

**Applying IFRS in Germany –  
Determinants and Consequences**

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## **Applying IFRS in Germany – Determinants and Consequences**

**Abstract:** We address three research questions motivated by the recent ascent of International Financial Reporting Standards (IFRS) in Europe. First, analyzing the determinants of voluntary IFRS adoption by publicly traded German firms during the period 1998-2004, we find that size, international exposure, dispersion of ownership, and recent IPOs are important drivers. Second, using the results from this determinant model to construct propensity score-matched samples of IFRS and German-GAAP (HGB) firms, we document significant differences in terms of earnings quality: IFRS firms have more persistent, less predictable and more conditionally conservative earnings. Third, analyzing information asymmetry differences between IFRS and HGB firms, we show that IFRS adopters experience a decline in bid-ask spread of 70 base points and an average of 17 more days with price changes per year. On the other hand, IFRS adopter's stock prices seem to be more volatile. In the light of some important limitations of our study, we discuss IFRS-related research opportunities in post-2005 Europe.

**Keywords:** IFRS, earnings quality, earnings attributes, information asymmetry, standard setting, IAS Regulation, Europe, propensity-score matching, voluntary adoption

## 1 Introduction

The European Commission's 'IAS Regulation' (EC 2002) made International Financial Reporting Standards (IFRS) mandatory for the consolidated financial statements of firms publicly traded in the European Economic Area from 2005 onwards.<sup>1</sup> It aims at contributing to the efficient and cost-effective functioning of the capital market by ensuring a high level of transparency and comparability of financial reporting. In several countries, however, firms have already been applying IFRS voluntarily before 2005, frequently in compliance with stock exchange regulations. In Germany, for example, several 'global players' adopted internationally accepted accounting systems, i.e. IFRS and U.S. Generally Accepted Accounting Principles (U.S. GAAP), as early as 1993.<sup>2</sup> Since these firms were required to continue reporting under national GAAP, costly 'parallel' and 'dual' accounting resulted.<sup>3</sup> In response to the ensuing 'demand pull' for international accounting, the 1998 Capital Raising Facilitation Act (*Kapitalaufnahmeerleichterungsgesetz—KapAEG*) allowed publicly traded parent companies to substitute consolidated IFRS or U.S. GAAP accounts for HGB (*Handelsgesetzbuch – German Commercial Code*, the main source of German GAAP) group accounts.<sup>4</sup> Six other European countries (Austria, Belgium, Finland, France, Italy, and Luxemburg) introduced similar legislation.<sup>5</sup> In Germany, IFRS or U.S. GAAP were required of firms listed in the now-defunct

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<sup>1</sup> The European Economic Area includes the European Union member states as well as Norway, Iceland, and Liechtenstein. Since January 1, 1994, most Single Market legislation applies to all of them.

<sup>2</sup> At the time, IFRS were known as "International Accounting Standards" (IAS).

<sup>3</sup> Under 'dual' reporting, firms prepared consolidated accounts that *simultaneously* fulfilled the requirements of German, EU Directives-based GAAP and internationally accepted standards. Under 'parallel' reporting, firms prepared consolidated IFRS/U.S. GAAP statements *in addition* to German-GAAP reports. See Haller (2002, p. 168).

<sup>4</sup> However, contrary to the initial bill dated June 7, 1996, the German legislator eventually shied away from also opening individual financial statements to IFRS and U.S. GAAP.

<sup>5</sup> The application decrees, however, have never been adopted in France and Italy (*Delvaillle/Ebbers/Saccon*, 2005, pp. 147, 158).

growth-stock segment ‘Neuer Markt’, launched in March 1997. The small-cap segment SMAX adopted this requirement in 2001. In 2003, the quality segment ‘Prime Standard’ inherited the IFRS/U.S. GAAP requirement. These developments resulted in many of Germany’s public firms preparing consolidated IFRS accounts before 2005.

Considering the European Commission’s goals in introducing the IAS Regulation, three broad research questions arise: First, does adoption of IFRS rules ensure “a high level of transparency and comparability”? If so, assessing the extent to which ‘high-quality’, comparable financial reporting contributes to “the efficient and cost-effective functioning of the capital market” begets two further questions: Second, how does financial reporting quality influence information asymmetry? And third, how does information asymmetry relate to stock prices, e.g. to the firms’ cost of equity capital?

With respect to the first question, research is required that assesses the ‘quality’ of financial reporting outcomes under IFRS and its determinants. Financial reporting quality is an elusive concept. Since accounting serves different purposes, it seems futile to attempt a comprehensive definition of financial reporting quality. Besides serving as a contracting device, the function of financial reporting is to reduce information asymmetries between market participants. Therefore, most of the academic accounting literature adopts a decision-usefulness perspective to financial reporting quality,<sup>6</sup> which is consis-

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<sup>6</sup> In this paper, we follow prior literature in focusing on the decision-usefulness role of financial reporting. This does not imply, however, that we view its contracting role as less important. See *Watts* (2006) for a recent discussion of this topic. The theoretical concept of economic income is an alternative, neutral benchmark against which to assess the outcomes of a given financial reporting system (e.g., *Beaver*, 1998, p. 3). However, due to its lack of operationality and observability (*Schipper/Vincent*, 2003), it cannot be used in empirical research, but is rather employed as a frame of reference in prescriptive-normative accounting research.

tent with the IASB's and FASB's stated objectives of financial reporting standards.<sup>7</sup> This paper addresses the connection between accounting standards and the quality of accounting outcomes. According to the SEC, there is a strong link between high-quality standards and high-quality accounting outcomes: The standards must be of "high quality—they must result in comparability and transparency, and they must provide for full disclosure. Investors must be able to meaningfully analyze performance across time periods and among companies" (Levitt 1998, p. 81).<sup>8</sup> On the other hand, quality – as well as other financial reporting properties<sup>9</sup> – may not be determined solely by the financial reporting standards followed. Rather, since standards provide discretion, financial reporting quality is also shaped by the *incentives* of those preparing (and auditing) the financial information.<sup>10</sup> Consequently, the relative role of standards versus incentives in determining financial reporting properties, including quality, is one of the most fundamental questions in accounting research.

Second, financial reporting quality, especially the quality and quantity of disclosure (e.g., *Leuz/Verrecchia*, 2000), is expected to be negatively associated with information asymmetry. To the extent that IFRS reporting increases financial reporting quality,

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<sup>7</sup> Refer to the IASB's Framework for the Preparation and Presentation of Financial Statements, par. 12, and the FASB's Concepts Statements No. 1, par. 32-54, and No. 2, par. 30-32. The U.S. Securities and Exchange Commission (SEC) concurs with these views (Levitt, 1998, p. 81).

<sup>8</sup> *Pownall/Schipper* (1998) review earlier research related to the SEC's consideration of IFRS and to these three criteria.

<sup>9</sup> While we view comparability as another important financial reporting property, we do not further address it in this paper. We do, however, discuss in section 4 research opportunities for addressing the comparability dimension of IFRS reporting.

