SHORT-TERM AND LONG-TERM EFFECTS OF IFRS ADOPTION ON DISCLOSURE QUALITY AND EARNINGS MANAGEMENT

Marcus Salewski*, Torben Teuteberg*, Henning Zülch**

* Research Associate Chair of Accounting and Auditing, HHL Leipzig Graduate School of Management, Germany
** Chairholder Chair of Accounting and Auditing, HHL Leipzig Graduate School of Management, Germany

Abstract

This study investigates the effect of IFRS adoption on the transparency of financial reporting in Germany. For a sample period from 1995 to 2012, we analyze the development of the degree of earnings management and of disclosure quality using discretionary accruals and disclosure quality scores from an annual report 'beauty contest' published by a German business journal as proxies. We find that IFRS adoption is associated with an increase in disclosure quality and with an initial increase in the extent of earnings management. We argue that the latter is driven by factors such as low compliance, lack of experience and weaker enforcement in the early years of IFRS accounting and show that the degree of earnings management decreases from the 'early' to the 'mature' phase of IFRS accounting. Finally, we provide evidence for a negative association between disclosure quality and earnings management indicating that disclosures potentially constrain earnings management.

Keywords: IFRS Adoption, Earnings Management, Earnings Quality, Disclosure Quality

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1. INTRODUCTION

Since 2005, European listed companies are required to prepare their consolidated financial statements according to International Financial Reporting Standards (IFRS)[30]. This is the result of the so-called "IAS-Regulation" (Regulation (EC) No. 1606/2002) which formulates two objectives directly related to financial reporting: (higher) comparability and transparency of financial statements. Although IFRS have been adopted in the European Union (EU) for some time, academics have failed to deliver compelling, unambiguous evidence for the effects of IFRS adoption on financial reporting quality, to date.[31]

In this paper, we focus on the effects of IFRS adoption on the transparency of financial reporting which, in our perception, have mostly been evaluated by measures of the properties of earnings ("earnings transparency").[32] A large part of this research examines the effects on the extent of earnings management accompanying the regulatory change. However, evidence for a decrease of the degree of earnings management, and thus an increase in financial reporting transparency,[33] is not yet conclusive. In particular, studies using discretionary accruals as a proxy for earnings management often do not support the general assumption that the adoption of IFRS leads to higher transparency (Ahmed et al., 2013). Instead, they often find an increase or no significant change rather than a decrease in the extent of discretionary accruals studying the very first years after IFRS adoption (e.g. van Tendeloo and Vanstraelen, 2005; Callao and Jarne, 2010).

Undoubtedly, users of financial reporting are interested beyond such aggregate measures of earnings quality (Brüggemann et al., 2013). Moreover, studies analyzing the effects on specific properties of accounting measures do not account for potential changes regarding the information content of annual reports published by firms applying IFRS (Daske and Gebhardt, 2006).

[30] In the following, we use the abbreviation IFRS when referring to the accounting standards issued by the International Accounting Standards Board (IASB) or its predecessor, the International Accounting Standards Committee (IASC). Standards issued by the IASC are called International Accounting Standards (IAS).

[31] See the findings of Soderstrom and Sun (2007) and Brüggemann et al. (2013) who review the literature related to voluntary and mandatory adoption of IFRS, respectively.

[32] Similarly, Brüggemann et al. (2013) observe that IFRS adoption studies mostly use 'earnings quality' metrics.

[33] Being aware that earnings management can also be used to signal private information, we interpret earnings management opportunistically which is in line with the majority of earnings management studies regarding IFRS adoption. For example, Barth et al. (2008) predict companies with earnings of higher quality to exhibit less earnings management and point out that this prediction is consistent with prior literature.

