported by Christensen et al. (2008) who find that firms who resisted IFRS adoption until 2005 have more concentrated ownership structures (measured by the proportion of closely held shares), a higher proportion of bank ownership (measured as the percentage of shares owned by banks and trusts as reported by Thomson Ownership for December 2004), more leverage and less analyst following. In addition, companies which have not adopted IFRS voluntarily tend to be smaller, older, more profitable (return on assets) and dispose of a lower degree of internationalization as compared to voluntary adopters. Using a sample of European firms which released their annual accounts for the year 1999 under non-local GAAP, Cuijpers and Buijink (2005) find that a US-listing, a listing at the EASDAQ, more geographically dispersed operations and lower local financial reporting quality are drivers of the adoption of international accounting standards, namely IFRS or US GAAP.

Although ownership structures are likely to differ between voluntary and mandatory IFRS adopters (Schipper, 2005), the influence of certain types of investors and the percentage of shares held by these investors has not been examined in previous studies.

This is of particular interest in the case of an economy that is characterized by high ownership concentration with blocks held by different shareholder groups like Germany, as

[5] For a detailed overview about German reforms on enforcement of IFRS and economic consequences resulting from these reforms cf. Ernstberger et al. (2008).

concentrated ownership structures facilitate communication between firms and investors via private information channels (Burgstahler et al. 2006). Hence, the use of these private communication channels might be perceived by investors with insider orientation or large stakes to be more efficient than the adoption of a new set of standards, while emphasis on the use of financial statements might be put on its contracting function. Controlling shareholders could believe that any benefit that arises from IFRS adoption would be less than the cost to implement and transit to the new set of standards (Armstrong et al., 2008). Hence, we suppose that the demand for IFRS is generally lower for firms with concentrated ownership structures.

German firms heavily rely on bank debt and internal financing. But banks do not only play a role as creditors in Germany, they also frequently hold stocks in German firms and act as trustees for the funds of small investors. Furthermore, the fact that banks frequently hold positions as representatives on supervisory boards (Leuz/Wüstemann, 2004) gives them the role of quasi insiders.[6] As banks can be supposed to have superior access to company information (either through debt contracts or through their role as insiders) and a particular interest to maintain a creditor-orientated accounting system, we expect bank ownership to have a negative impact on voluntary IFRS adoption.

Firms with high insider ownership face less capital market pressure and should therefore have lower incentives to adopt an investor orientated accounting system. Furthermore, as managers as well as members of supervisory boards have superior possibilities to access company information, they could try to avoid costs associated with the transition to a new set of accounting standards. Hence, one could suggest that insider ownership delays IFRS adoption. However, considering information asymmetries between inside and outside shareholders, outside shareholders could demand higher transparency through IFRS and therefore urge firms with a significant proportion of insider ownership to adopt IFRS. Firms with insider ownership might as well take IFRS adoption into account when they aim at an increase in capital either by issuing new shares or selling (part of) their stake. Taken together, the influence of insider ownership on voluntary IFRS adoption is unclear.

In order to contribute to the discussion whether IFRS is able to reduce equity home bias, we examine the relationship between foreign ownership and IFRS adoption in Germany. Foreign investors face information costs when they have to become familiar with financial statements prepared by foreign companies. The adoption of an internationally accepted set of accounting standards like IFRS could reduce information processing costs and hence help

[6] Dittmann et al. (2009) present evidence that banks help German non-financial firms to overcome financing boundaries but do not act in the interest of other shareholders even if they hold a stake in the firm themselves.

reduce home bias. Covrig et al. (2007) show that foreign ownership increases in companies that adopt international accounting standards. However, Beneish and Yohn (2008) argue that although information costs are likely to be material to individual investors this might not hold to be true for large institutional investors. Another factor is uncertainty about the quality of financial reporting in foreign countries. Evidence from previous studies indicates that IFRS increase decision usefulness of financial statements which is why IFRS adoption could also increase earnings quality in a non-Anglo-Saxon environment (Leuz, 2003; Bartov et al., 2005; Barth et al. 2008). However, investors could make a discount to the use of international financial standards if these are weakly implemented and enforced. Taken together, also the question whether IFRS adoption was appreciated by foreign investors in Germany is unanswered.

### 2.3 Determinants of earnings quality: incentives vs. standards

Previous studies have found that besides standards incentives and institutional factors are important drivers for financial reporting outcomes (Joos/Lang, 1994; Ball et al., 2000; Ali/Hwang, 2000; Ball et al., 2003; Leuz et al., 2003). Within the debate on accounting harmonization much attention has been paid to the relationship between the use of international accounting standards and earnings quality (Ashbaugh/Pincus, 2001; Asbaugh, 2001; Van Tendeloo/Vanstraelen, 2005; Barth et al., 2008).

Before EU regulation became effective, outside shareholders could criticize that discretion provided by the German accounting system to smooth earnings for tax avoidance purposes using hidden reserves as well as explicit accounting choices together with low disclosure requirements result in rather uninformative financial reporting outcomes (Leuz/Verrecchia, 2000). In contrast, IFRS have fewer explicit accounting choices and high disclosure requirements as they are meant to lead to financial reporting outcomes that meet the information needs of analysts and investors. However, it should be noted that IFRS allow for a higher amount of implicit accounting choices that can be used in order to enhance or reduce the information content of earnings. Dobler (2008) concludes that possibilities to engage in earnings management do not necessarily decrease under IFRS as compared to HGB. This suggests that the impact of IFRS on earnings management is an open empirical question.

Previous studies on the impact of IFRS adoption on earnings management focus on the dimensions of discretionary accruals and income smoothing. Using a sample of German firms, Van Tendeloo and Vanstraelen (2005) provide evidence that voluntary IFRS adoption

is not associated with less earnings management in terms of discretionary accruals when compared to non-adopters, although there is a decrease in income smoothing among IFRS adopters. Similarly, Goncharov and Zimmermann (2007) find that earnings management does not decrease under IFRS but under US GAAP as compared to HGB. Barth et al. (2008) examine the impact of IFRS adoption on income smoothing using an international sample of voluntary IFRS adopters. German firms constitute a significant proportion of firms used in their analysis (about 20%). They find that firms who voluntarily adopt IFRS engage in less income smoothing compared to the period when firms reported under national GAAP. Christensen et al. (2008) use a similar research design like Barth et al. (2008) and compare the extent of income smoothing in the pre- and post-adoption period for voluntary and mandatory IFRS adopters in Germany. They find that income smoothing decreased significantly under voluntary but not under mandatory IFRS adoption.

We re-examine and enlarge evidence on earnings management from previous studies comparing income smoothing and discretionary accruals for voluntary and mandatory IFRS adopters in the pre- and post-adoption period among German firms. Within our observation period, HGB and IFRS observations for voluntary and mandatory adopters fall into different capital market phases. Sufficient firm-year observations allow us to analyze the influence of an evolving financial market environment on earnings management.

Conditional conservatism is another dimension that is supposed to characterize high quality earnings[7] and which has frequently been referred to in previous studies on IFRS adoption and earnings quality. According to Basu (1997) conservatism is interpreted as capturing accountant's tendency to require a higher degree of verification for recognising good rather than bad news in earnings. This is why bad news tend to be reflected on a timelier basis in financial statements than good news. Building on the timing and sequencing of gains and losses with respect to their associated cash flows the resulting measures of conservatism are based on the extent to which the earnings-return association is stronger during periods of negative returns relative to periods of positive returns (Givoly/Hayn 2000, Givoly et al., 2004).

Gassen and Sellhorn (2006) use a matched sample of German firms and find that conditional conservatism is higher for IFRS firms than for HGB firms. Similarly, Barth et al. (2008) find that voluntary IFRS adopters report earnings on a timelier basis in the post than in the pre-adoption period. Besides the Basu (1997) measure for conditional conservatism, they run logistic regressions in order to evaluate whether firms report large negative losses more

[7] For a detailed overview on conservatism, cf. Watts (2003).

frequently in the post- than the pre-adoption period. Christensen et al. (2008) closely follow the methodology in Barth et al. (2008) and find an increase in conditional conservatism in the post-adoption period for voluntary but not for mandatory IFRS adopters. While evidence on conditional conservatism is quite consistent across previous studies, evidence on mandatory IFRS adoption needs to be revisited as IFRS observations for mandatory adopters are scarce in previous studies.

Besides earnings management and conditional conservatism, previous studies frequently focussed on value relevance in order to draw standard setting inferences building on the association of accounting numbers and stock market data (Holthausen/Watts, 2001; Barth et al. 2001). Bartov et al. (2005) compare value relevance under HGB, IFRS and US GAAP for a sample of listed German firms. They find that value relevance is more pronounced under international financial reporting standards (IFRS or US GAAP) than under HGB. Similarly, Gassen and Sellhorn (2006) find value relevance to be somewhat higher for IFRS adopters compared to non-adopters, but this difference is not significant. For an international sample of voluntary IFRS adopters, Barth et al. (2008) find that value relevance is higher in the post- than in the pre-adoption period. Hung and Subramanyam (2007) use a different approach to examine value relevance under HGB compared to IFRS. They analyze reconciliations of net income and shareholder's equity from HGB to IFRS and find that book value of equity and net income are no more relevant under IFRS than under HGB.

IFRS adoption appears particularly beneficial to firms if investors consider IFRS as being informative and resulting in high quality accounting income. Firms could then use the adoption of IFRS as a signalling mechanism through committing themselves to higher financial reporting requirements and more transparency. On the other side, investors could also doubt the positive effects of IFRS adoption if they believe that IFRS fails to or does not adequately reflect Germany's particularities including political and economic features. Investors could also believe that an insufficient implementation and enforcement of IFRS might lead to enhanced opportunistic managerial discretion when firms report under IFRS. This is consistent with evidence provided by Armstrong et al. (2008) who find that stock market reactions on IFRS adoption are weaker in European code-law than common-law countries. They presume that this result is due to concerns over enforcement. Kaserer and Klingler (2008) show for the accrual anomaly, that introducing true and fair view accounting standards, like IFRS, that rely on hard-to-verify-information might not necessarily be appropriate to improve the information content of earnings under the German institutional framework. As previous evidence on IFRS adoption and the information content of earnings

is mixed, the question whether IFRS leads to more value relevant earnings under voluntary vs. mandatory IFRS adoption is an open empirical question.

## 3. Data

We start our sample selection process identifying all German corporations whose common stock[8] is listed in the Composite German stock index (CDAX).[9] Our sample period starts in 1998 as due to the KapAEG publicly traded German corporations were allowed to prepare consolidated financial statements under international accounting standards (IFRS or US GAAP) instead of German GAAP (HGB) for the first time. This has two central implications for our empirical analysis. First, as firms which adopted IFRS before the KapAEG were forced to incur the costs of dual or parallel reporting, it can be assumed that these adopters differ systematically from firms choosing IFRS after the issuance of this act. Second, a sufficient number of firms applying international accounting standards could not be observed before this point in time.[10] Furthermore, 1998 is the first year in which a full set of IFRS became available and firms that chose IFRS had to fully comply with these standards. As we analyze (i) the impact of ownership characteristics on the probability of voluntary IFRS adoption and (ii) consequences of voluntary vs. mandatory IFRS adoption on earnings quality, we eliminate all firms that apply US GAAP within the sample period. We also exclude bank and insurance companies as well as other financial services companies from our analysis.[11] In order to assure that observations are not biased by different stock market regulations[12], we only include firm-year observations in which the stock is actually listed in the CDAX. Following the argument proposed by Gassen and Sellhorn (2006) we do not exclude firm-year observations due to requirements by the German stock exchange concerning mandatory application of international accounting standards in special market segments (New Market

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8 We only include firms with listed common stock in our analysis as non-listed common shares might bias our results due to different ownership structures. In a few cases firms are listed with more than one class of common shares in the index. In this case we include the share class with the higher proportion of nominal capital.