<sup>10</sup> Accordingly, *Ball/Robin/Wu* (2003, p. 236) "view the focus on standards as substantially and misleadingly incomplete, because financial reporting practice under a given set of standards is sensitive to the incentives of the managers and auditors responsible for financial statement preparation." Following this reasoning, installing uniform, high-quality financial reporting standards (*de jure* harmonization) is unlikely to be sufficient for achieving comparable, uniformly high-quality financial reporting outcomes (*de facto* harmonization). *Ewert/Wagenhofer* (2005) show that tighter accounting standards increase earnings quality, but that this effect is potentially outweighed by detrimental effects of earnings management activity.

information asymmetry should decrease under IFRS. This should be reflected in measures of information asymmetry such as bid-ask spread, share turnover, stock return volatility, analyst forecast dispersion, and IPO underpricing. The third question calls for theoretical links between information asymmetry and investors' resource allocation decisions. Such links have been provided by, for example, *Easley/O'Hara* (2004), *O'Hara* (2003), and *Lambert/Leuz/Verrecchia* (2006). Several empirical papers including *Easley/Hvidkjaer/O'Hara* (2002) and *Francis et al.* (2005) show associations between different proxies for information asymmetry and the cost of equity capital.

In this paper we condense and extend prior findings regarding the effect of IFRS on the German market by addressing the first two questions presented above. Despite the popular notion that "high quality standards lower the cost of capital" (*Levitt*, 1998, p. 82),<sup>11</sup> we do not analyze the effects of IFRS adoption, an accounting phenomenon, on the cost of capital, an asset pricing phenomenon, since we believe that this relation is not yet well understood (e.g., *Ewert*, 1999). When linking financial reporting quality to the cost of capital, we view the cost of capital as a second-order effect, following information asymmetry, the first-order effect. Rather, we initially estimate a determinant model of the IFRS adoption decision for German firms which voluntarily adopted IFRS over the period 1998 to 2004. Using the results from this model, we construct a propensity score-matched sample of control firms in order to address the problem of self-selection bias. We then compare selected earnings attributes of these two samples over time in order to test whether the change to IFRS altered the quality of the financial reporting information.

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<sup>11</sup> A survey conducted by *Pellens/Tomaszewski* (1999, p. 203) documents that, at the time, 45% of German IFRS or U.S. GAAP adopters expected lower costs of capital. *Daske* (2006) reports mixed empirical evidence on this issue.

Finally, we address the impact of IFRS adoption on the equity market by investigating measures of information asymmetry for both samples.

This paper continues as follows: In the second section, we discuss the theoretical background and selected prior research findings related to the three research questions we address. In the third section, we provide evidence for the German market in the period 1998-2004 on the determinants of IFRS adoption, on the differences in earnings quality between IFRS and German GAAP (HGB), and on the information asymmetry effects of IFRS versus German GAAP reporting. The fourth section concludes and indicates future IFRS-related research opportunities in post-2005 Europe.

## **2 Extant research on the determinants and consequences of IFRS adoption**

### *2.1 Determinants of IFRS adoption*

Our first analysis elucidates the determinants of voluntary IFRS adoption. In order to understand the market forces behind the internationalization of financial reporting, several previous papers have analyzed why firms voluntarily choose to apply international financial reporting standards instead of, or in addition to, their local GAAP. The general hypothesis is that firms adopt non-local GAAP because it is beneficial for them to do so. Examining the factors associated with 211 firms listed on the London Stock Exchange in 1993 voluntarily applying IFRS or U.S. GAAP, *Ashbaugh* (2001) identifies the number of foreign listings and the higher degree of disclosure and information standardization relative to local GAAP as the main drivers. With regard to the choice between IFRS and U.S. GAAP, her analysis shows that firms are more likely to adopt IFRS when participating in seasoned equity offerings and when IFRS are less costly to implement because they require fewer accounting policy changes from local GAAP relative to U.S.

GAAP. The adoption of U.S. GAAP is mainly driven by the SEC filing requirements faced by firms listed on a U.S. stock exchange. In a more recent study, *Cuijpers/Buijink* (2005) address a similar research question using 133 non-financial IFRS or U.S. GAAP adopters listed and domiciled in the EU. They focus on the year 1999 because more recent accounting choices may be influenced by the anticipation of mandatory IFRS reporting from 2005 onwards. Similar to *Ashbaugh* (2001), the authors find that foreign listing (in the U.S. and/or on the EASDAQ exchange in Brussels) is an important driver. Furthermore, the geographical dispersion of a firm's operations is positively associated with non-local-GAAP adoption, while financial reporting quality under local GAAP negatively affects that choice. Unsurprisingly, where national regulation allows non-local GAAP as an alternative to local GAAP, firms are more likely to adopt them due to lower costs.<sup>12</sup>

## 2.2 Earnings quality

In order to assess whether different accounting standards lead to differences in financial reporting quality, a definition of financial reporting quality is required. In line with prior literature, we focus on the narrower concept of earnings quality, since earnings is a summary measure on which many users of financial reporting information rely. *Schipper/Vincent* (2003) distinguish, *inter alia*, between two groups of earnings quality constructs derived from (1) the time-series properties of earnings and (2) the role of accruals in transforming cash flows into earnings, respectively.<sup>13</sup> First, the time series of

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<sup>12</sup> Other studies on the determinants of IFRS adoption include *Dumontier/Raffournier* (1998), *El-Gazzar/Finn/Jacob* (1999), *Murphy* (1999), and *Renders/Gaeremynck* (2005).

<sup>13</sup> Much of the following is based on *Schipper/Vincent* (2003, pp. 99-103). *Francis et al.* (2004) define and apply most of *Schipper/Vincent's* (2003) concepts in the context of an empirical study, providing an overview of the related literature.

earnings is reflected in persistence, predictability, and variability. Perfectly persistent ('sustainable') earnings ( $e$ ) follow a random walk ( $e_t = e_{t-1} + \varepsilon$ ), i.e. earnings innovations ('shocks') tend to remain in the earnings series permanently. Therefore, present realizations of earnings are assumed to have large implications for future earnings realizations. Predictability implies that past financial reporting outcomes improve users' ability to forecast items of interest.<sup>14</sup> In the context of earnings, past earnings help predict future earnings. In some contexts, accounting conservatism has been argued to be a quality attribute of earnings, which serves important economic functions (e.g., *Watts*, 2003). *Ball/Kothari/Robin* (2000, p. 2) argue that "timeliness and conservatism together capture much of the commonly used concept of financial statement transparency". Consequently, empirical measures of conservatism have been used to operationalize financial reporting quality (e.g. *Ball/Robin/Wu*, 2003).<sup>15</sup>

Second, earnings quality constructs are also derived from the accruals and cash components of earnings.<sup>16</sup> Measures such as the ratio of cash from operations to earnings are based on the view that the accruals process itself decreases earnings quality by reducing the closeness-to-cash of the earnings number. Other measures try to separate a specific, 'discretionary' or 'unexpected' subset of accruals from 'normal' accruals, where the former is viewed as detrimental to earnings quality. This group of earnings quality measures includes the change in total accruals, which assumes that the 'normal' portion is constant over time, and discretionary accruals estimated using the *Jones* (1991) model and its extensions, which assume that the discretionary portion is a linear function of accounting

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<sup>14</sup> *Bricker et al.*'s (1995) content analysis of 479 sell-side analyst reports suggests that analysts assess earnings quality in terms of near-term predictability, focusing on some measure of 'core' earnings.