Therefore, researchers have examined the effects of IFRS adoption on the quantity and the quality of disclosures that typically accompany the primary financial statements (hereafter: disclosure quality), a different dimension of transparency. Contrary to the results regarding earnings management, research examining disclosure quality provides unanimous support for an increase in transparency in the course of the switch to international accounting standards (Leuz and Verrecchia, 2000; Daske and Gebhardt, 2006; Glaum et al., 2013). Since prior research indicates that disclosure quality and earnings management are negatively related (e.g. Lobo and Zhou, 2001; Shalev, 2009) and that disclosures facilitate the detection of earnings management (Hunton et al., 2006; Jo and Kim, 2007), enhanced disclosures under IFRS have been brought forward as one argument to expect a decrease in earnings management after the switch to IFRS (see Doukakis, 2014). This argument and the different effects of IFRS adoption on earnings management and disclosure quality documented in the literature make the association between these dimensions of transparency around the regulatory change a matter of great interest that has not been addressed by prior literature.

In our paper, we examine the effects of IFRS adoption on earnings management as well as disclosure quality. We focus on Germany which allows using a specific proxy for disclosure quality, namely the disclosure scores of the "Best Annual Report" 'beauty contest' of the German business journal *manager magazin*, which are publicly available from 1995 to 2012.[34] Since prior research had to study some few years around the adoption of IFRS and the need to study longer time horizons has been explicitly emphasized (e.g. Callao and Jarne, 2010), we are particularly interested in the development of transparency from the first few years, the 'early' phase of IFRS accounting, to the 'mature' phase. Moreover, we examine the nature of the relationship between disclosure quality and the degree of earnings management.

Consistent with prior research, we find an increase in disclosure quality accompanying the transition from German GAAP to IFRS. Contrary, we find a significantly higher level of earnings management under IFRS compared to German GAAP. However, this seems to be driven by observations from the first few years of IFRS reporting, since our results indicate a significant decrease in the extent of earnings management from the 'early' phase of IFRS accounting to the 'mature' phase. Comparing the degree of earnings management under German GAAP to 'mature' IFRS observations, we do not find a significant difference indicating that the extent of earnings management does not increase under IFRS compared to German GAAP in the longer run. We interpret this as an improvement in transparency over time attributable to learning effects of preparers, users, and auditors, developing enforcement, diminishing effects resulting from the application of IFRS 1 (First-time Adoption of IFRS), and emerging common guidelines and interpretations fostering more consistent application of the new standards. Finally, we show that disclosures have the potential to constrain earnings management, especially when accounting standards require comparatively few disclosures and/or when common guidelines and interpretations are not yet developed and financial statements are influenced by low compliance, little experience or weak enforcement as in the 'early' phase of IFRS accounting.

Our findings contribute to the widespread debate on the effects of IFRS adoption highlighting the importance to study time horizons beyond the few years around the regulatory change. Considering the dimension of the introduction of IFRS in the EU, regulators, standard setters and other financial reporting stakeholders should clearly be interested in the long-term effects rather than focused on short-term outcomes. Thus, our results may mitigate concerns raised by prior 'short horizon' studies documenting increasing earnings management behavior under IFRS (e.g. Callao and Jarne, 2010). Our results regarding the negative association between disclosures and earnings management are of potential interest to both standard setters and analysts. The former should feel encouraged to demand high quality disclosures, especially with regard to management's estimates and assumptions, while the latter should be aware of the use of discretionary accounting in the absence of disclosures.

The remainder of this paper is organized as follows. Section 2 describes the institutional background by presenting the German accounting environment and its development towards IFRS. Section 3 reviews related literature and develops our hypotheses. Section 4 describes our research design, our data, and the measurement of disclosure quality and earnings management. Section 5 presents our results next to robustness checks. Section 6 concludes.

2. INSTITUTIONAL BACKGROUND: DEVELOPMENT OF THE GERMAN ACCOUNTING ENVIRONMENT

For our study, we focus on Germany, a continental European country that has been characterized as a code-law country having had relatively weak investor protection rights (La Porta et al., 2000). Overviews of the German accounting system have been provided by several authors (e.g. Harris et al., 1994; van Tendeloo and Vanstraelen, 2005; Ferrari et al., 2012) which is why we limit our remarks to the fundamental characteristics and developments towards mandatory IFRS adoption. Traditionally, German accounting according to the German Commercial Code ("Handelsgesetzbuch", HGB) mostly aims at protecting the interests of firms' creditors and is heavily influenced by tax regulations (van Tendeloo and Vanstraelen, 2005; Glaum et al., 2013). While the dominant valuation principle is prudence (Harris et al., 1994; Ferrari et al., 2012), German GAAP has been characterized as providing a