9 Focussing on the CDAX, the market segment that comprises the EU regulated market mitigates influences of regulatory differences that arise between the regulated and the open market (Freiverkehr). The CDAX is a market segment of the German stock exchange set up in 1993. For an exact index definition of the CDAX cf. http://deutsche-boerse.com.

10 Based on the information provided by the Worldscope database, only 9 German firms (thereof 7 non-financial firms) listed in the CDAX adopted IFRS prior to 1998.

11 The identification of firms from financial services industries is based on the ICB industry classification in Thomson Financial Datastream.

12 Regulatory differences arise between the EU regulated and the open market, see Fn. 9.

firms) as firms could switch to other segments.[13] The sample period ends in the year 2008 which was the last year with available ownership, accounting and capital market information when constructing the dataset.[14] For analyzes concerning the impact of ownership characteristics on voluntary IFRS adoption a sub-sample is built, which ends by the year 2004, the last period in which firms could voluntarily adopt IFRS.

Based on this sampling procedure we are able to identify 543 non-financial firms (3697 firm-year observations) whose annual reports were published under German GAAP or IFRS.[15] The sample selection process is reported in table 1, panel A.

– Insert table 1 about here –

Panel B of table 1 shows the distribution of accounting standards followed by voluntary and mandatory IFRS adopters. Voluntary adopters are defined as firms which adopted IFRS no later than 2004, while mandatory adopters are those companies who did not apply IFRS before 2005. Our analysis includes 2160 firm-year observations for voluntary and 1537 firm-year observations for mandatory IFRS adopters. The proportion of IFRS to HGB observations is unequally distributed among the two groups, with 322 HGB and 1838 IFRS firm-year observations for voluntary compared to 1088 HGB and 449 IFRS observations for mandatory IFRS adopters.

The core data on ownership structures is derived from *Hoppenstedt Aktienführer* which publishes annual data on ownership structures of publicly listed German firms. In order to verify ownership information we use several further databases: *Bureau van Dijk's Amadeus database*, *Commerzbank's Wer gehört zu wem, the director dealings database of the Bundesanstalt für Finanzdienstleistungsaufsicht* and web research. Accounting data used in our analyzes comes from Worldscope database[16], while capital market data comes from the Thomson Financial Datastream database.

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13 However, we run additional analyses to assess whether the inclusion of New Market firms in our sample affects our results.

14 As fiscal year's end does not always correspond to calendar year end, firm-year observations with fiscal year's end starting from July 1st of the actual year to June 30th of the following year are allocated to the actual calendar year. For the year 2008 our dataset only includes data on financial statements available until 20th October 2009. German firms need to file their annual reports within four months according to German law, while the German Corporate Governance Code recommends firms to file their annual reports within three months. Therefore, firm-year observations for the year 2008 should by widely complete.

15 For the sub-sample from 1998 to 2004 the sample corresponds to 479 firms (2,461 firm-year observations).

16 Note that as the data quality concerning the applied accounting standard is quite low in the Worldscope database we verified this critical information using annual reports.

## 4. Methodology

### 4.1 The impact of ownership characteristics on voluntary IFRS adoption

Following and extending prior research on the adoption of non-local GAAP we perform the following logistic regression to assess the impact of ownership characteristics on voluntary IFRS adoption.[17]

$$PROBIT(IFRS = 1) = \phi(\alpha_0 + \alpha_1 \cdot Conc_{it} + \alpha_2 \cdot Bank_{it} + \alpha_3 \cdot FI_{it} + \alpha_4 \cdot IO_{it} + CV + IndustryFixedEffects + YearFixedEffects) \quad (1)$$

Within our analysis we consider the following ownership dimensions.

Ownership concentration: Ownership concentration is measured using the aggregate amount of shares owned by the three biggest shareholders (*CONC*).[18]

Bank ownership: Bank ownership (*Bank*) is defined as the cumulated amount of stock owned by German banks.

Foreign investments: The variable 'foreign investments' (*FI*) comprises the percentage of stock held by non-German investors.[19]

Insider ownership: Insider ownership (*IO*) aggregates all block holdings owned by actual and former directors (members of the management or supervisory board) of the firm.

In order to assure that our findings concerning the impact of differences in ownership structures on voluntary adoption of IFRS are not biased by omitted variables, we control for factors influencing the adoption decision (*CV*) known from previous studies. Following Gassen and Sellhorn (2006) we expect larger firms with more geographically dispersed operations by trend to have a higher probability to switch to international accounting standards than smaller firms. Therefore we control for (1) firm size (*Size*) and (2) international exposure (*Internationalization*). Size is defined as natural logarithm of total assets at fiscal

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[17] IFRS accounts thereby comprise the labels 'International standards', 'International standards and some EEC guidelines' and 'IFRS' in the Worldscope database (WC07536). The classifications 'Local standards', 'Local standards with some EEC guidelines' and 'Local standards with EEC and IASC guidelines' are aggregated to German GAAP (HGB) accounts. The regression is also performed separately for each of the considered ownership characteristics.

[18] As a robustness check, a Herfindahl index which is calculated as the sum of the squared shares owned by blockholders and the percentage of closely held shares (WC08021) are used as alternative concentration measures in our analysis.

[19] It therefore aggregates all block investments of the following investor groups: Non German banks, non German institutional investors, foreign venture capital and private equity investors, foreign endowment funds, non German corporations and business groups, foreign governments and foreign insurance companies.

year's end (WC02999). International exposure is measured by the fraction of sales which are achieved outside the home market (WC0701/WC01001). In line with Gassen and Sellhorn (2006) who show that firms which adopt IFRS have primarily an IPO date post 1995, we control for (3) the listing years (*Listing Years*) of a firm. In particular this variable is defined as the difference between the considered year *t* and the IPO year.[20]

Using a sample of European firms, Cuijpers and Buijink (2005) find that a US-listing plays a predominant role in explaining the voluntary adoption of non-local GAAP. In contrast to their study which also includes US GAAP firms, we expect that European listings are most likely to influence IFRS adoption because European stock exchanges have become more favorable towards IFRS in the period of our study.[21] Therefore, we include (4) an indicator variable (*European Listing*) which equals one if the firm is listed on a European stock exchange outside Germany and zero otherwise.[22]

We also include (5) growth (*Growth*) measured by the percentage change in sales (WC 01001) into our model as growth firms can be expected to have a higher tendency to voluntarily adopt IFRS. As Germany is a country with relatively low investor protection we expect that outside creditors (like i.e. banks) will urge corporations to apply the creditor orientated accounting system, namely HGB and therefore reduce the probability of voluntary IFRS adoption. As the Worldscope database does not deliver bank debt explicitly, we use (6) leverage defined as total debt (WC03255) divided by total assets (WC02999) as a proxy.[23] We account for the influence of industry affiliations including industry fixed effects in our regression.[24] To control for year fixed effects, we also include year dummies in our regression.

Additionally, we analyze the impact of ownership and firm characteristics on the timing of IFRS adoption using the following binary logistic regression.

$$PROBIT(Early = 1) = \phi(\alpha_0 + \alpha_1 \cdot Conc_{it} + \alpha_2 \cdot Bank_{it} + \alpha_3 \cdot FI_{it} + \alpha_4 \cdot IO_{it} + CV + IndustryFixedEffects + YearFixedEffects) \quad (2)$$

[20] The information concerning the IPO year is derived from *Hoppenstedt Aktienführer*.

[21] Note, that results not tabulated in this study based on our dataset suggest that firms that adopt IFRS are more frequently listed on European than on US stock exchanges.

[22] Data on the yearly listing status of our sample firms again comes from *Hoppenstedt Aktienführer*.

[23] Note that this seems quite reasonable as a test for a sub-sample of Prime Standard firms for the year 2003 (which is the first year of the Prime Standard as the transparency standard with the highest disclosure requirements in Germany) shows that the correlation between hand collected bank debt from annual reports and total leverage as reported by the Worldscope database is about 0.8.

[24] Industry fixed effects are calculated using the ICB industry classification in Thomson Financial Datastream.

The indicator variable *Early* equals one for annual accounts released by firms that adopted IFRS before 2002 and zero otherwise. All other variables in equation (2) are defined as in equation (1). The intention behind this equation is to analyze whether firms adopting IFRS before the issuance of EC regulation 1606/2002 differ from those who adopted IFRS at a later point in time.

### 4.2 Consequences of voluntary vs. mandatory IFRS adoption on earnings quality

#### 4.2.1 Earnings Management

At first, we follow Barth et al. (2008) as well as Christensen et al. (2008) and analyze effects of voluntary vs. mandatory IFRS adoption on income smoothing. Previous literature suggests that a higher variability of earnings is associated with fewer income smoothing (Leuz et al., 2003; Lang et al., 2006; Barth et al., 2008). As German firms are presumed to use accruals in order to smooth earnings, especially under HGB (Beckman et al., 2007), we suggest an analysis of the extent of income smoothing under HGB vs. IFRS to be of particular interest. To avoid idiosyncratic effects mentioned by Aussenegg et al. (2008), we use six different measures for income smoothing which are partly modified compared to previous studies.