<sup>15</sup> However, *Holthausen* (2003, p. 279) questions whether conservatism, e.g. the degree observed in the U.S., should be equated with a level of quality desirable for other countries.

<sup>16</sup> See *Schipper/Vincent* (2003, pp. 101-103).

fundamentals such as revenues. A related metric developed by *Dechow/Dichev* (2002) models accruals as a function of past, present and future cash flow from operations, interpreting firm-specific accruals estimation errors as inverse measures of earnings quality.

A third set of quality measures adopts a standard-setting perspective: Since standard setters are interested in empirical research to underpin their decisions, researchers have attempted to operationalize earnings quality in terms of relevance and reliability (*Schipper/Vincent*, 2003, pp. 103-104). Value relevance research is a case in point, where the overall explanatory power and coefficient estimates from regressions of returns/stock prices on earnings and other accounting measures are interpreted as evidence of the combined relevance/reliability of the financial reporting information (e.g. *Barth/Beaver/Landsman*, 2001). However, the standard-setting implications of value relevance research are heavily debated (e.g. *Holthausen/Watts*, 2001). Empirically found value relevance is difficult to interpret because the measure does not support conclusions about causality. Also, value relevance relies on market data, which makes this metric susceptible to differences in market efficiency.

Given our suggested operationalization of earnings quality: Why would we expect earnings quality to differ between IFRS and HGB firms? Since earnings quality is a function of accounting standards, institutional environment and incentives, we first have to assume that, *ceteris paribus*, accounting standards quality has an impact on earnings quality. Although we believe accounting standards quality to be unobservable (since there is no objective, interpersonal rule to judge the quality of standards with), we propose three different reasons for quality differences between IFRS and German GAAP: (1) the fundamental character of the standards, (2) the objectives of the standards, and (3) the

standard-setting process. First, since the German HGB is more strongly principles-based than IFRS, and since empirical results seem to indicate that principles-based standards produce better earnings quality (e.g. *Webster/Thornton*, 2005), we posit the assumption that HGB standards result in higher earnings quality. Second, although consolidated financial statements under both IFRS and German GAAP are geared exclusively towards decision usefulness (e.g., *Leuz*, 2003, p. 453; § 297 HGB), German-GAAP group accounts are usually derived from individual accounts, which in Germany are the basis for taxation and legal dividend restrictions. Since the prudence principle is dominant in German accounting rules (§ 252 HGB), German GAAP group accounts might in some cases reflect prudent accounting to the extent that the consolidation process did not revoke prudent recognition and measurement policies (e.g., *Sellhorn/Gornik-Tomaszewski*, 2006). This coexistence of multiple purposes in German GAAP can be argued to decrease earnings quality relative to the single-purpose IFRS. Third, German GAAP are established in the public-sector political-legal system, while IFRS are promulgated by a private-sector standard-setting body. It has been argued that procedural properties of the rule-making process influence the unobservable quality of the resulting rules and, thus, earnings quality (e.g., *Pellens/Fülbier/Gassen*, 2006, pp. 24-28). To the extent that the IASB's due process is superior to the German legislative procedure in terms of equal involvement of all stakeholders, neutrality of the standard-setting body, presence of a measurable objective derived from an agreed-upon, consistent conceptual framework, and monitoring and enforcement of the principles of fair standard-setting by an independent authority, IFRS can be expected to be higher-quality than German GAAP.

Prior research already investigated the impact of accounting standards on earnings quality. While some studies on international differences in earnings quality either analyze samples pooled across countries with different standards *and* different institutional environments (e.g., *Ball/Kothari/Robin*, 2000; *Leuz/Nanda/Wysocki*, 2003), others examine the joint effect of a low-quality institutional environment combined with a high-quality set of standards (e.g., *Ball/Robin/Wu*, 2003). Our setting is comparable to *Leuz* (2003) and *Bartov/Goldberg/Kim* (2005) in that we examine the effects of different sets of standards followed by two groups of firms that face very similar institutional environments and, thus, financial reporting incentives. Similarly, *van Tendeloo/Vanstraelen* (2005) and *Goncharov* (2005) recently took advantage of the German setting to show that German IFRS firms do not engage significantly less in earnings management than their HGB counterparts.

### 2.3 Information asymmetry

Theory suggests that higher financial reporting quality reduces the dispersion of information (1) between managers and outside investors and (2) between potential buyers and sellers of shares (e.g., *Leuz/Verrecchia*, 2000).<sup>17</sup> Since IFRS adoption can be viewed as a voluntary commitment to increased disclosure (e.g., *Leuz/Verrecchia*, 2000; *Cuijpers/Buijink*, 2005), we test whether our IFRS and HGB samples differ significantly on selected dimensions of information asymmetry. Theory suggests that information asymmetry is positively associated with the cost of capital (e.g. *Easley/O'Hara*, 2004; *Lambert/Leuz/Verrecchia*, 2006).

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<sup>17</sup> While *Leuz/Verrecchia* (2000, p. 92) actually refer to “the notion of ‘increased levels of disclosure’ to be interpreted as either an increase in the quantity of disclosure or an increase in the quality of disclosure (or both)”, we argue that an increase in earnings quality should have qualitatively the same effect.

Whether or not this relation holds in practice is an empirical question (e.g., *Ewert*, 1999). Consistent with the notion that information asymmetry differences are a first-order effect of differences in financial reporting, *Leuz* (2003) exploits a unique setting that presented itself at the German ‘Neuer Markt’. Comparing information asymmetry measures between two otherwise homogeneous sets of firms reporting under either IFRS or U.S. GAAP, he shows that differences between IFRS and U.S. GAAP firms in terms of bid-ask spread, share turnover and other information asymmetry proxies are statistically insignificant and economically small. Examining the effects of voluntary non-local GAAP adoption by EU firms, *Cuijpers/Buijink* (2005) fail to find significant benefits in terms of the cost of equity capital and stock return volatility. However, they document a positive effect of non-local GAAP adoption on analyst following. Results for analyst forecast dispersion differ between ‘early’ and ‘late’ adopters.

### **3 Evidence on the determinants and consequences of IFRS adoption**

In this section, we provide year-specific evidence for German firms in the period 1998-2004 on the determinants of IFRS adoption, on the differences in earnings quality between IFRS and German GAAP reports, and on the effects of IFRS versus HGB reporting on information asymmetry.

#### *3.1 Sample selection and determinants of IFRS adoption*

In order to assess the extent and impact of IFRS adoption, we use various sources to obtain time-series information on the accounting standards followed by German public firms: First, for the early adopters, we rely on the data provided by *Bonse* (2004). Second, we use data about the ‘Neuer Markt’ presented by *Küting* (2001). Third, we extensively

hand-collect data, especially for the periods 2000 onwards. Finally, where we are unable to otherwise obtain data, we rely on the Worldscope item “Accounting Standards Followed”.