[34] There are three more reasons for our focus on Germany. First, the large differences between German GAAP and IFRS as well as relatively high compliance levels likely result in more powerful tests on the effects of IFRS adoption (Bartov et al., 2005; Soderstrom and Sun, 2007). Second, since German firms account for a substantial part of the firms worldwide that reported under IFRS in the 1990s (see Daske and Gebhardt (2006) for an analysis of the number of firms adopting IFRS between 1996 and 2004), the effects of the regulatory change can be studied particularly well in the German setting (see also Glaum et al., 2013). Third, our focus on a single country removes the need to put emphasis on country-specific factors that are not related to the financial reporting system but could potentially be confounding (Barth et al., 2008).

multitude of options with regard to inclusion and valuation of balance sheet items and opportunities to manage earnings (van Tendeloo and Vanstraelen, 2005).

In the 1990s, the accounting rules of the German system were criticized by Anglo-American investors and the financial press.[35] Leuz and Verrecchia (2000) outline the main arguments as follows: German GAAP allows too much discretion, especially with regard to the management of income through the use of large hidden reserves; German GAAP financial statements are subject to tax optimization incentives to a large extent; and German GAAP has deficits regarding disclosure requirements that are not sufficient to meet the demands of investors and analysts. Over the years, the financing as well as the ownership structure of German firms have changed since companies have been relying more and more on public equity markets. In the course of this development, the importance of (potential) investors as users of financial statements has risen (van Tendeloo and Vanstraelen, 2005).

In response to the complaints about German GAAP and the increasing importance of capital markets, many German firms adjusted their financial reporting and disclosure strategies and published additional information according to US GAAP or IFRS (Leuz and Verrecchia, 2000).[36] Nevertheless, German groups had to provide consolidated financial statements according to local GAAP until April 1998. At that time, the German Parliament and Federal Council decided to allow listed firms to issue consolidated financial statements that comply with either German GAAP or international accounting standards (either IFRS or US GAAP) by enacting the "Law to Facilitate the Raising of Capital" ("Kapitalaufnahmeerleichterungsgesetz", KapAEG).[37] The next important milestone in the development of the German financial reporting environment was the enactment of the so-called "IAS Regulation" in 2002 (Regulation (EC) No. 1606/2002). For fiscal years starting on or after 1 January 2005, the regulation requires European firms to prepare their consolidated financial statements in accordance with IFRS, if their securities are admitted to trading on a regulated market within the EU.[38]

In the meantime, the German stock exchange Deutsche Börse AG had introduced the requirement of international financial reporting for selected segments, such as the New Market (*Neuer Markt*) which required listed firms to publish financial statements in accordance with internationally recognized standards already in 1997. Similarly, companies seeking to comply with the listing requirements of the prime standard segment which was introduced in 2003 had to adopt international accounting standards prior to 2005, if they had not been listed before 1 January 2003.[39] Alongside the adoption of IFRS in the EU, the member states also introduced the requirement to establish, on a national basis, mechanisms to ensure the appropriate and consistent application of the international accounting rules. In Germany, the DPR ("Deutsche Prüfstelle für Rechnungslegung" – German Financial Reporting Enforcement Panel, FREP) was established in 2004 and started assessing financial statements with respect to compliance with the relevant accounting rules in 2005. Once a material error is detected, this finding has to be disclosed by the firm to the public, which may lead to negative capital market effects for the firm.[40]

In contrast to traditional German GAAP, IFRS aim at providing information that is useful to investors and creditors in deciding about the provision of financial resources to the reporting firm.[41] Consequently, IFRS differ substantially from German GAAP. Importantly, international accounting standards are said to require a greater amount of disclosures (Leuz and Verrecchia, 2000; Ashbaugh, 2001) and provide fewer accounting choices than German GAAP (d'Arcy, 2000). These features potentially constrain earnings management and therefore might lead to the intended increase in transparency of financial reporting. In this paper, we analyze the effects of IFRS adoption on disclosure quality and earnings management separately and asses the relationship between these dimensions of transparency to further understand the consequences of the regulatory change.