Our first measure for income smoothing is based on the variability of change in net income scaled by average total assets (Lang et al., 2006). We assume a smaller variance of the change in net income as evidence for a greater extent of income smoothing. However, as change in net income is sensitive to various factors that cannot be attributed to the accounting system, we extend and modify the approach used by Lang et al. (2006) and Barth et al. (2008). Therefore, in our second measure we consider the variance of the residuals from a pooled regression of the absolute change in net income on variables identified as factors influencing the decision to voluntarily adopt IFRS. Equation (3) expresses our second measure.

$$\begin{aligned} \left|\Delta NI_{it}\right| = {} & \alpha_0 + \alpha_1 \cdot Conc_{it} + \alpha_2 \cdot Size_{it} + \alpha_3 \cdot \left|Growth_{it}\right| + \alpha_4 \cdot CF_{it} + \alpha_5 \cdot Lev_{it} \\ & + \alpha_6 \cdot Internationalization_{it} + \alpha_7 \cdot Turn_{it} + \alpha_8 \cdot Listing\,Years_{it} \\ & + IndustryFixedEffects + YearFixedEffects + \varepsilon_{it} \end{aligned} \tag{3}$$

In contrast to previous studies, we use the absolute change in net income as dependent variable, as we consider the extent rather than the direction of change in net income to be

explained by changing incentives around IFRS adoption.[25] Based on our findings on the factors influencing voluntary IFRS adoption, we control for *ownership concentration*, *size*, *leverage*, *international exposure*, *listing years* as well as industry and year fixed effects. Additionally, we control for factors used in related studies adapted to our measurement approach. Therefore, we control for absolute *growth* which is defined as the absolute percentage change in sales. *CF* is annual net cash flow from operating activities. *Turn* is sales divided by average total assets. Again, we include year dummies to control for year fixed effects. Our third measure for income smoothing is the ratio of the variability of change in net income $\Delta NI$ over the variability of the change in cash flows $\Delta CF$. As suggested by Barth et al. (2008) we expect firms with volatile cash flows to have more volatile net income. Again, we measure this ratio by (i) the variance of $\Delta NI$ divided by the variance of $\Delta CF$ and (ii) using the residuals from equations (3) and (4) (measure four). Following our deliberations for the second measure, equation (4) is modified compared to previous studies by using the absolute value of $\Delta CF$ as dependent variable and absolute growth as explanatory variable.

$$\begin{aligned} \left|\Delta CF_{it}\right| = {} & \alpha_0 + \alpha_1 \cdot Conc_{it} + \alpha_2 \cdot Size_{it} + \alpha_3 \cdot \left|Growth_{it}\right| + \alpha_4 \cdot CF_{it} + \alpha_5 \cdot Lev_{it} \\ & + \alpha_6 \cdot Internationalization_{it} + \alpha_7 \cdot Turn_{it} + \alpha_8 \cdot Listing\,Years_{it} \\ & + IndustryFixedEffects + YearFixedEffects + \varepsilon_{it} \end{aligned} \tag{4}$$

Our fifth measure to examine the extent of income smoothing is based on the Spearman correlation coefficient between accruals and cash flows. If accruals are used to smooth earnings, a more negative correlation between accruals and cash flows should occur. As with the measures above we use (a) the raw variables *CF* and *ACC* as well as (b) the residuals from the following equations (5) and (6) for our analysis (measure six).[26]

$$\begin{aligned} CF_{it} = {} & \alpha_0 + \alpha_1 \cdot Conc_{it} + \alpha_2 \cdot Size_{it} + \alpha_3 \cdot Growth_{it} + \alpha_4 \cdot Lev_{it} \\ & + \alpha_5 \cdot Internationalization_{it} + \alpha_6 \cdot Turn_{it} + \alpha_7 \cdot Listing\,Years_{it} \\ & + IndustryFixedEffects + YearFixedEffects + \varepsilon_{it} \end{aligned} \tag{5}$$

[25] As equation (3) explains the change of a flow variable by both stock and flow variables, not taking the absolute values for the flow variables overestimates the residuals of the equation as the stock variables are not able to explain the direction of the dependent flow variable.

[26] As the dependent variables in equation (5) and (6) are not defined as changes from period t-1 to period t, we now take the initial values for the variables.

$$ACC_{it} = \alpha_0 + \alpha_1 \cdot Conc_{it} + \alpha_2 \cdot Size_{it} + \alpha_3 \cdot Growth_{it} + \alpha_4 \cdot Lev_{it} + \alpha_5 \cdot Internationalization_{it} + \alpha_6 \cdot Turn_{it} + \alpha_7 \cdot Listing\ Years_{it} + IndustryFixedEffects + YearFixedEffects + \varepsilon_{it} \quad (6)$$

To test for differences in the pre- and post-adoption period we estimate equations (3) to (6) pooling observations for the whole observation period for voluntary and mandatory adopters.[27] In a second step, we derive the metrics for each period by classifying the residuals according to the applied accounting standard. To test for statistical significance we run F-tests for measures one and two and standard tests using Fisher's z for measures five and six. Additionally, we follow Barth et al. (2008) and Christensen et al. (2008) applying t-tests based on the empirical distribution of the differences between the pre- and post-adoption period for metrics one to four. In order to obtain our distribution of the differences between the respective metric in the pre- and post-adoption period, we run a simulation modelling the distribution of the basic population. Therefore, we randomly select $n_{Pre}$ firm-year observations for the particular group in the pre and $n_{Post}$ firm-year observations in the post-adoption period with replacement (bootstrapping), whereby $n_{Pre}$ and $n_{Post}$ equals the number of observations of the group in the respective period. This procedure is repeated 1,000 times.

Our second measure to examine the influence of IFRS adoption on earnings management is discretionary accruals. Discretionary accruals are estimated cross-sectionally in each year and each industry[28] based on the model proposed by Ball and Shivakumar (2006)[29] instead of the modified Jones-model as applied by Van Tendeloo and Vanstraelen (2005) as well as Goncharov and Zimmermann (2007).

To test the relation between IFRS adoption and earnings management separately for voluntary and mandatory adopters, absolute discretionary accruals ($ABS\_ACC_t$) are used as dependent variable in equation (7).

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[27] I.e. to test for differences concerning income smoothing by voluntary adopters in the pre- and post-adoption period we pool all observations which belong to the group of voluntary adopting firms.

[28] In contrast to Ball/Shivakumar (2006) discretionary accruals are estimated based on ICB-Codes instead of three-digit SIC-codes.

[29] Discretionary accruals are estimated using the following regression:
$ACC_t=\alpha_0+ \alpha_1*CF_t+ \alpha_2*CF_{t-1}+ \alpha_3*CF_{t+1}+ \alpha_4*DCF_t+ \alpha_5*DCF_t*CF_t+\varepsilon_t$, where: $ACC_t$ is total accruals at t, scaled by average total assets at t; total accruals are earnings before extraordinary items minus operating cash flows; $CF_t$ is operating cash flows at t, scaled by average total assets at t; $CF_{t-1}$ is operating cash flows at t-1, scaled by average total assets at t; $DCF_t$ is one if the change in cash flows at t is less than zero, and zero otherwise; the interaction term $DCF_t$* $CF_t$ serves as proxy for economic losses.

$$ABS\_ACC_t = \alpha_0 + \alpha_1 IFRS + \alpha_2 \cdot Size_{it} + \alpha_3 \cdot Growth_{it} + \alpha_4 \cdot Lev_{it} + \alpha_5 \cdot RoA_{it} + \alpha_6 \cdot Listing\,Years_{it} + IndustryFixedEffects + YearFixedEffects + \varepsilon_{it} \quad (7)$$

### 4.2.2 Conditional Conservatism

We use two models to analyze conditional conservatism in the pre and post IFRS adoption period for voluntary and mandatory adopters. Our first model relies on the specification for timely loss recognition by Basu (1997) that builds on the transitory nature of economic income (Samuelson, 1965; Fama, 1970). In this model conditional conservatism corresponds to the difference between the slope coefficient on negative returns and the slope coefficient on positive returns (Gassen/Sellhorn, 2006). To test for differences between the pre and post-adoption period, we run the following regression (8) for voluntary and mandatory adopters.

$$NI_{it} = \beta_0 + \beta_1 \cdot IFRS_{it} + \beta_2 \cdot d_{it} + \beta_3 \cdot R_{it} + \cdot\beta_4 \cdot IFRS \cdot R_{it} + \beta_5 \cdot d_{it} \cdot R_{it} + \beta_6 \cdot d_{it} \cdot IFRS \cdot R_{it} + CV + Industry\,FixedEffects + Year\,FixedEffects + \varepsilon_{it} \quad (8)$$

In contrast to Basu (1997), *NI* is net income scaled by average total assets instead of the market value of equity at the beginning of the fiscal year. We follow this approach, as the sample period covers a sub-period of extreme market values, which might bias our results. *R* is defined as the annual buy-and-hold return ending four months after fiscal year end, *d* is an indicator variable which equals one if the return *R* is negative and zero otherwise. *IFRS* is a dummy variable which equals one for firm-year observations in the post-adoption period and zero for observations in the pre-adoption period. As in our analysis on earnings management we control for factors (*CV*) which cannot be attributed to the accounting system in our analysis on conditional conservatism.[30] Following the argument in Basu (1997) we expect that earnings are timelier in reflecting publicly available 'bad news' than 'good news'. Therefore we expect $ß_5$ to be positive. A higher incremental coefficient on bad news in the post-adoption period ($ß_6>0$) is consistent with more timely loss recognition after IFRS adoption.

Our second model to examine conservatism is the accruals-based model as introduced by Ball and Shivakumar (2005) in order to mitigate potential limitations associated with Basu's

[30] In particular we control for the following factors: size, leverage, listing years, growth, cash flow and turnover.

serial dependence model. Based on the approach by Ball and Shivakumar (2005) our second measure for conditional conservatism is expressed by the following regression (9):

$$\begin{aligned} ACC_{it} = {} & \beta_0 + \beta_1 \cdot IFRS_{it} + \beta_2 \cdot d_{it} + \beta_3 \cdot CF_{it} + \beta_4 \cdot IFRS_{it} \cdot CF_{it} + \beta_5 \cdot d_{it} \cdot CF_{it} \\ & + \beta_6 \cdot IFRS_{it} \cdot d_{it} \cdot CF_{it} + CV + IndustryFixedEffects \\ & + YearFixedEffects + \varepsilon_{it} \end{aligned} \tag{9}$$

The indicator variable *d* equals one if the cash flow of firm *i* in period *t* is negative and zero otherwise. In contrast to the model used in Ball and Shivakumar (2005) accruals (*ACC*) are directly derived from cash flow statements instead of balance sheets. Accordingly, in our model accruals are defined as the difference between net income and cash flow from operations.[31] As in Ball and Shivakumar (2005) we predict a positive incremental coefficient $\beta_5$ for negative cash flows, following the hypothesis that accrued losses are more likely in periods of negative cash flows. We do not offer any prediction for the intercept $\beta_0$, respectively the dummy specific intercept. More timely loss recognition in the post-adoption period in this model is marked by $\beta_6 > 0$.

### 4.2.3 Value Relevance

The last earnings quality dimension we consider in our study is the association between either stock prices or returns and accounting numbers. Following Barth et al. (2001), higher explanatory power of accounting data for prices or returns is interpreted as higher accounting quality. We use three measures proposed in prior research to examine value relevance for voluntary and mandatory adopters in the pre- and post-adoption period. As for income smoothing, discretionary accruals and conditional conservatism we run pooled OLS regressions separately for voluntary and mandatory adopters. Again, we include control variables (*CV*) into our models to capture the influence of changing incentives around IFRS adoption.[32]

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[31] Referring to the work of Hribar and Collins (2002), we suppose that the cash flow measure provided by the cash flow statement via the Worldscope database is more accurate than a measure that is derived from balance sheet data.

[32] In the value relevance models we use the following control variables: size, leverage, listing years, growth, turn and market-to-book ratio. We run additional analyses adding a beta factor derived from the CAPM using all non-financial firms listed in the CDAX as portfolio as additional explanatory variable for stock data into our analyses. This approach leads to a loose of quite some observations and results remain unchanged, we do not tabulate this additional analysis.

Our first measure modifies the approach suggested in Warfield et al. (1995), which tests for the cross-sectional variation in the earnings coefficient (the slope coefficient from a regression of returns on earnings). The fact that we include an interaction term considering the IFRS adoption leads to the following equation (10).

$$R_{it} = \alpha_0 + \alpha_1 \cdot IFRS_{it} + \alpha_2 \cdot (NIPS_{it} / P_{i,t-1}) + \alpha_3 \cdot IFRS_{it} \cdot (NIPS_{it} / P_{i,t-1}) + CV + IndustryFixedEffects + YearFixedEffects + \varepsilon_{it} \quad (10)$$

$R_{it}$ denotes the return of firm *i* for the annual period *t* ending four months after fiscal year's end, *NIPS* (WC05201) is earnings per share, $P_{i,t-1}$ is price per share four months after fiscal year end of period *t-1*. A higher value relevance of accounting numbers in the post-adoption period is consistent with a regression coefficient $\alpha_3 > 0$.