**[Insert Table 1 around here]**

Table 1 shows the distribution of the application of HGB, IFRS and U.S. GAAP over time. We code dual accounting as HGB accounting, because in this case, compliance with IFRS is limited by conflicting HGB requirements. In line with prior research, we document a monotonic incline of IFRS application over time, with rapid growth around the enactment of the KapAEG. The number of U.S. GAAP adopters also increases during the 1990s, but later decreases as the IAS Regulation was discussed and finally adopted. For our further analysis, we focus on the period 1998-2004. In 1998, publicly traded German corporations were allowed to substitute IFRS consolidated financial statements for group accounts prepared under German GAAP for the first time. Previously, firms were forced to incur the costs of dual or parallel reporting, which implies that ‘early’ and ‘late’ (with respect to the year 1998) adopters differ systematically. In addition, IFRS sample sizes in the years prior to 1998 are too small for the annual regressions we conduct. As we focus on voluntary adopters, we do not include the year 2005. Given the sample period 1998-2004, our sample comprises purely voluntary adopters along with firms required to apply IFRS or U.S. GAAP under stock exchange regulations. Since the latter firms could have chosen a market segment not requiring ‘international standards’ at all or could have chosen U.S. GAAP over IFRS, we view them as ‘voluntary’ IFRS adopters nonetheless. We also include firms listed on the now-defunct ‘Neuer Markt’. Excluding them does not materially alter our results.

We start our sample selection procedure with the universe of German public firms covered by Worldscope as well as by Thompson Financial Datastream. The values of all non-truncated variables are winsorized at the bottom and top percentiles. Since we analyze IFRS adoption, we eliminate all U.S. GAAP firms. We also exclude financial institutions because of the fundamental differences in their financial accounting relative to non-financial firms. We further limit our sample to observations for which sufficient data is available to carry out all of our analyses. These cuts substantially reduce our sample size compared to the numbers in Table 1 and bias our sample towards the larger and more ‘visible’ firms on which the international accounting debate concentrates. The resulting sample size and properties are reported in Table 2.

**[Insert Table 2 around here]**

The descriptive statistics in Panel A and B reveal substantial differences between IFRS firms and HGB firms: Not only do fewer IFRS firms operate in the manufacturing sector; they are also larger, have a higher proportion of foreign sales, have more diverse ownership structures, are listed on more stock exchanges, have a higher propensity of being listed on the U.S. capital market, and more frequently went public in 1995 or later.

Since our sample firms self-select into applying IFRS, they can be expected to be systematically different from other firms which do not choose to voluntarily comply with IFRS. To address the resulting selection bias (see also *Leuz, 2003; Leuz/Verrecchia, 2000*), we apply a propensity-score matching procedure, which can be viewed as a similar but alternative approach to the two-stage *Heckman* procedure applied by prior literature.<sup>18</sup>

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<sup>18</sup> The propensity-score matching technique is a well-accepted matching methodology in the natural and social sciences. Refer to *Rosenbaum/Rubin (1983)* for the seminal paper and to *Smith/Todd (2001)* for a discussion of the methodological and conceptual differences between the propensity score matching technique and the two-stage *Heckman* approach.

We construct propensity score-matched samples of firms that do and do not adopt IFRS, respectively, for each year of the sample period: Each IFRS firm is matched by a HGB firm which, according to the results of estimating determinant model (1) in Panel C of Table 2, has the same propensity to adopt IFRS but chose not to. In order to include only close matches in our sample, we impose a caliper of 0.1, meaning that the differences in propensity scores between matched IFRS and HGB firms are below 10%. Using this technique, we ensure that differences in the subsequent analyses are not caused by differences underlying the decision to voluntarily adopt IFRS. The matching procedure thus controls for relevant sample differences *other than* the accounting standards followed, allowing for a test of the relative role of rules versus incentives in determining financial reporting outcomes. In effect, we construct our treatment (IFRS firms) and control samples (HGB firms) so that, conceptually, we can expect the matched firms to differ *only* in terms of the accounting standards followed and of the *effects* of this difference.

Since this matching technique depends crucially on our determinant model capturing all aspects of the voluntary IFRS adoption by German firms, we rely on the results of prior research (presented in section 2) for constructing model (1).<sup>19</sup> The results of the annual estimations complement the results of prior research: Younger, larger U.S-listed firms with a larger proportion of foreign sales and more dispersed ownership tend to have a higher propensity of adopting IFRS.

**[Insert Table 3 around here]**

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<sup>19</sup> We apply a set of robustness tests to ensure our model captures the IFRS decision: We include more industry intercepts, different measures of financing needs or liquidity constraints, and alternative measures of capital market access. We find our results to be stable. The alternative specifications of model (1) do not qualitatively influence our subsequent results.

The propensity score-matched sample constructed based on the estimates of model (1) is presented in Table 3. Panel A reports the distribution of our sample across time and accounting standards followed. Carrying out our matching procedure separately for each year ensures that for each year every treatment (IFRS) firm is matched by a control (HGB) firm of the same year. It is important to note that the resulting samples are no longer representative of all HGB and IFRS firms. Comparing the average market capitalizations of the matched HGB sample in Table 3 to the original HGB sample in Table 2 we find that the former firms are on average (median) roughly 50% larger than the latter. In contrast, the firms in the propensity score-matched IFRS sample are smaller on average than the original IFRS sample firms in Table 2.<sup>20</sup> Thus, we can draw only relative, not absolute inferences from the analyses conducted in the following sections. Panel B and C of Table 3 compare the two propensity score-matched samples along the variables required for the analyses in section 3.2. Generally, there are few differences across the two samples. Interestingly, however, the only significant difference – IFRS firms report lower earnings than comparable HGB firms – is a direct result of the accounting system followed.

### 3.2 *Earnings quality effects of IFRS adoption*

In defining our measures of earnings quality, we rely on prior literature. Mainly following *Francis et al.* (2004), we use accrual quality, persistence, predictability, value relevance and conservatism as our measures of earnings quality. The *Dechow/Dichev* (2002) measure of accrual quality is derived from the mapping of current working capital

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<sup>20</sup> To verify the effectiveness of the propensity score-matching technique, we retest the propensity score-matched sample with regard to the univariate variable differences documented in Panel B of Table 2 and find them to be insignificant (not tabulated).

accruals into last-period, current-period, and next-period cash flows,<sup>21</sup> as indicated by model (2) presented in Panel A of Table 4. Intuitively, this regression model tries to capture the expected accruals given a specific cash flow stream. The residuals from estimating model (2) capture unexpected working capital accruals and, thus, are a measure of accrual quality: The lower the absolute level of unexpected working capital accruals, the higher accrual quality. Although *Dechow/Dichev* (2002, pp. 43-44) expect firm-specific estimations of their model to be superior, they also report within-industry and pooled results. While we agree with *Dechow* and *Dichev*'s argument, we use pooled estimation since our time series and samples are too small to estimate firm-specific or industry-specific models. Therefore, our results must be interpreted with caution. The results of the regressions presented in Panel A are as predicted by theory and generally very similar to the results presented in prior research: Working capital accruals are positively correlated with prior- and subsequent-period operating cash flows and negatively correlated with current-period cash flows. The sample differences are evaluated in Panel E of Table 4 along with the other earnings attributes. The results for our measure of accrual quality, the absolute of the residual of model (2) deflated by its dependent variable,<sup>22</sup> are higher for IFRS, indicating that the accrual quality of IFRS firms is lower than that of comparable HGB firms. However, the differences are insignificant (two-sided significance for mean: 0.445; median: 0.201).