3. PRIOR RESEARCH AND HYPOTHESES

3.1 IFRS Adoption and Transparency

The requirement for European listed firms to prepare their consolidated financial statements in accordance with IFRS is the result of the so-called "IAS Regulation" in 2002. The stated objectives of the Regulation are *'…the adoption and use of international accounting standards in the Community […] in order to ensure a high degree of transparency and comparability of financial statements and hence an efficient functioning of the Community capital market and of the Internal Market'* (Regulation (EC) No. 1606/2002, Article 1). Thus, with regard to financial reporting, two objectives can be identified, transparency and comparability, which should enhance the functioning of capital markets and, finally, foster macroeconomic developments (Brüggemann et al., 2013). Assuming this causal chain, research provides broad evidence for positive capital market and macroeconomic effects of IFRS adoption.[42]

[35] See Leuz and Verrecchia (2000) who also provide some examples.

[36] Leuz and Verrecchia (2000) identify three different strategies to report (almost) in compliance with IFRS or US GAAP: 1. Preparation of financial statements as close as possible to international standards while still complying with German GAAP; 2. Reconciliation of income and shareholder's equity with international accounting standards while providing additional disclosures required by international standards in the notes; 3. Provision of an additional separate set of financial statements in accordance with international standards.

[37] See Bundesgesetzblatt, 1998, pt. 1, no. 22, Bonn, April 23, 1998.

[38] See Regulation (EC) No. 1606/2002, Article 4. Firms that were preparing their statements in accordance with US GAAP were allowed to apply IFRS at latest for fiscal year 2007 (see Regulation (EC) No. 1606/2002, Article 9(b)).

[39] See Daske and Gebhardt (2006) for a description of the transition process towards IFRS including the role of listing requirements for Germany, Austria and Switzerland.

[40] For a good overview of the enforcement of IFRS in the EU in general and, in particular, the specific German two-tier enforcement system consisting of a private body (the DPR) and the securities regulator (the federal agency BaFin) see Hitz et al. (2012).

[41] See Conceptual Framework, OB2.

[42] Several studies investigate the effects of the adoption of international accounting standards on capital markets, such as changes in bid-ask spreads

Besides those indirect measures of financial reporting quality, research has also examined the impact of international accounting standards on financial reporting quality directly. Consistent with the notion that there is no consensus on the characteristics of high quality financial reporting (see e.g. Daske and Gebhardt 2006; Glaum et al., 2013) studies have focused on different dimensions of comparability and transparency. First, the compliance of firms' financial statements with IFRS has been questioned. Street and Gray (2002) provide evidence for substantial compliance problems in IFRS financial reports for the year 1998. Verriest et al. (2013) and Glaum et al. (2013b) also find a considerable degree of non-compliance with regard to IFRS disclosures in the first year of IFRS application. Second, studies have investigated the effects of IFRS adoption on the comparability of financial statements documenting substantial differences across countries with regard to accounting policy choices (e.g. Kvaal and Nobes, 2010 and 2012; Haller and Wehrfritz, 2013).

Third, the quality of financial statements, especially regarding transparency, has been evaluated by measures of the properties of earnings but, to date, results have been inconclusive. For example, some researchers have addressed the value relevance of IFRS financial statements in capital markets (e.g. Bartov et al., 2005; Hung and Subramanyam, 2007; Jermakowicz et al., 2007; Aharony et al., 2010; Ahmed et al., 2013).[43] A common approach to evaluate the quality of earnings is to measure the degree of earnings management whereby earnings management refers to corporate decision makers affecting the outcomes of financial reporting by either structuring real transactions or using discretion over recognition or disclosure when preparing financial statements (see e.g. Healy and Wahlen, 1999; Roychowdhury, 2006; Ronen and Yaari, 2008). They may do so in order to achieve certain contractual outcomes that are dependent on accounting figures or to mislead users of financial reporting about the real performance of the company (Healy and Wahlen, 1999). Besides such opportunistic reasons, discretionary accounting choices can also be used as a means of signaling private information to outside investors or other external parties (Watts and Zimmermann, 1986; Healy and Wahlen, 1999). However, in most cases, higher quality earnings are assumed to exhibit less earnings management.[44]