The second model (Equation 11) is based on Lang et al. (2003, 2006) and regresses equity book value per share *BVPS* (WC05476) and net income per share *NIPS* on the industry adjusted price $P_{it}$* of firm *i* four months after fiscal year's end.[33] Following Lang et al. (2006) and Brown et al. (1999) we deflate regression variables by the stock price at the end of period *t-1* to mitigate scale effects that can occur if samples differ in terms of general share price levels. Higher value relevance of accounting numbers after IFRS adoption is marked by $\alpha_4 > 0$ and $\alpha_5 > 0$ respectively.

$$P_{it}^* = \alpha_0 + \alpha_1 \cdot IFRS_{it} + \alpha_2 \cdot BVEPS_{it} + \alpha_3 \cdot NIPS_{it} + \alpha_4 \cdot IFRS_{it} \cdot BVEPS_{it} + \alpha_5 \cdot IFRS_{it} \cdot NIPS_{it} + CV + YearFixedEffects + \varepsilon_{i,t} \quad (11)$$

Our third value relevance model examines the proportion of stock returns that can be explained by net income $NI_{it}$ and change in net income $\Delta NI_{it}$ as applied by Francis and Schipper (1999) and Gassen and Sellhorn (2006). As in all our other models, net income and change in net income are scaled by average total assets, $R_{it}$ is annual buy-and-hold returns ending four months after fiscal year's end, in order to assure that accounting information can be accessed by the capital market. Equation (12) describes the model.

[33] Following Barth et al. (2008) $P_{it}$* is defined as the residual of a regression of the price of firm *i* four months after fiscal year end ($P_{it}$), on industry dummies. To calculate the industry dummies we again use the ICB industry classification from Thomson Financial Datastream.

$$R_{it} = \alpha_0 + \alpha_1 \cdot IFRS_{it} + \alpha_2 \cdot NI_{it} + \alpha_3 \cdot \Delta NI_{it} + \alpha_4 \cdot IFRS_{it} \cdot NI_{it} + \alpha_5 \cdot IFRS_{it} \cdot \Delta NI_{it} + CV + IndustryFixedEffects + YearFixedEffects + \varepsilon_{it} \quad (12)$$

As in model two more value relevant accounting numbers are indicated by $\alpha_4 > 0$ and $\alpha_5 > 0$ respectively.

## 5. Results

### 5.1. Descriptive Statistics

Table 2 provides an overview on how firms who voluntarily adopted IFRS and those who resisted IFRS adoption differ in terms of ownership structures and other firm characteristics. In order to assure that our results are not biased towards bigger more visible firms each variable is considered with as many observations as possible, resulting in different numbers of observations.

– Insert table 2 about here –

Panel A describes the properties of firms which are classified as voluntary adopters, Panel B reports data for mandatory adopters. In order to assess whether differences are dependent on the distribution of accounts released under HGB vs. IFRS, summary statistics are reported separately for both accounting standards. First of all, it becomes obvious that voluntary IFRS adopters have less concentrated ownership structures than mandatory IFRS adopters.[34] Bank ownership is higher for mandatory than for voluntary IFRS adopters while insider ownership does not differ significantly between both groups. Surprisingly, mandatory IFRS adopters have a significant higher proportion of foreign ownership compared to voluntary IFRS adopters. This result holds true in the pre- as well as in the post-adoption period. This result might be explained by the fact that these investors are long-term orientated investors with rather large stakes and that firms seeking equity financing from US investors adopted US GAAP rather than IFRS.

Voluntary IFRS adopters also differ decisively from mandatory IFRS adopters in terms of other firm characteristics. They have less listing years, more sales growth, are more frequently

[34] Not tabulated results using a Herfindahl-index or closely-held shares instead of the percentage held by the three largest shareholders as a proxy for ownership concentration do not alter our results.

listed at European stock exchanges, underlie more international exposure in terms of foreign sales and have less financial leverage.[35]

Overall, our descriptive statistics suggest that voluntary and mandatory IFRS adopters differ essentially in terms of central firm characteristics that could have an impact on earnings quality. Therefore, we control for main differences between voluntary and mandatory IFRS adopters in our analyses on earnings quality.

### 5.2. Determinants of voluntary IFRS adoption in Germany

The results of our analysis on the impact of ownership structures on voluntary IFRS adoption are reported in tables 3a and 3b. The logistic regressions confirm impressions gained from the descriptive statistics.

– Insert tables 3a and 3b about here –

Both tables show that ownership concentration significantly delayed IFRS adoption even if we control for certain shareholder types. This evidence confirms our suggestion that controlling shareholders rely on private information channels and avoid costs associated with the transition to a new set of standards.[36] As expected, bank ownership was among the factors that significantly delayed IFRS adoption. We suppose this to be a result of the quasi insider role played by banks in the German economy. Considering the fact that banks do not only play a role as investor but also act as creditors, the impact of leverage on voluntary IFRS adoption additionally has to be taken into account. We find that a high proportion of debt to total assets (leverage) also significantly delayed IFRS adoption. Insider ownership has no significant influence on voluntary IFRS adoption, neither for the whole sample nor for the sub-sample of early voluntary IFRS adopters. Foreign ownership was among the factors that had a significant negative impact on early IFRS adoption. This result can be explained by the fact that concerns over enforcement and over implementation of IFRS were particularly high in the early adoption phase. In a separate analysis not reported in this paper, we also found foreign investors to hold rather large stakes when invested in German companies. Hence, they

[35] In contrast to previous studies we find that voluntary adopters are only significantly larger in the pre-adoption period. When analyzing the median, we find that mandatory adopters are significantly larger in the post-adoption period. This might be due to the fact that we use total assets instead of market capitalization of equity as a measure for size.

[36] This evidence holds true for all our measures for ownership concentration: (i) the aggregate amount held by the three largest shareholders, (ii) the Herfindahl index and (iii) the proportion of closely held shares.

might prefer to rely on alternative information channels rather than IFRS for information purposes, especially under the conditions of a weak corporate governance system. If foreign investors are long-term investors they might as well have gained expertise with financial statements derived under HGB.[37]

Furthermore, we find similar firm characteristics to have a significant influence on voluntary IFRS adoption as previous studies. We document that larger firms, with more international exposure and less listing years are more likely to voluntarily adopt IFRS.

### 5.3. Consequences of voluntary vs. mandatory IFRS adoption in Germany

#### 5.3.1 Earnings Management

Table 4a presents our results comparing income smoothing for voluntary and mandatory IFRS adopters in the pre and post-adoption period. The variability of changes in net income, measured by the raw variable as well as the residuals, increases significantly in the post-adoption period for voluntary IFRS adopters. This change is highly significant under the F-test and the t-test (simulation) and suggests that voluntary IFRS adopters engage in less income smoothing in the post-adoption period. One explanation for this result could be the fact that voluntary adopters are much more heterogeneous in terms of size than mandatory adopters. The group of voluntary adopters does not only comprise some very large and well established firms but also a certain amount of young high growth firms which went public in the period from 1998 to 2000 and had more volatile earnings (the group of so-called New Market firms). [38] Similar results to the variability in change in net income can be derived from our analysis of the variability of earnings over cash flows and the correlation between accruals and cash flows.[39]

– Insert table 4a about here –

However, we find quite different results on income smoothing by mandatory IFRS adopters. All six measures denote a higher extent of income smoothing in the post-adoption

[37] The results could be explained by the fact that foreign investors especially US-investors might prefer to invest in companies that apply US GAAP instead of IFRS. These observations are excluded from our analysis.

[38] For this reason, we repeat our analysis excluding all firms that went public within the period from 1998 to 2000. Not tabulated results show that this reduces the extent of the decrease in income smoothing among voluntary adopters, but that the results remain robust by trend for all our measures on income smoothing.

[39] Note that not modifying the measures for income smoothing used in Barth et al. (2008) and Christensen et al. (2008) does not alter our results.

period, whereby only measure (1), the variability of change in net income is significant at a 95%-level. Therefore, we conclude that by trend mandatory adopters slightly engage in more income smoothing after IFRS adoption. These results are similar to those in Christensen et al. (2008).

However, descriptive statistics not tabulated suggest that the period of voluntary IFRS adoption is characterized by a financial market environment where earnings were particularly volatile which suggests that our results could be driven by a time trend. Therefore, we conduct further sensitivity analyses in order to assess the robustness of these results.

– Insert table 4b about here –

At first, we repeat our analyses for the variability of change in net income for a balanced panel. For this analysis we limit the observations to firms for which data is available the year before and after IFRS adoption, and in a second step to firms for which data is available two years before and after IFRS adoption.[40] This analysis indicates by trend that income smoothing did not decrease but rather increase under IFRS for voluntary adopters.[41] In a second step, we compare income smoothing among voluntary and mandatory IFRS adopters for the period from 2005 to 2008 and find that both groups do not differ significantly in terms of income smoothing according to most measures (cf. table 4b, panel A). This indicates that voluntary and mandatory adopters do not differ if comparable market phases are considered. Our third robust check where we pretend that voluntary IFRS adopters did not adopt IFRS before 2005 (cf. table 4b, panel B) supports this notion. In this analysis we find the same trend on income smoothing as compared to mandatory IFRS adopters suggesting an increase instead of a decrease in income smoothing after IFRS adoption. Therefore, we conclude that the findings in table 4a are more likely to be a result of different capital market environments than of voluntary or mandatory IFRS adoption.

Discretionary accruals between voluntary and mandatory IFRS adopters are compared in table 5.

– Insert table 5 about here –

[40] This approach allows us to directly observe the adoption effect, whereby each firm in the pre-adoption period serves as control for the post-adoption period. However, it has to be mentioned that this reduces the number of observations to a great extent.

[41] To save space results are not tabulated.

Table 5, panel A shows, consistent with Van Tendeloo and Vanstraelen (2005), that discretionary accruals did not decrease significantly under voluntary IFRS adoption but rather increase by trend.[42] However, there is a significant decrease in discretionary accruals under mandatory IFRS adoption (cf. table 5, panel C). As suggested by not tabulated descriptive statistics discretionary accruals were particularly low in the period of mandatory IFRS adoption. Therefore, evidence on discretionary accruals could also be caused by a time trend rather than IFRS adoption. When we repeat our regression analyzes adding an interaction term that analyzes the additional impact of IFRS observations for voluntary adopters that fall into the period from 2005 to 2008 (cf. table 5, panel B), we also find a significant decrease in discretionary accruals for this group (90%-level).

Overall, we conclude that earnings management did not decrease under IFRS among German firms regardless whether IFRS are applied on a voluntary or mandatory basis but that corporate incentives to manage earnings differ between the periods of voluntary (1998 to 2004) vs. mandatory adoption (2005 to 2008).