**[Insert Table 4 around here]**

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<sup>21</sup> *Dechow/Dichev*'s (2002, p. 37) „model of accruals focuses on working capital accruals because cash flow realizations related to working capital generally occur within one year, making both the theory and the empirics more tractable.”

<sup>22</sup> We use this concept throughout this section whenever we investigate differences in the goodness of fit across samples. It yields very similar results compared to investigating the standard deviation of the residuals directly (e.g. *Francis et al.*, 2004, p. 980) and is much less sensitive to scale differences caused by sample differences in the dependent variable. See *Gu* (2004) for an excellent discussion of this topic.

Persistence is the slope coefficient from a regression of current earnings on lagged earnings (model (3)). Given that persistent earnings tend to follow a random walk process, the coefficient of fully persistent earnings should be one. The results of model (3) are presented in Panel B of Table 4. The coefficient on  $NIBE\_TA_{t-1}$  is larger for the IFRS sample. As Panel E shows based on an interacted version of model (3) (not tabulated), this difference is significant. Thus, we conclude that IFRS firms tend to have more persistent earnings than comparable HGB firms.

Model (3) also yields information about the predictability of earnings. Earnings are predictable if they are persistent and exhibit low earnings shocks. Since earnings shocks are captured as residuals in model (3), the absolute deflated level of residuals is our measure of predictability: The lower the absolute deflated residuals, the higher the predictability of earnings. Panel E shows that IFRS firms' earnings tend to be less predictable since the median of the absolute deflated residuals is significantly larger for IFRS firms. The difference in the mean is insignificant (two-sided significance: 0.144).

Model (4) represents a model of value relevance comparable to, among others, *Francis/Schipper* (1999), as it investigates the proportion of stock returns which can be explained by earnings information. We use 15-month returns in order to ensure that the earnings information, some of which is published after fiscal year end, is incorporated into stock returns. Panel C reports the results. Again, all estimates are as economically expected, with the  $R^2$  of the value-relevance regression being somewhat higher for the IFRS sample. Since it is useless and misleading to compare  $R^2$  values across samples (*Gu*, 2004), we again compare the absolute deflated residuals (Panel E). As the residuals capture the proportion of stock returns not explained by accounting data, higher levels of

absolute residuals indicate lower levels of value relevance. The residuals are lower for the IFRS sample than for the matched HGB sample, indicating that the value relevance of IFRS firms is higher. However, these differences are insignificant (two-sided, mean: 0.884; median: 0.452).<sup>23</sup>

Our last measure of earnings quality, conservatism, is based on the asymmetric timeliness approach pioneered by *Basu* (1997). It is measured as the difference between the slope coefficient on negative returns and the slope coefficient on positive returns in a ‘reverse’ regression of earnings on returns (model (5)). The results are reported in Panel D. The ‘good news’ coefficient ( $\beta_2$ ) is lower for IFRS firms and the ‘bad news’ coefficient ( $\beta_3$ ) is higher, indicating that IFRS firms exhibit more conditionally conservative earnings than HGB firms. Panel E reports the differences ( $\beta_3 - \beta_2$ ) for the two samples. We assess the significance of the difference in this metric between the two samples by estimating a fully interacted version of model (6) for the pooled sample (not tabulated). The significance is estimated by an F-Test, which tests whether the difference of the interacted versions of  $\beta_3$  and  $\beta_2$  is above zero. We find the difference to be significant, but only marginally so (two-sided significance: 0.097).

Taken together, this section provides evidence that, in a comparable sample of German IFRS and HGB firms, IFRS firms tend to have more persistent, less predictable and more conservative earnings than their HGB counterparts. Assuming that, first, our determinant model of IFRS adoption successfully captures the systematic differences between IFRS and HGB firms prior to IFRS adoption and, second, our earnings attributes capture the opaque concept of earnings quality, the question arises how to weight the dif-

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<sup>23</sup> Following a different methodology, *Bartov/Goldberg/Kim* (2005) find a significant higher value relevance of IFRS earnings for the time-period 1998-2000.

ferent earnings attributes in our combined judgment of earnings quality. From a reliability and relevance perspective, low absolute earnings shocks (high predictability) are not necessarily an indicator of good earnings quality, since earnings shocks are the only relevant component of persistent earnings. We thus conclude this section, based on the assumptions made above and notwithstanding further caveats presented in section 4, by cautiously stating that our results provide some limited evidence that the adoption of IFRS has had a positive impact on the earnings quality of German firms. The next section investigates whether this earnings quality improvement has also had an impact on the information asymmetry in the German capital market.

### *3.3 Information asymmetry effects of IFRS adoption*

As in the previous section, the following set of tests also uses the propensity score-matched sample developed in section 3.1. Following *Leuz/Verrecchia* (2000), we adopt the bid-ask spread, share turnover, and share price volatility as proxies for information asymmetry. In addition, we incorporate the percentage of trading days in a fiscal year with no price change as an additional measure of information asymmetry, since recent research by *Ashbaugh-Skaife/Gassen/LaFond* (2006) shows that this metric robustly captures the level of information impounded into prices for a large body of international markets. Bid-ask spread is possibly the most direct measure of information asymmetry because the diverse expectations of potential buyers and sellers are reflected in the range of prices offered and asked. Trading volume captures the liquidity of a firm's shares, with the willingness to trade being inversely related to the information asymmetry among market participants. The argument regarding share price volatility can go both ways: On the one hand, idiosyncratic (unsystematic) price changes can be viewed as an indicator of

firm-specific information being impounded into prices. On the other hand, research shows that share price volatility tends to be too high to be explained by firm fundamentals alone. Thus, if noise is one potential explanation for share price volatility, volatility can be expected to increase as information asymmetry increases.

**[Insert Table 5 around here]**

The explanatory variables in models (6) to (9) are as those used in *Leuz/Verrecchia* (2000). They are aimed at capturing influential factors other than accounting standards followed. Their definitions are given in the notes to Table 5. In line with *Leuz/Verrecchia* (2000, p. 110), we include BETA as an additional control in model (9) because we expect the volatility of a share to be influenced by its systematic risk. Concerning our measure of bid-ask spread, we note that intraday bid-ask spreads are generally better suited than closing-price bid-ask spreads to capture the level of information asymmetry, especially since thin trading often occurs in the late trading hours. However, we use average closing price bid-ask spreads because we do not have access to a sufficiently large sample of intraday bid-ask spread data. The values of the dependent as well as independent variables are compared across the samples in Panel A and B of Table 5. Besides bid-ask-spread, all variables exhibit significant differences across the samples: The shares of IFRS firms have more turnover, more frequent price changes, more volatile prices and carry more systematic risk than do the shares of comparable HGB firms.

The results of the models are presented in Panel C of Table 5. The signs and magnitudes of the other explanatory variables are as theoretically predicted and generally significant. The estimation quality of the models is good, indicating a reasonable fit with the data. Turning to our main variable of interest, the dummy indicating IFRS adoption,

we find that IFRS adoption seems to lead to lower bid-ask spreads, more frequent price changes and more volatility, while there is no significant impact on share turnover. The differences appear to be economically meaningful as well: They indicate a bid-ask spread reduction by 70 base points as well as increased liquidity reflected in 17 more trading days with price changes per year.