### 5.3.3 Conditional Conservatism

Table 6 presents our results concerning changes in conditional conservatism for voluntary and mandatory IFRS adopters in the pre and post-adoption period.[43]

– Insert table 6 about here –

We find similar results for voluntary and mandatory adopters. For model (1), the Basu (1997) serial dependence model, the regression coefficient $\beta_6$ shows no incremental improvement concerning the consideration of 'bad news' in the post-adoption period for voluntary and mandatory adopters. In contrast, for model (2), the accruals based model by Ball and Shivakumar (2005) which overcomes potential limitations of model (1), $\beta_6$ documents an increase in conditional conservatism from the pre to the post IFRS adoption period at a significance level of 99% for voluntary and 95% for mandatory adopters. This result suggests that IFRS might indeed lead to an increase in conditional conservatism regardless of voluntary or mandatory IFRS adoption among German listed firms. These

[42] We find the same result when we exclude New Market firms from our analysis, although discretionary accruals are generally lower when New Market firms are excluded.

[43] Again, our results are not affected by the fact that New Market firms are included in our sample.

results are in line with previous studies on effects of voluntary IFRS adoption, but contrast previous evidence on effects of mandatory IFRS adoption on conditional conservatism.

### 5.3.4 Value Relevance

Table 7 shows our results for value relevance.[44] For voluntary adopters, we find that value relevance slightly improved in the post-adoption period when model (2) is used (cf. table 7, panel A). This is marked by $\alpha_5 > 0$ at a significance-level of 90%. Value relevance is unaffected by mandatory IFRS adoption under model (2) (cf. table 7, panel B). Model (1) and (3) denote that value relevance remains unchanged ($\alpha_3$, respectively $\alpha_4$ and $\alpha_5$ not significantly different from zero) after IFRS adoption for both groups.

– Insert table 7 about here –

By and large, these results suggest that value relevance did not clearly increase or decrease after IFRS adoption no matter whether IFRS was chosen on a voluntary or a mandatory basis. This finding is consistent with the argument that hard-to-verify information used in true and fair view accounting systems might not be a suitable mean to increase the information content of accounting data in the German capital market.

## 6. Summary and Conclusion

The enactment of EC regulation 1606/2002 provides a unique setting to evaluate the effectiveness of IFRS adoption on improvements of financial reporting. Focussing on a single country study, we keep the institutional framework constant which allows us to observe directly whether incentives or IFRS standards were drivers of earnings quality in Germany.

The first purpose of our study was to enhance our understanding of determinants of voluntary IFRS adoption in Germany. Like previous studies we find that size, leverage and age were important firm characteristics that influenced the decision to voluntarily adopt IFRS. Focussing on the impact of ownership structures, we find that ownership concentration and bank ownership negatively influenced voluntary IFRS adoption in Germany. Interestingly, foreign ownership has been a factor that delayed IFRS adoption among early adopters. This could be explained by the fact that these foreign investors hold rather large stakes in German

[44] Additional analysis without New Market firms leads to similar results.

firms and might therefore consider private communication channels as being more efficient than IFRS adoption. As we presume that these investors are long-term orientated, there were apparently no efforts to attract further investors through IFRS adoption.

The second purpose of our study was to assess consequences of voluntary vs. mandatory IFRS adoption on earnings quality. Barth et al. (2008) find more timely loss recognition and less earnings smoothing under IFRS across countries. Their evidence is contrasted by Ahmed et al. (2009) who find that income smoothing increases and conditional conservatism decreases under IFRS. The results of these studies are not contradictory as Barth et al. (2008) focus on voluntary adopters while results in Ahmed et al. (2009) are stemmed from mandatory adopters. For voluntary adopters however, Van Tendeloo and Vanstraelen (2005) find that discretionary accruals are not affected significantly by IFRS adoption, although there is a decrease in income smoothing among German firms that voluntarily adopt IFRS. In a subsequent study Christensen et al. (2008) find a decrease in income smoothing and an increase in timely loss recognition for voluntary but not for mandatory adopters among German firms. They suggest that mandatory adopters could perceive fewer benefits from a shareholder orientated set of accounting standards and thus avoid costs to transit to IFRS. They presume that in contrast to voluntary adopters mandatory adopters not only had a lack of incentives to adopt IFRS but also to improve earnings quality.

In contrast to previous studies, we find that conditional conservatism increases under IFRS for both groups of adopters when measured by the approach as in Ball and Shivakumar (2005). For earnings management, we find a decrease in income smoothing by voluntary but not for mandatory IFRS adopters while we find no decrease in discretionary accruals under voluntary but under mandatory IFRS adoption.[45] However, additional analyses suggest that voluntary and mandatory IFRS adopters do not diverge with regard to these measures for earnings management. Hence, we presume that this evidence is rather explained by the impact of financial market developments and economic cycles rather than IFRS standards or the decision to voluntarily adopt IFRS. Concerning the value relevance of accounting numbers, we find no significant improvement for voluntary as well as for mandatory adopters in the post-adoption period. These findings are in line with evidence provided by Gassen and Sellhorn (2006) and the notion in Kaserer and Klingler (2008) that accounting standards that rely on hard-to-verify information do not necessarily improve accounting quality under code law regimes like Germany.

[45] Discretionary accruals have not been analyzed under mandatory IFRS adoption in previous studies.

On the whole, we find evidence which is in line with previous studies but suggest that this evidence crucially depends on the proxies used for earnings quality and that our results on earnings management, measured by income smoothing and discretionary accruals, are particularly sensitive to the capital market environment and economic cycles during the adoption phase. Finally, this implies that evidence on earnings quality under IFRS found in previous studies should be interpreted with caution.

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## Table 1
## Sample Description

### Panel A: Sample Selection

| Year | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | Pooled |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **# of Stocks in Index** | **520** | **670** | **790** | **790** | **751** | **719** | **692** | **678** | **684** | **684** | **664** | **7642** |
| *- # of Preferred Stocks* | *87* | *85* | *73* | *63* | *59* | *56* | *52* | *46* | *43* | *41* | *38* | *643* |
| *- # of Common Stocks Financials* | *77* | *91* | *98* | *102* | *97* | *95* | *91* | *93* | *102* | *108* | *103* | *1057* |
| *- # of Other Adjustments* | *11* | *10* | *14* | *14* | *18* | *17* | *16* | *19* | *18* | *12* | *14* | *163* |
| **# of Common Stocks of Non-Financial Firms** | **345** | **484** | **605** | **611** | **577** | **551** | **533** | **520** | **521** | **523** | **509** | **5779** |
| *- # US-GAAP Adopters* | *46* | *100* | *158* | *161* | *154* | *149* | *146* | *141* | *136* | *131* | *126* | *1448* |
| *- # No Information on Accounting Standard* | *16* | *28* | *32* | *53* | *62* | *69* | *74* | *72* | *68* | *72* | *88* | *634* |
| **# Sample Observations** | **283** | **356** | **415** | **397** | **361** | **333** | **313** | **307** | **317** | **320** | **295** | **3697** |
| *# of HGB Accounts* | *250* | *260* | *253* | *213* | *168* | *139* | *117* | *11* | *0* | *0* | *0* | *1411* |
| *# of IFRS Accounts* | *33* | *96* | *162* | *184* | *193* | *194* | *196* | *297* | *317* | *320* | *295* | *2287* |
| *# of IFRS First Time Adopters* | *27* | *65* | *71* | *33* | *31* | *15* | *13* | *98* | *35* | *19* | *8* | *415* |

### Panel B: Accounting Standard Followed by Voluntary and Mandatory IFRS Adopters

| Year | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | Pooled |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **# of Mandatory Adopters** | **174** | **186** | **182** | **161** | **139** | **124** | **112** | **108** | **111** | **124** | **116** | **1537** |
| *# of HGB Accounts* | *174* | *186* | *182* | *161* | *139* | *124* | *112* | *10* | *0* | *0* | *0* | *1088* |
| *# of IFRS Accounts* | *0* | *0* | *0* | *0* | *0* | *0* | *0* | *98* | *111* | *124* | *116* | *449* |
| **# of Voluntary Adopters** | **109** | **170** | **233** | **236** | **222** | **209** | **201** | **199** | **206** | **196** | **179** | **2160** |
| *# of HGB Accounts* | *76* | *74* | *71* | *52* | *29* | *15* | *5* | *0* | *0* | *0* | *0* | *322* |
| *# of IFRS Accounts* | *33* | *96* | *162* | *184* | *193* | *194* | *196* | *199* | *206* | *196* | *179* | *1838* |

Panel A describes the sample selection process. Based on the yearly composition of the CDAX the sample is formed under the following adjustments: All preferred stocks listed in the CDAX are excluded. Firms from the financial sector (based on the ICB industry classification in Thomson Financial Datastream) are excluded. Other adjustments concern e.g. elimination of a second listed common stock of a firm. The remaining sample is adjusted for firm-year observations of firms which ever reported consolidated financial statements under US-GAAP and for firm-year observations with no information on the accounting standard applied in the consolidated financial statements. Furthermore, firms that only prepare individual financial statements are excluded. The Group of "Mandatory Adopters" comprises all firm-year observations of firms which did not adopt IFRS prior to 2005. The group of "Voluntary Adopters" subsumes all firm-year observations of firms which adopted IFRS no later than 2004.

## Table 2
## Summary Statistics of Selected Variables

**Panel A: Voluntary Adopters** **Sample Period: 1998-2008**

| Variable | Mean | | Median | | Standard Deviation | | Observations | |
|---|---|---|---|---|---|---|---|---|
| Applied Accounting Standard | HGB | IFRS | HGB | IFRS | HGB | IFRS | HGB | IFRS |
| **Ownership Characteristics:** | | | | | | | | |
| Concentration *(Conc)* | 0.554 | 0.516 | 0.590 | 0.525 | 0.234 | 0.232 | 316 | 1810 |
| Bank *(Bank)* | 0.025 | 0.012 | 0 | 0 | 0.073 | 0.053 | 316 | 1810 |
| Foreign Investment *(FI)* | 0.063 | 0.082 | 0 | 0 | 0.179 | 0.190 | 316 | 1810 |
| Insider Ownership *(IO)* | 0.247 | 0.278 | 0.050 | 0.252 | 0.290 | 0.259 | 316 | 1810 |
| **Other Firm Characteristics:** | | | | | | | | |
| Net Income *(NI)* | 0.025 | -0.009 | 0.314 | 0.026 | 0.090 | 0.140 | 306 | 1727 |
| Change in Net Income$_t$ *($\Delta NI_t$)* | -0.013 | -0.006 | -0.003 | 0.002 | 0.068 | 0.130 | 297 | 1676 |
| Accruals (*ACC*) | -0.042 | -0.059 | -0.046 | -0.045 | 0.100 | 0.128 | 295 | 1711 |
| Change in Accruals ($\Delta ACC_t$) | 0 | -0.010 | 0.004 | -0.003 | 0.139 | 0.170 | 275 | 1651 |
| Cash Flow (*CF*) | 0.066 | 0.041 | 0.076 | 0.066 | 0.130 | 0.151 | 300 | 1756 |
| Change in Cash Flow *($\Delta CF$)* | -0.010 | 0.003 | -0.006 | 0.003 | 0.114 | 0.122 | 274 | 1647 |
| Return (*R*) | -0.017 | 0.005 | -0.073 | -0.072 | 0.401 | 0.560 | 294 | 1672 |
| ROA | 0.006 | 0.002 | 0.007 | 0.005 | 0.011 | 0.017 | 302 | 1717 |
| Size *(Size)* | 5.603 | 5.274 | 5.567 | 5.032 | 0.783 | 0.903 | 307 | 1756 |
| Foreign Sales *(Internationalization)* | 0.445 | 0.441 | 0.455 | 0.438 | 0.267 | 0.261 | 215 | 1143 |
| Listing Years *(Listing Years)* | 19.727 | 13.924 | 9 | 7 | 20.594 | 17.783 | 322 | 1836 |
| European Listing *(EXL)* [1] | 0.075 | 0.064 | -- | -- | 0.265 | 0.246 | 318 | 1442 |
| Leverage *(Lev)* | 0.231 | 0.199 | 0.233 | 0.176 | 0.160 | 0.161 | 287 | 1607 |
| Growth *(Growth)* | 0.172 | 0.170 | 0.086 | 0.076 | 0.462 | 0.436 | 303 | 1756 |
| Turnover *(Turn)* | 1.389 | 1.222 | 1.324 | 1.127 | 0.681 | 0.661 | 304 | 1744 |

**Panel B: Mandatory Adopters** **Table 2 - continued** **Sample Period: 1998-2008**

| Variable | Mean | | Median | | Standard Deviation | | Observations | |
|---|---|---|---|---|---|---|---|---|
| Applied Accounting Standard | HGB | IFRS | HGB | IFRS | HGB | IFRS | HGB | IFRS |
| **Ownership Characteristics:** | | | | | | | | |
| Concentration *(Conc)* | 0.703*** | 0.611*** | 0.748*** | 0.645*** | 0.232 | 0.253 | 1057 | 444 |
| Bank *(Bank)* | 0.028 | 0.027*** | 0*** | 0** | 0.107 | 0.110 | 1057 | 444 |
| Foreign Investment *(FI)* | 0.147*** | 0l41*** | 0** | 0*** | 0.321 | 0.257 | 1057 | 444 |
| Insider Ownership *(IO)* | 0.251 | 0.293 | 0 | 0.178 | 0.308 | 0.307 | 1057 | 444 |
| **Other Firm Characteristics:** | | | | | | | | |
| Net Income *(NI)* | 0.004*** | 0.010** | 0.020*** | 0.032** | 0.103 | 0.118 | 1054 | 403 |
| Change in Net Income$_t$ *($\Delta NI_t$)* | -0.001* | -0.007 | 0** | 0.001 | 0.106 | 0.097 | 1048 | 387 |
| Accruals *(ACC)* | -0.053 | -0.043** | -0.056** | -0.036** | 0.107 | 0.103 | 919 | 402 |
| Change in Accruals ($\Delta ACC_t$) | 0 | 0 | 0 | 0.001 | 0.135 | 0.137 | 826 | 377 |
| Cash Flow *(CF)* | 0.053 | 0.057* | 0.059*** | 0.068 | 0.131 | 0.129 | 932 | 408 |
| Change in Cash Flow *($\Delta CF$)* | -0.002 | -0.003 | -0.002 | -0.003 | 0.103 | 0.110 | 832 | 377 |
| Return *(R)* | 0.033* | -0.004 | 0.013** | -0.025 | 0.457 | 0.467 | 1065 | 418 |
| ROA | 0.004*** | 0.005*** | 0.005*** | 0.007*** | 0.012 | 0.012 | 1046 | 433 |
| Size *(Size)* | 5.300*** | 5.314 | 5.287*** | 5.295*** | 0.667 | 0.695 | 1066 | 436 |
| Foreign Sales *(Internationalization)* | 0.365*** | 0.451 | 0.376*** | 0.446 | 0.263 | 0.267 | 693 | 275 |
| Listing Years *(Listing Years)* | 24.061*** | 20.387*** | 14*** | 12*** | 20.498 | 20.342 | 1082 | 444 |
| European Listing *(EXL)* (1) | 0.020*** | 0.020** | -- | -- | 0.141 | 0.139 | 1082 | 203 |
| Leverage *(Lev)* | 0.241 | 0.245*** | 0.219 | 0.213*** | 0.190 | 0.183 | 980 | 409 |
| Growth *(Growth)* | 0.065*** | 0.107*** | 0.010*** | 0.058** | 0.368 | 0.274 | 1052 | 407 |
| Turnover *(Turn)* | 1.342 | 1.291* | 1.292 | 1.233 | 0.733 | 0.740 | 1037 | 406 |

The variables are defined as follows:

*Concentration* is measured as the aggregate amount of stock owned by the three biggest shareholders. *Bank* is defined as the cumulated amount of stock owned by German banks. *Foreign Investment* comprises the percentage of stock held by non-German investors. *Insider Ownership* aggregates all block holdings owned by investors with inside information. *Net Income* is defined as earnings before extraordinary items deflated by average total assets. *Change in Net Income $_t$* is Net Income in period t minus Net Income in period t-1. *Accruals* are defined as Net Income minus Cashflow, whereby Cashflow is Cashflow from operating activities deflated by average total assets. Change in Accruals$_t$ is calculated as Accruals in period t less Accruals in period t-1. *Change in Cashflows* is Cashflows in period t minus Cash Flows in period t-1. *Return is annual* buy-and-hold stock return ending 4 months after fiscal year end. ROA denotes EBIT devided by total assets at fiscal year end. *Size* is defined as the natural logarithm of total assets at fiscal year end. *Foreign Sales* is the fraction of sales achieved outside the home market. *European Listing* is defined as an indicator variable which equals 1 if the firm is listed on a European Stock Exchange in year t and zero otherwise. *Leverage* is defined as total debt divided by average total assets. *Growth* is the relative difference of sales in periode t and period t-1. *Turnover* is sales divided by average total assets. The significance of sample differences between voluntary and mandatory adopters is assesed by Chi-squared tests for nominal variables and by t-tests (Wilcoxon tests) for the means (medians) of non-nominal variables. *** / ** / * indicates a two-tailed level of significance of 99% / 95% / 90%. The variable EXL labeled by (1) only covers the period from 1998 to 2006 due to data limitations.

## Table 3a
## The Impact of Ownership Structures on Voluntary IFRS Adoption

$$\text{Prob}(IFRS = 1) = \Phi z\,(\alpha_0 + \alpha_1 \cdot Conc + \alpha_4 \cdot Bank + \alpha_5 \cdot FI + \alpha_6 \cdot MO + \beta_n \cdot CV_n)$$

**Sample Period: 1998-2004**

| **Model** | **Expected Sign** | **(1)** | **(2)** | **(3)** | **(4)** | **(5)** |
|---|---|---|---|---|---|---|
| N (*firm-years*) | | 1303 | 1303 | 1303 | 1303 | 1303 |
| Constant | ? | -2.349*** | -3.259*** | -2.959*** | -3.343*** | -2.290*** |
| | | (0.856) | (0.795) | (0.799) | (0.771) | (0.868) |
| Conc | - | -1.001*** | | | | -0.840** |
| | | (0.294) | | | | (0.331) |
| Bank | - | | -1.366** | | | -1.743** |
| | | | (0.673) | | | (0.743) |
| FI | + | | | -0.617** | | -0.476 |
| | | | | (0.290) | | (0.335) |
| IO | ? | | | | -0.0723 | -0.155 |
| | | | | | (0.276) | (0.303) |
| Size | + | 0.441*** | 0.450*** | 0.415*** | 0.434*** | 0.415*** |
| | | (0.131) | (0.131) | (0.131) | (0.134) | (0.135) |
| Internationalization | + | 0.488 | 0.483 | 0.581* | 0.505* | 0.506* |
| | | (0.302) | (0.300) | (0.304) | (0.300) | (0.305) |
| Listing Years | - | -0.0121*** | -0.0123*** | -0.0121*** | -0.0134*** | -0.0106** |
| | | (0.00450) | (0.00429) | (0.00443) | (0.00427) | (0.00457) |
| EXL | + | 0.378 | 0.580* | 0.554* | 0.581* | 0.410 |
| | | (0.308) | (0.315) | (0.309) | (0.313) | (0.316) |
| Growth | + | 0.410*** | 0.440*** | 0.437*** | 0.451*** | 0.410*** |
| | | (0.138) | (0.136) | (0.134) | (0.138) | (0.138) |
| Lev | - | -0.930** | -0.762* | -0.838** | -0.751* | -0.928** |
| | | (0.415) | (0.418) | (0.425) | (0.425) | (0.428) |
| Industry Fixed Effects | | included | included | included | included | included |
| Year Fixed Effects | | included | included | included | included | included |
| Pseudo $R^2$ | | 0.329 | 0.314 | 0.319 | 0.311 | 0.337 |

The variables are defined as follows:
*IFRS* is an indicator variable which equals 1 if a firm applies IFRS and 0 if it applies HGB. *Conc* is the aggregate amount of stock owned by the three biggest shareholders. *Bank* is defined as the cumulated amount of stock owned by German banks. *FI* comprises the percentage of stock held by non-German investors. *IO* aggregates all block holdings owned by investors with inside information. *CV* denotes the following included control variables. *Size* is defined as natural logarithm of total assets at fiscal year end. *Internationalization* is the fraction of sales achieved outside the home market. *Lisiting years* is the difference between year t and the IPO year. *EXL* is defined as an indicator variable which equals 1 if the firm is listed on a European Stock Exchange in year t and zero otherwise. *Growth* is the relative difference of sales in period t and period t-1. *Lev* is total debt divided by average total assets. Additionally we control for Industry and Year Fixed Effects. Industry Fixed Effects are calculated on the basis of ICB-industry codes. Numbers in parantheses denote clustered, White (1980) heteroskedasticity-robust standard errors. *** / ** / * indicates a two-tailed significance level of 99% / 95% / 90%.