Again, these results crucially depend on the validity of model (1), which tries to capture the determinants of IFRS adoption. If we assume, in contrast to prior literature, that firms with higher levels of information asymmetry have an incentive *not to* adopt IFRS, possibly because the high levels of information asymmetry are the result of an opaque yet efficient corporate disclosure strategy not captured by the other determinants in model (1), this might be an alternative explanation for our findings in models (6) to (9). In addition, as index membership and IFRS adoption are closely related in our German sample, we cannot rule out index membership as an alternative explanation. In order to further test our results, we construct an alternative sample based on a pre and post analysis. The sample contains only firms which switch from HGB to IFRS and for which we have three years of prior and three years of subsequent data. This yields a small sample of 29 firms (172 observations). Comparing our measures of information asymmetry across time for these firms (not tabulated), we are able to replicate our findings for the frequency of price changes and volatility, but not for the bid-ask spread. However, pre and post research designs have fundamental problems, since it is nearly impossible to control for all changes occurring over time. Therefore, and due to the severely reduced sample size, we view the propensity score-matched results as our main results for our information asymmetry analysis. We conclude from this section that the supposedly

higher quality of IFRS accounting has had a slight impact on the information asymmetry related to firms adopting IFRS, as we document a decline in the average bid-ask spread by 70 base points and 17 more price change days for these firms. However, this decrease in information asymmetry comes with a price tag: IFRS adopters also experience a significant increase in share price volatility.

#### **4 Conclusion and future research opportunities in post-2005 Europe**

We conclude from our study that the voluntary adoption of IFRS for German firms is influenced by size, international exposure, and dispersion of ownership. In addition, adopting IFRS was especially attractive for young firms which initially went public subsequent to the mid-1990s. Comparing a sub-sample of these voluntary IFRS adopters with comparable German-GAAP (HGB) firms, we find IFRS firms to have more persistent, less predictable and more conditionally conservative earnings. Taken together, we view these results as indicating that the earnings of IFRS firms are of higher quality. We also find that IFRS adopters experience lower levels of information asymmetry on the German equity market relative to their German counterparts: They experience a decline in bid-ask spread of 70 base points and an average of 17 more days with price changes. On the other hand, more information also seems to induce more volatility: We find the level of share price volatility to be significantly higher for IFRS firms.

However, these results come with some important caveats: First, the concept of earnings quality does not capture accounting quality *per se*, let alone disclosure quality. Given its theoretical underpinnings, it gives more weight to the decision-usefulness view of accounting than it does to the contracting view of accounting. Thus, concluding that IFRS earnings are of higher quality does not necessarily imply that they are a more effi-

cient contracting device. Second, as every other correction scheme for selection bias we are aware of, our propensity score-matched research design presumes that the determinant model of IFRS adoption captures all relevant variables. If our determinant model suffers from omitted variables, these variables might present alternative explanations for our findings regarding earnings quality and information asymmetry. Third, our measures of earnings attributes and our proxies for information asymmetry are noisy and potentially biased. While noise reduces the power of our tests and thus works against finding significant differences, bias might render our results useless. Finally, even if our results are internally valid, their external validity might still be questioned: We investigate IFRS over a time period in which substantial changes concerning the contents of IFRS, the institutional infrastructure of IFRS standard setting, and the institutional infrastructure surrounding the German capital market and its participants occurred. All these changes might substantially limit the generalizability of our findings to other time periods and other institutional infrastructures.

Given the limitations of this study, the need for future research is obvious. In contrast to the time period studied in this paper, the post-IAS Regulation situation in Europe represents a nearly ideal setting for analyzing the relative roles of standards and institutional environments in determining financial reporting quality and other properties of financial reporting (*Schipper, 2005; Nobes, 2005*). This new setting allows researchers to examine financial reports prepared under identical, high-quality standards by firms facing vastly different regulatory and firm-specific incentives. Therefore, besides the aspect of financial reporting quality, it also lends itself to assessing the extent to which the IAS

Regulation was successful at bringing about greater *comparability* of financial reporting across Europe.

Not unlike previous research, the dimensions along which post-2005 European IFRS reports will need to be analyzed and compared internationally include accounting choice, compliance, financial reporting quality, and the impact of financial reporting on information asymmetry and on the cost of debt and equity capital. Any remaining international variation under harmonized IFRS reporting is likely to be driven by country-level differences in the degree of investor protection, securities regulation, legal system, financing system, corporate governance, auditing, and enforcement. Furthermore, firm-level determinants including ownership structure, size, industry, investment opportunity set, and other incentives will also be influential factors.

However, while the new setting has obvious appeal, to the extent that mandatory IFRS reporting is shaped by the transitional choices of first-time adopters as well as by learning-curve effects of financial statement preparers and users, empirical findings in the initial years may be difficult to interpret and may not be representative of what IFRS reporting will some day look like. Also, the continuing evolution of IFRS (including their convergence with U.S. GAAP) and capital market regulation will inhibit the development of a stable European, let alone global, reporting environment in the foreseeable future. While this may represent bad news to some constituents, it certainly is good news for researchers: The supply of captivating research questions is unlikely to decline soon.

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**TABLE 1: Accounting Standards Followed by German Public Firms 1993-2004**

Year	Accounting Standards Followed			Total
	HGB	IFRS	US-GAAP	
1993	549 <i>99.82</i>	0 <i>0.00</i>	1 <i>0.18</i>	550
1994	559 <i>99.64</i>	1 <i>0.18</i>	1 <i>0.18</i>	561
1995	560 <i>98.94</i>	3 <i>0.53</i>	3 <i>0.53</i>	566
1996	556 <i>97.54</i>	7 <i>1.23</i>	7 <i>1.23</i>	570
1997	545 <i>92.06</i>	19 <i>3.21</i>	28 <i>4.73</i>	592
1998	518 <i>86.77</i>	42 <i>7.04</i>	37 <i>6.20</i>	597
1999	503 <i>77.74</i>	86 <i>13.29</i>	58 <i>8.96</i>	647
2000	473 <i>62.48</i>	162 <i>21.40</i>	122 <i>16.12</i>	757
2001	451 <i>60.54</i>	177 <i>23.76</i>	117 <i>15.70</i>	745
2002	443 <i>53.70</i>	253 <i>30.67</i>	129 <i>15.64</i>	825
2003	440 <i>53.33</i>	263 <i>31.88</i>	122 <i>14.79</i>	825
2004	378 <i>48.84</i>	305 <i>39.41</i>	91 <i>11.76</i>	774
Total	5,975	1,318	716	8,009

The sample comprises all firms included in the Worldscope universe. The data for “Accounting Standards Followed” is in large part hand-collected from annual reports. Where annual reports are unavailable, we use Worldscope item WC07536 (Accounting Standards Followed). Dual accounting is coded as HGB. Non-italic numbers are frequency counts, and numbers in italics are percentages for the respective year.

**TABLE 2: Determinants of Accounting Choice***Panel A: Descriptive Statistics for HGB Firms (n=1,176)*

Variable	Mean	Median	Std. Dev	First Quartile	Third Quartile
MANUF	0.669				
MKTCAP	809.478	121.455	2,773.829	43.600	366.400
DEBT_TA	0.219	0.202	0.186	0.047	0.351
FOR_SALES	0.268	0.177	0.284	0.000	0.512
CLOSEHELD	0.676	0.713	0.243	0.506	0.900
NR_EXCHG	1.709	2.000	1.182	1.000	2.000
USLISTING	0.025				
IPO	0.220				

*Panel B: Descriptive Statistics for IFRS Firms (n=630)*

Variable	Mean	Median	Std. Dev	First Quartile	Third Quartile
MANUF	0.517***				
MKTCAP	1,925.339***	190.634***	4,439.419	49.728	1,044.721
DEBT_TA	0.208	0.185	0.180	0.040	0.326
FOR_SALES	0.352***	0.339***	0.299	0.000	0.609
CLOSEHELD	0.519***	0.526***	0.268	0.311	0.714
NR_EXCHG	2.154***	2.000***	1.462	1.000	3.000
USLISTING	0.090***				
IPO	0.594***				

*Panel C: Annual Logistic Determinant Model of IFRS Adoption*

$$(1) \text{ Prob}(IFRS = 1) = \text{logit}(\beta_0 + \beta_1 \text{MANUF} + \beta_2 \log(\text{MKTCAP}) + \beta_3 \text{DEBT\_TA} + \beta_4 \text{FOR\_SALES} + \beta_5 \text{CLOSEHELD} + \beta_6 \text{NR\_EXCHG} + \beta_7 \text{USLISTING} + \beta_8 \text{IPO})$$

Variable	Expected Sign	Coefficient	Significance
INTERCEPT	?	-6.118	0.011
MANUF	-	-0.054	0.872
log(MKTCAP)	+	0.394	0.000
DEBT_TA	?	0.314	0.732
FOR_SALES	+	1.332	0.000
CLOSEHELD	-	-1.417	0.023
NR_EXCHG	+	-0.041	0.543
USLISTING	+	0.958	0.084
IPO	+	1.456	0.000
Rescaled R <sup>2</sup>		0.359	

Notes: n represents the number of firm-year observations over 1998-2004. MANUF is equal to one if the firm belongs to a manufacturing industry (SIC below 4000). MKTCAP is the market capitalization of equity (WC08001) at the beginning of the fiscal year, measured in million €. DEBT\_TA is total debt (WC03255) divided by total assets (WC02999). FOR\_SALES is foreign sales (WC07101) divided by total sales (WC01001). CLOSEHELD is the percentage of closely held shares (WC08021). NR\_EXCHG is the number of exchanges (domestic and foreign) on which the firm's shares are listed (WC05427). USLISTING is one if the firm is directly or indirectly (via ADRs) traded at the New York Stock Exchange. IPO is one if the firm went public in 1995 or later. IFRS is one if the firm follows IFRS in its group accounts. The significance of sample differences is assessed by Chi-squared tests for nominal variables and by t-tests (Wilcoxon tests) for the means (medians) of non-nominal variables. \*\*\*/\*\*/\* marks two-sided significance at the 1/5/10% level. The coefficients in Panel C are average coefficients of annual logistic regressions of model (1) over the period 1998-2004 and are estimated by maximum likelihood. Their significance is assessed by their annual distributions.

**TABLE 3: Propensity Score-Matched Sample***Panel A: Accounting Standards Followed by Propensity Score-Matched Sample*

Year	Accounting Standards Followed		Total
	HGB	IFRS	
1998	10	10	20
1999	28	28	56
2000	42	42	84
2001	60	60	120
2002	80	80	160
2003	73	73	146
2004	61	61	122
Total	354	354	708

*Panel B: Descriptive Statistics for HGB Firms (n=354)*

Variable	Mean	Median	Std. Dev	First Quartile	Third Quartile
MKTCAP	1,485.498	173.380	4,511.109	47.676	618.484
NIBE_TA	0.021	0.029	0.115	0.003	0.064
CFO_TA	0.078	0.080	0.131	0.020	0.136
RET	0.089	0.014	0.518	-0.202	0.270
NEG	0.480				

*Panel C: Descriptive Statistics for IFRS Firms (n=354)*

Variable	Mean	Median	Std. Dev	First Quartile	Third Quartile
MKTCAP	1,248.330	151.114	2,905.008	32.907	669.900
NIBE_TA	-0.021***	0.019***	0.155	-0.045	0.052
CFO_TA	0.065	0.076	0.174	-0.002	0.151
RET	0.051	0.000	0.617	-0.372	0.295
NEG	0.497				

Notes: n represents the number of firm-year observations over 1998-2004. The sample is constructed by matching each IFRS observation with a HGB observation based on the propensities derived from the estimation of model (1). This procedure yields a sample of 1,140 observations. To ensure that only closely matched pairs are used in the analysis, a caliper of 0.1 is imposed, resulting in the smaller sample presented in the table. MKTCAP is the market capitalization of equity (WC08001) at the beginning of the fiscal year, measured in million €. NIBE\_TA is net income before extraordinary items (WC01551) divided by total assets (WC02999). CFO\_TA is CFO divided by total assets. CFO is net income before extraordinary items minus total accruals, which are equal to change in current assets (WC02201) less change in current liabilities (WC03101) less change in cash and cash equivalents (WC02001) plus change in current debt (WC03051) less depreciation, amortization and depletion (WC01151). RET is the buy-and-hold return over the fiscal year. NEG is one if RET is below zero. The significance of sample differences is assessed by Chi-squared tests for nominal variables and by t-tests (Wilcoxon tests) for the means (medians) of non-nominal variables. \*\*\*/\*\*/\* marks two-sided significance at the 1/5/10% level.

**TABLE 4: Earnings Attributes***Panel A: Accrual Quality, Yearly Fixed Effects, Clustered Standard Errors*

$$(2) \quad WCACC\_TA_t = \sum_{i=1998}^{2004} \zeta_i YEAR_{i,t} + \varphi_1 CFO\_TA_{t-1} + \varphi_2 CFO\_TA_t + \varphi_3 CFO\_TA_{t+1} + \nu_t$$

Variable	Accounting Standards Followed			
	HGB		IFRS	
	Coefficient	Significance	Coefficient	Significance
Avg. INTERCEPT	0.028	0.028	0.012	0.389
CFO_TA <sub>t-1</sub>	0.170	0.000	0.081	0.056
CFO_TA <sub>t</sub>	-0.562	0.000	-0.469	0.000
CFO_TA <sub>t+1</sub>	0.204	0.000	0.177	0.001
R <sup>2</sup>	0.580		0.520	

*Panel B: Persistence and Predictability, Yearly Fixed Effects, Clustered Standard Errors*

$$(3) \quad NIBE\_TA_t = \sum_{i=1998}^{2004} \psi_i YEAR_{i,t} + \varphi_1 NIBE\_TA_{t-1} + \nu_t$$

Variable	Accounting Standards Followed			
	HGB		IFRS	
	Coefficient	Significance	Coefficient	Significance
Avg. INTERCEPT	0.027	0.011	-0.011	0.321
NIBE_TA <sub>t-1</sub>	0.133	0.000	0.502	0.000
R <sup>2</sup>	0.387		0.294	

*Panel C: Value Relevance, Yearly Fixed Effects, Clustered Standard Errors*

$$(4) \quad RET15_t = \sum_{i=1998}^{2004} \vartheta_i YEAR_{i,t} + \delta_1 NIBE\_MVE_t + \delta_2 \Delta NIBE\_MVE_t + \zeta_t$$