## Table 3b
## The Impact of Ownership Structures on Timing of Voluntary IFRS Adoption

$$\text{Prob}(EARLY = 1) = \Phi z\,(\alpha_0 + \alpha_1 \cdot Conc + \alpha_4 \cdot Bank + \alpha_5 \cdot FI + \alpha_6 \cdot MO + \beta_n \cdot CV_n)$$

**Sample Period: 1998-2004**

| **Model** | **Expected Sign** | **(1)** | **(2)** | **(3)** | **(4)** | **(5)** |
|---|---|---|---|---|---|---|
| N (*firm-years*) | | 1303 | 1303 | 1303 | 1303 | 1303 |
| Constant | ? | -1.827*<br>(0.974) | -2.855***<br>(0.909) | -2.427***<br>(0.912) | -2.618***<br>(0.913) | -1.686*<br>(0.967) |
| Conc | - | -1.069***<br>(0.318) | | | | -0.792**<br>(0.341) |
| Bank | - | | -1.536<br>(0.971) | | | -1.983*<br>(1.046) |
| FI | + | | | -0.831**<br>(0.328) | | -0.752**<br>(0.364) |
| IO | ? | | | | -0.232<br>(0.301) | -0.367<br>(0.318) |
| Size | + | 0.496***<br>(0.152) | 0.517***<br>(0.150) | 0.466***<br>(0.151) | 0.484***<br>(0.150) | 0.452***<br>(0.152) |
| Internationalization | + | 0.620*<br>(0.325) | 0.615*<br>(0.324) | 0.746**<br>(0.328) | 0.636**<br>(0.323) | 0.669**<br>(0.327) |
| Listing Years | - | -0.0107**<br>(0.00516) | -0.0111**<br>(0.00493) | -0.0109**<br>(0.00512) | -0.0127**<br>(0.00498) | -0.00934*<br>(0.00533) |
| EXL | + | 0.511<br>(0.372) | 0.715*<br>(0.366) | 0.685*<br>(0.369) | 0.716*<br>(0.367) | 0.588<br>(0.380) |
| Growth | + | 0.389***<br>(0.145) | 0.423***<br>(0.141) | 0.416***<br>(0.139) | 0.441***<br>(0.144) | 0.398***<br>(0.144) |
| Lev | - | -1.276***<br>(0.454) | -1.086**<br>(0.450) | -1.189***<br>(0.460) | -1.062**<br>(0.454) | -1.242***<br>(0.464) |
| Industry Fixed Effects | | included | included | included | included | included |
| Year Fixed Effects | | included | included | included | included | included |
| Pseudo $R^2$ | | 0.275 | 0.257 | 0.268 | 0.254 | 0.290 |

The variables are defined as follows:
*Early* is an indicator variable which equals 1 if a firm adopts *IFRS* no later than 2001 and zero otherwise. *Conc* is the aggregate amount of stock owned by the three biggest shareholders. *Bank* is defined as the cumulated amount of stock owned by German banks. *FI* comprises the percentage of stock held by non-German investors. *IO* aggregates all block holdings owned by investors with inside information. CV denotes the following included control variables. *Size* is defined as natural logarithm of total assets at fiscal year end. *Internationalization* is the fraction of sales achieved outside the home market. *Lisiting years* is the difference between year t and the IPO year. *EXL* is defined as an indicator variable which equals 1 if the firm is listed on a European Stock Exchange in year t and zero otherwise. *Growth* is the relative difference of sales in period t and period t-1. *Lev* is total debt divided by average total assets. Additionally we control for Industry and Year Fixed Effects. Industry Fixed Effects are calculated on the basis of ICB-industry codes. Numbers in parantheses denote clustered, White (1980) heteroskedasticity-robust standard errors. *** / ** / * indicates a two-tailed significance level of 99% / 95% / 90%.

## Table 4a

## Earnings Smoothing by Voluntary and Mandatory Adopters

### Panel A: Earnings Smoothing by Voluntary Adopters — Sample Period: 1998-2008

| Measure | Prediction | Observations | | Measure | | Difference | | Significance | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Pre | Post | Pre | Post | Absolute | Relative | F-Test | Fisher's z | Simulation |
| (1) Variability of ΔNI | Post > Pre | 297 | 1676 | 0.0046 | 0.0168 | 0.0122 | 265% | *** | -- | *** |
| (2) Variability of ΔNI* | Post > Pre | 189 | 958 | 0.0023 | 0.0057 | 0.0034 | 148% | *** | -- | ** |
| (3) Variability of ΔNI over ΔCF | Post > Pre | 270 | 1610 | 0.3389 | 1.1314 | 0.7925 | 234% | -- | -- | *** |
| (4) Variability of ΔNI* over ΔCF* | Post > Pre | 182 | 942 | 0.4987 | 1.2135 | 0.7148 | 143% | -- | -- | * |
| (5) Correlation between ACC and CF | Post > Pre | 295 | 1711 | -0.7200 | -0.4127 | 0.3073 | 43% | -- | *** | -- |
| (6) Correlation between ACC* and CF* | Post > Pre | 194 | 969 | -0.7688 | -0.4350 | 0.3338 | 43% | -- | *** | -- |

### Panel B: Earnings Smoothing by Mandatory Adopters

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| (1) Variability of ΔNI | Post > Pre | 1048 | 387 | 0.0112 | 0.0093 | -0.0019 | -17% | ** | -- | No |
| (2) Variability of ΔNI* | Post > Pre | 515 | 218 | 0.0042 | 0.004 | -0.0002 | -5% | No | -- | No |
| (3) Variability of ΔNI over ΔCF | Post > Pre | 821 | 375 | 1.0332 | 0.7674 | -0.2658 | -26% | -- | -- | No |
| (4) Variability of ΔNI* over ΔCF* | Post > Pre | 476 | 214 | 1.1309 | 1.1402 | 0.0093 | 1% | -- | -- | No |
| (5) Correlation between ACC and CF | Post > Pre | 919 | 402 | -0.4999 | -0.4930 | 0.0069 | 1% | -- | No | -- |
| (6) Correlation between ACC* and CF* | Post > Pre | 517 | 227 | -0.5721 | -0.5980 | -0.0259 | -5% | -- | No | -- |

Note: *Variability of ΔNI* is defined as the variance of the change in Net Income from period t-1 to period t. *Variability of ΔNI** is defined as the variance of the residuals from the regression of absolute change in net income on control variables reflecting incentives for IFRS adoption. *Variability of ΔNI over ΔCF* is defined as the variance of the change in Net Income from period t-1 to period t divided by the variance of the change in Cash Flow from period t-1 to period t. *Variability of ΔNI* over ΔCF** is calculated as the variance of the residuals resulting from the regression of absolute change in net income on control variables divided by the variance of the residuals from the regression of absolute change in cashflows on control variables. *Correlation between ACC and CF* is defined as the Spearman Correlation coefficient between Accruals and Cash Flows. *Correlation between ACC* and CF** is defined as the Spearman correlation coefficient between the residuals from the regression of accruals on control variables and the residuals from the regression equation of cash flows on control variables. All measures for *Net Income (NI)* and *Cashflows (CF)* are scaled by average total assets. *Pre* comprises firm-year observations with consolidated accounts released under HGB. Post comprises firm-year observation with IFRS consolidated accounts. Significance in the case of simulation is tested by t-tests. *** / ** / * indicates a two-tailed level of significance of 99% / 95% / 90%.

## Table 4b

## Earnings Smoothing by Voluntary and Mandatory Adopters

### Panel A: Earnings Smoothing by Voluntary and Mandatory Adopters und IFRS — Sample Period: 2005-2008

| Measure | Prediction | Observations | | Measure | | Difference | | Significance | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Vol | Mand | Vol | Mand | Absolute | Relative | F-Test | Fisher's z | Simulation |
| (1) Variability of ΔNI | Vol > Mand | 752 | 398 | 0.0110 | 0.0092 | -0.00184 | -17% | * | -- | No |
| (2) Variability of ΔNI* | Vol > Mand | 451 | 225 | 0.0036 | 0.0040 | 0.00044 | 12% | No | -- | No |
| (3) Variability of ΔNI over ΔCF | Vol > Mand | 742 | 386 | 1.0810 | 0.7523 | -0.3287 | -30% | -- | -- | ** |
| (4) Variability of ΔNI* over ΔCF* | Vol > Mand | 449 | 221 | 1.1135 | 1.1702 | 0.0567 | 5% | -- | -- | No |
| (5) Correlation between ACC and CF | Vol > Mand | 759 | 414 | -0.4598 | -0.497 | -0.0372 | 8% | -- | No | -- |
| (6) Correlation between ACC* and CF* | Vol > Mand | 453 | 234 | -0.5335 | -0.6139 | -0.0804 | 15% | -- | No | -- |

### Panel B: Earnings Smoothing by Voluntary Adopters (Assumed Switch in year 2005) — Sample Period: 1998-2008

| Measure | Prediction | Observations | | Measure | | Difference | | Significance | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Pre | Post | Pre | Post | Absolute | Relative | F-Test | Fisher's z | Simulation |
| (1) Variability of ΔNI | Post > Pre | 1221 | 752 | 0.0174 | 0.0110 | -0.0064 | -37% | *** | -- | *** |
| (2) Variability of ΔNI* | Post > Pre | 696 | 451 | 0.0060 | 0.0039 | -0.0021 | -35% | *** | -- | *** |
| (3) Variability of ΔNI over ΔCF | Post > Pre | 1138 | 742 | 1.0091 | 1.0810 | 0.0719 | 7% | -- | -- | No |
| (4) Variability of ΔNI* over ΔCF* | Post > Pre | 675 | 449 | 1.0554 | 1.1867 | 0.1313 | 12% | -- | -- | No |
| (5) Correlation between ACC and CF | Post > Pre | 1247 | 759 | -0.4572 | -0.4980 | -0.0408 | 9% | -- | No | -- |
| (6) Correlation between ACC* and CF* | Post > Pre | 710 | 453 | -0.4939 | -0.4300 | 0.0639 | -13% | -- | No | -- |

Note: *Variability of ΔNI* is defined as the variance of the change in Net Income from period t-1 to period t. *Variability of ΔNI** is defined as the variance of the residuals from the regression of absolute change in net income on control variables reflecting incentives for IFRS adoption. *Variability of ΔNI over ΔCF* is defined as the variance of the change in Net Income from period t-1 to period t divided by the variance of the change in Cash Flow from period t-1 to period t. *Variability of ΔNI* over ΔCF** is calculated as the variance of the residuals resulting from the regression of absolute change in net income on control variables divided by the variance of the residuals from the regression of absolute change in cashflows on control variables. *Correlation between ACC and CF* is defined as the Spearman Correlation coefficient between Accruals and Cash Flows. *Correlation between ACC* and CF** is defined as the Spearman correlation coefficient between the residuals from the regression of accruals on control variables and the residuals from the regression equation of cash flows on control variables. All measures for *Net Income (NI)* and *Cashflows (CF)* are scaled by average total assets. *Pre* comprises firm-year observations of voluntary adopters before the year 2005. *Post* comprises firm-year observations of voluntary adopters 2005 onwards. Significance in the case of simulation is tested by t-tests. *** / ** / * indicates a two-tailed level of significance of 99% / 95% / 90%.

## Table 5
## Earnings Management by Voluntary and Mandatory Adopters

### Panel A: Earnings Management by Voluntary Adopters — Sample Period: 1998-2008

| Variable | Pred. | Coef. | Std. Err. |
|---|---|---|---|
| Constant | ? | 0.096*** | (0.010) |
| IFRS | ? | 0.003 | (0.004) |
| Size | - | -0.007*** | (0.002) |
| Lev | ? | -0.020** | (0.009) |
| Age | - | -0.000 | (0.0004) |
| Growth | - | -0.007** | (0.003) |
| ROA | - | -1.023*** | (0.201) |
| Conc | ? | 0.004 | (0.006) |
| adj. $R^2$ | 0.149 | | |
| N | 1311 | | |

### Panel B: Earnings Management by Voluntary Adopters considering time trend

| Variable | Pred. | Coef. | Std. Err. |
|---|---|---|---|
| Constant | ? | 0.096*** | (0.010) |
| IFRS | ? | 0.005 | (0.004) |
| d*IFRS | ? | -0.005* | (0.003) |
| Size | - | -0.007*** | (0.002) |
| Lev | ? | -0.020** | (0.009) |
| Age | - | -0.000 | (0.00003) |
| Growth | - | -0.007** | (0.003) |
| ROA | - | -0.992*** | (0.203) |
| Conc | ? | 0.002 | (0.006) |
| adj. $R^2$ | 0.15 | | |
| N | 1311 | | |

### Panel C: Earnings Management by Manadatory Adopters

| Variable | Pred. | Coef. | Std. Err. |
|---|---|---|---|
| Constant | ? | 0.104*** | (0.019) |
| IFRS | ? | -0.008** | (0.003) |
| Size | - | -0.008*** | (0.003) |
| Lev | ? | 0.003 | (0.011) |
| Age | - | -0.0001** | (0.00004) |
| Growth | - | -0.005 | (0.007) |
| ROA | - | -0.823** | (0.329) |
| Conc | ? | 0.001 | (0.007) |
| adj. $R^2$ | 0.08 | | |
| N | 857 | | |

Note: The model to measure the impact of IFRS on absolute discretionary accruals is defined as follows:

$$ABS\_ACC_{it} = \beta_0 + \beta_1 \cdot IFRS_{it} + CV + \varepsilon_{it}$$

The variables are defined as follows:
*ABS_ACC* are absolute discretionary accruals measured by the approach by Ball and Shivakumar (2005). *IFRS* is a dummy variable which equals one if the firm-year observation belongs to the post adoption period and zero otherwise. CV denotes the following included control variables. *Size,* defined as the natural logarithm of total assets at fiscal year´s end at t; *Lev* is total debt divided by average total assets at t; *age* , which is firm age in years; *Growth* , as the relative difference of sales in periode t and period t-1; *ROA* , which is return on assets calculated as earnings before interest and tax (EBIT) divided by total assets. *Conc* , defined as the aggregate amount of shares owned by the three biggest shareholders. Standard errors are clustered, White (1980) heteroskedasticity-robust standard errors. *** / ** / * indicates a two-tailed significance level of 99% / 95% / 90%.

## Table 6
## Timely Loss Recognition by Voluntary and Mandatory Adopters

### Panel A: Timely Loss Recognition by Voluntary Adopters — Sample Period: 1998-2008

| | Model 1 | | | | Model 2 | | |
|---|---|---|---|---|---|---|---|
| | Pred. | Coef. | Std. Err. | | Pred. | Coef. | Std. Err. |
| $ß_3$ | ? | 0.035** | 0.154 | $ß_3$ | - | -0.737*** | 0.0846 |
| $ß_5$ | + | 0.071 | 0.051 | $ß_5$ | + | 0.046 | 0.144 |
| $ß_6$ | + | 0.077 | 0.054 | $ß_6$ | + | 0.540*** | 0.173 |
| $ß_5+ß_6$ | + | 0.148*** | 0.024 | $ß_5+ß_6$ | + | 0.587*** | 0.148 |
| $ß_3+ß_5+ß_6$ | + | 0.183*** | 0.030 | | | | |
| adj. $R^2$ | 0.384 | | | adj. $R^2$ | 0.344 | | |
| N | 1622 | | | N | 1734 | | |

### Panel B: Timely Loss Recognition by Mandatory Adopters

| | Model 1 | | | | Model 2 | | |
|---|---|---|---|---|---|---|---|
| | Pred. | Coef. | Std. Err. | | Pred. | Coef. | Std. Err. |
| $ß_3$ | ? | 0.002 | 0.01 | $ß_3$ | - | -0.564*** | 0.077 |
| $ß_5$ | + | 0.142*** | 0.021 | $ß_5$ | + | -0.043 | 0.131 |
| $ß_6$ | + | -0.046 | 0.049 | $ß_6$ | + | 0.456** | 0.185 |
| $ß_5+ß_6$ | + | 0.097** | 0.047 | $ß_5+ß_6$ | + | 0.413* | 0.180 |
| $ß_3+ß5+ß_6$ | + | 0.099** | 0.049 | | | | |
| adj. $R^2$ | 0.374 | | | adj. $R^2$ | 0.323 | | |
| N | 1130 | | | N | 1160 | | |

Note: The models to measure timely loss recognition are defined as follows:

**Model (1):** $NI_{it} = \beta_0 + \beta_1 \cdot IFRS_{it} + \beta_2 \cdot d^1_{it} + \beta_3 \cdot R_{it} + \beta_4 \cdot IFRS \cdot R_{it} + \beta_5 \cdot d^1_{it} \cdot R_{it} + \beta_6 \cdot IFRS_{it} \cdot d^1_{it} \cdot R_{it} + CV + \varepsilon_{it}$

**Model (2):** $ACC_{it} = \beta_0 + \beta_1 \cdot IFRS_{it} + \beta_2 \cdot d^2_{it} + \beta_3 \cdot CF_{it} + \beta_4 \cdot IFRS_{it} \cdot CF_{it} + \beta_5 \cdot d^2_{it} \cdot CF_{it} + \beta_6 \cdot IFRS_{it} d^2_{it} \cdot CF_{it} + CV + \varepsilon_{it}$

The variables are defined as follows:

*R* is the annual buy-and-hold stock return ending 4 months after fiscal year end. *P** is the industry adjusted price four months after fiscal year end. *IFRS* is an indicator variable which equals one if the firm-year observation belongs to the post adoption period and zero otherwise. *NIPS* is net income per share. P is the Price for months after fiscal year end. *BVPS* is the book value of equity per share. *NI* is defined as earnings before extraordinary items deflated by average total assets. CV denotes the following included control variables: *Size*, defined as the natural logarithm of total assets at fiscal year end; *Leverage*, defined as total debt divided by average total assets; *Listing years*, which is the difference between year t and the IPO year; *Growth*, which is the relative difference of sales in periode t and period t-1; *MTB* defined as the market value of equity at fiscal year end divided by book value of equity at fiscal year end. *Turnover*, which is sales divided by average total assets. Additionally, we control for Industry and Year Fixed Effects. Industry Fixed Effects are based on ICB-industry codes. Standard errors are clustered, White (1980) heteroskedasticity-robust standard errors. *** / ** / * indicates a two-tailed significance level of 99% / 95% / 90%.

## Table 7
## Value Relevance of Accounting Numbers by Voluntary and Mandatory Adopters

### Panel A: Value Relevance of Accounting Numbers by Voluntary Adopters — Sample Period: 1998-2008

| | Model 1 | | | | Model 2 | | | | Model 3 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Pred. | Coef. | Std.Err. | | Pred. | Coef. | Std.Err. | | Pred. | Coef. | Std.Err. |
| $\alpha_2$ | + | 0.242*** | 0.0302 | $\alpha_2$ | + | 1.0120*** | 0.128 | $\alpha_2$ | + | 0.723* | 0.393 |
| $\alpha_3$ | ? | -0.124 | 0.123 | $\alpha_3$ | + | 0.639 | 0.426 | $\alpha_3$ | + | 1.376 | 0.446 |
| | | | | $\alpha_4$ | ? | 0.175 | 0 .134 | $\alpha_4$ | ? | -0.261 | 0.411 |
| | | | | $\alpha_5$ | ? | 1.157* | 0.682 | $\alpha_5$ | ? | -0.548 | 0.469 |
| $\alpha_{2+}\alpha_3$ | + | 0.118 | 0.084 | $\alpha_{2+}\alpha_4$ | + | 1.187*** | 0.18 | $\alpha_{2+}\alpha_4$ | + | 0.463*** | 0.153 |
| | | | | $\alpha_{3+}\alpha_5$ | + | 1.796*** | 0.651 | $\alpha_{3+}\alpha_5$ | + | 0.828*** | 0.163 |
| adj. $R^2$ | 0.395 | | | adj. $R^2$ | 0.523 | | | adj. $R^2$ | 0.435 | | |
| N | 1616 | | | N | 1688 | | | N | 1572 | | |

### Panel B: Value Relevance of Accounting Numbers by Mandatory Adopters — Sample Period: 1998-2008

| | Model 1 | | | | Model 2 | | | | Model 3 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Pred. | Coef. | Std.Err. | | Pred. | Coef. | Std.Err. | | Pred. | Coef. | Std.Err. |
| $\alpha_2$ | + | 0.157*** | 0.021 | $\alpha_2$ | + | 1.720*** | 0.142 | $\alpha_2$ | + | 1.009*** | 0.264 |
| $\alpha_3$ | ? | 0.131 | 0.138 | $\alpha_3$ | + | -0.218 | 0.440 | $\alpha_3$ | + | 0.370 | 0.235 |
| | | | | $\alpha_4$ | ? | -0.093 | 0.188 | $\alpha_4$ | ? | -0.472 | 0.318 |
| | | | | $\alpha_5$ | ? | 1.420 | 1.261 | $\alpha_5$ | ? | -0.203 | 0.380 |
| $\alpha_{2+}\alpha_3$ | + | 0.288** | 0.136 | $\alpha_{2+}\alpha_4$ | + | 1.628*** | 0.196 | $\alpha_{2+}\alpha_4$ | + | 0.537*** | 0.169 |
| | | | | $\alpha_{3+}\alpha_5$ | + | 1.202 | 1.256 | $\alpha_{3+}\alpha_5$ | + | 0.167 | 0.304 |
| adj. $R^2$ | 0.257 | | | adj. $R^2$ | 0.733 | | | adj. $R^2$ | 0.241 | | |
| N | 1132 | | | N | 1120 | | | N | 1147 | | |

Note: The Models to measure the value relevance of accounting numbers are defined as follows:

**Model (1):** $R_{it} = \alpha_0 + \alpha_1 \cdot IFRS_{it} + \alpha_2 \cdot (NIPS_{it}/P_{i,t-1}) + \alpha_3 \cdot IFRS_{it} \cdot (NIPS_{it}/P_{i,t-1}) + CV + \varepsilon_{it}$

**Model (2):** $P^*_{it} = \alpha_0 + \alpha_1 \cdot IFRS_{it} + \alpha_2 \cdot BVPS_{it} + \alpha_3 \cdot NIPS_{it} + \alpha_4 \cdot IFRS_{it} \cdot BVPS_{it} + \alpha_5 \cdot IFRS_{it} \cdot NIPS_{it} + CV + \varepsilon_{it}$

**Model (3):** $R_{it} = \alpha_0 + \alpha_1 \cdot IFRS_{it} + \alpha_2 \cdot NI_{it} + \alpha_3 \cdot \Delta NI_{it} + \alpha_4 \cdot IFRS_{it} \cdot NI_{it} + \alpha_5 \cdot IFRS_{it} \cdot \Delta NI_{it} + CV + \varepsilon_{it}$

The variables are defined as follows:

*R* is the annual buy-and-hold stock return ending 4 months after fiscal year end. *P** is the industry adjusted price four months after fiscal year end. *IFRS* is an indicator variable which equals one if the firm-year observation belongs to the post adoption period and zero otherwise. *NIPS* is net income per share. *P* is the Price for months after fiscal year end. *BVPS* is the book value of equity per share. *NI* is defined as earnings before extraordinary items deflated by average total assets. $\Delta NI$ is Net Income in period t minus Net Income in period t-1. *CV* denotes the following included control variables: *Size* , defined as the natural logarithm of total assets at fiscal year end; *Leverage* , defined as total debt divided by average total assets; *Listing years* , which is the difference between year t and the IPO year; *Growth* , which is the relative difference of sales in periode t and period t-1; *MTB* defined as the market value of equity at fiscal year end divided by book value of equity at fiscal year end. *Turnover* , which is sales divided by average total assets. Additionally, we control for Industry and Year Fixed Effects. Industry Fixed Effects are based on ICB-industry codes. Standard errors are clustered, White (1980) heteroskedasticity-robust standard errors. *** / ** / * indicates a two-tailed significance level of 99% / 95% / 90%.