Variable	Accounting Standards Followed			
	HGB		IFRS	
	Coefficient	Significance	Coefficient	Significance
Avg. INTERCEPT	0.063	0.594	0.032	0.854
NIBE_MVE <sub>t</sub>	0.574	0.000	0.406	0.006
ΔNIBE_MVE <sub>t</sub>	0.290	0.081	0.164	0.036
R <sup>2</sup>	0.360		0.404	

**TABLE 4 (continued)**

*Panel D: Conditional Conservatism, Yearly Fixed Effects, Clustered Standard Errors*

$$(5) \quad NIBE\_MVE_t = \sum_{i=1998}^{2004} \theta_i YEAR_{i,t} + \beta_1 NEG_t + \beta_2 RET_t + \beta_3 NEG_t \cdot RET_t + \rho_t$$

Variable	Accounting Standards Followed			
	HGB		IFRS	
	Coefficient	Significance	Coefficient	Significance
Avg. INTERCEPT	0.073	0.016	0.057	0.316
NEG <sub>t</sub>	-0.023	0.553	0.012	0.835
RET <sub>t</sub>	0.042	0.337	-0.064	0.399
NEG <sub>t</sub> ·RET <sub>t</sub>	0.335	0.018	0.543	0.000
R <sup>2</sup>	0.139		0.189	

*Panel E: Summary and Significance Tests*

Earnings Attribute	Statistic	Accounting Standards Followed	
		HGB	IFRS
Accrual Quality	Mean $ v_t/WCACC\_TA_t $	1.857	2.115
	Median $ v_t/WCACC\_TA_t $	0.704	0.808
Persistence	$\phi_1$	0.133	0.502***
Predictability	Mean $ v_t/NIBE\_TA_t $	1.397	1.719
	Median $ v_t/NIBE\_TA_t $	0.789	0.896***
Value Relevance	Mean $ \zeta_t/RET15_t $	2.183	2.131
	Median $ \zeta_t/RET15_t $	0.825	0.757
Conditional Conservatism	$\beta_3 - \beta_2$	0.293	0.607*

Notes: This Table details the regression results of models (2) to (5). Each model is estimated as a yearly fixed-effect model using OLS and clustered standard errors to account for the heteroskedasticity and auto-correlation caused by the panel structure of the data. The sample is as reported in Table 3. YEAR is a series of yearly fixed effects. WCACC\_TA is working capital accruals, which are equal to change in current assets (WC02201) less change in current liabilities (WC03101) less change in cash and cash equivalents (WC02001) plus change in current debt (WC03051), divided by total assets. TOTACC\_TA is WCACC\_TA less depreciation, amortization and depletion (WC01151) divided by total assets. RET15 is the buy-and-hold return over a 15-month period ending three months after fiscal year end. NIBE\_MVE is net income before extraordinary items (WC01551) divided by beginning-of-period market capitalization of equity (WC08001). All other variables are as previously defined. In Panel E, the significance of mean (median) differences is assessed by t-tests (Wilcoxon tests). The significance of regression coefficient differences is assessed by fully interacted regressions of pooled samples (not tabulated) along with t-tests ( $\phi_1$ ) or F-tests ( $\beta_3 - \beta_2$ ), respectively. \*\*\*/\*\*/\* marks two-sided significance at the 1/5/10% level.

**TABLE 5: Accounting Standards and Information Asymmetry***Panel A: Descriptive Statistics for HGB Firms (n=354)*

Variable	Mean	Median	Std. Dev	First Quartile	Third Quartile
BAS	0.035	0.025	0.039	0.014	0.042
TOVER	0.006	0.002	0.015	0.001	0.006
ZRETURN	0.340	0.254	0.250	0.131	0.531
VOLA	0.414	0.359	0.234	0.266	0.478
BETA	0.431	0.295	0.536	0.060	0.590

*Panel B: Descriptive Statistics for IFRS Firms (n=354)*

Variable	Mean	Median	Std. Dev	First Quartile	Third Quartile
BAS	0.033	0.025	0.030	0.016	0.041
TOVER	0.009**	0.004***	0.017	0.001	0.010
ZRETURN	0.237***	0.165***	0.189	0.096	0.312
VOLA	0.524***	0.440***	0.287	0.315	0.715
BETA	0.771***	0.600***	0.668	0.260	1.140

Panel C: Impact of IFRS on Information Asymmetry

$$(6) \quad BAS_t = \sum_{i=1998}^{2004} \eta_i YEAR_{i,t} + \alpha_1 \log(MKTCAP_t) + \alpha_2 VOLA_t + \alpha_3 TOVER_t + \alpha_4 CLOSEHELD_t + \alpha_5 IFRS + \rho_t$$

$$(7) \quad TOVER_t = \sum_{i=1998}^{2004} \iota_i YEAR_{i,t} + \beta_1 \log(MKTCAP_t) + \beta_2 VOLA_t + \beta_3 CLOSEHELD_t + \beta_4 IFRS + \zeta_t$$

$$(8) \quad ZRETURN_t = \sum_{i=1998}^{2004} \kappa_i YEAR_{i,t} + \gamma_1 \log(MKTCAP_t) + \gamma_2 VOLA_t + \gamma_3 CLOSEHELD_t + \gamma_4 IFRS + \tau_t$$

$$(9) \quad VOLA_t = \sum_{i=1998}^{2004} \lambda_i YEAR_{i,t} + \delta_1 \log(MKTCAP_t) + \delta_2 CLOSEHELD_t + \delta_3 BETA_t + \delta_4 IFRS + \nu_t$$

Variable	Model							
	(6)		(7)		(8)		(9)	
	Coefficient	Significance	Coefficient	Significance	Coefficient	Significance	Coefficient	Significance
Avg. INTERCEPT	0.076	0.000	0.009	0.037	0.783	0.000	1.026	0.000
log(MKTCAP)	-0.006	0.000	0.001	0.216	-0.049	0.000	-0.055	0.000
VOLA	0.046	0.000	0.005	0.055	-0.277	0.000		
TOVER	-0.190	0.001						
CLOSEHELD	0.027	0.000	-0.016	0.000	0.425	0.000	-0.060	0.079
BETA							0.220	0.000
IFRS	-0.007	0.011	0.002	0.205	-0.068	0.001	0.034	0.069
R <sup>2</sup>	0.682		0.335		0.800		0.889	

Notes: This Table details the regression results of models (6) to (9). Each model is estimated as a yearly fixed-effect model using OLS and clustered standard errors to account for the heteroskedasticity and autocorrelation caused by the panel structure of the data. The sample is as reported in Table 3. YEAR is a series of yearly fixed effects. BAS is the average bid-ask spread of the closing price at the main exchange over the calendar year. TOVER is the average daily number of shares traded at all German exchanges divided by the daily number of shares outstanding. ZRETURN is the proportion of trading days where there is no price change for the stock. VOLA is the volatility of the firm's stock over the calendar year. BETA is the coefficient of a daily regression of the firm's stock return on a value-weighted market index. All other variables are as previously defined. In Panel A and B, the significance of mean (median) differences is assessed by t-tests (Wilcoxon tests). \*\*\*/\*\*/\* marks two-sided significance at the 1/5/10% level.