Prior research reveals inconsistent results. For example, the results of Barth et al. (2008) generally indicate less earnings management in terms of earnings smoothing and earnings management towards positive earnings ("loss avoidance") for firms that adopted international accounting standards compared to (matched) non-adopters applying domestic GAAP in 21 countries. Contrarily, Jeanjean and Stolowy (2008) who examine the impact of the mandatory adoption of IFRS in Australia, France, and the UK conclude that the pervasiveness of earnings management behavior has not been reduced by the introduction of the new standards. The most widespread approach to measuring the degree of earnings management is to determine discretionary accruals. Ahmed et al. (2013) provide a comprehensive overview of research on the association between IFRS adoption and discretionary accruals highlighting the inconsistency of prior findings. On the basis of a meta-analysis, they further conclude that the regulatory change towards IFRS did not lead to a decrease in discretionary accruals.

For the German accounting environment, van Tendeloo and Vanstraelen (2005) provide evidence for a significant increase in earnings management measured by discretionary accruals following the voluntary adoption of international accounting standards for a sample period from 1999 to 2001. However, the authors find no significant differences between voluntary adopters of international standards and firms reporting under German GAAP after including hidden reserves into their analyses. Nevertheless, van Tendeloo and Vanstraelen (2005) conclude that the application of international accounting standards cannot be associated with a decrease in earnings management. These results are complemented by Callao and Jarne (2010) who examine the effects of mandatory IFRS adoption in 11 European countries. Covering a period of two years before and two years after the regulatory change in 2005, the authors find an increase in earnings management as discretionary accruals increased immediately after the IFRS adoption in Europe. Meanwhile, the results for Germany reveal significant changes only with regard to long-term discretionary accruals, while there are no significant differences regarding total and current accruals.

As one potential explanation for such inconsistent results regarding the financial reporting effects of the adoption of IFRS, Brüggemann et al. (2013) suggest that the (earnings quality) metrics applied are not capturing what is relevant to users of financial reporting. In a similar vein, Daske and Gebhardt (2006) point out that studies examining the effects of IFRS adoption on specific properties of accounting measures, such as earnings, *'by their design do not analyze the potential differences and changes in the information provided in the actual annual reports of firms adopting IFRS'* (p. 462). Obviously, the primary contents of financial statements, income statement and balance sheet, are not the only means by which firms communicate to external stakeholders. Accordingly, some researchers have examined the effects of the introduction of international accounting standards on disclosure quality, a different dimension of transparency.

(Leuz and Verrecchia, 2000; Muller et al., 2011), stock market liquidity (Daske et al., 2008), cost of capital (Daske, 2006) or the accuracy of analysts' forecasts (Glaum et al., 2013). Others have focused on macroeconomic effects, particularly on changes in foreign investment behavior (e.g. Beneish et al., 2015). Brüggemann et al. (2013) who review the literature on the economic consequences of mandatory IFRS adoption observe that *'there is plenty and almost unanimous evidence of positive capital market and macroeconomic effects'* (p. 29).

[43] With regard to Germany, results are mixed. Bartov et al. (2005) provide evidence for earnings computed according to US GAAP or IFRS being of higher value relevance than German GAAP earnings. For a DAX-30 sample of firms, Jermakowicz et al. (2007) also find support for higher value relevance as a result of the voluntary adoption of IFRS. However, Hung and Subramanyam (2007) find no evidence for an increase in value relevance from local GAAP numbers to those that are presented by German first-time adopters of international accounting standards. For a comprehensive overview of value relevance studies examining the effects of IFRS adoption see Ahmed et al. (2013) highlighting the mixed evidence delivered.

[44] See footnote 4 again.

Leuz and Verrecchia (2000) examine the quality of disclosures for German *DAX 100* firms by comparing ratings of an annual report 'beauty contest' published in the business journal *Capital*. For the fiscal years ending between July 1997 and June 1998, they find significantly higher mean and median ratings for firms that have adopted international reporting strategies[45] compared to firms that report solely according to German GAAP. Daske and Gebhardt (2006) analyze the effects of the adoption of internationally recognized financial reporting standards, IFRS and US GAAP, on the quality of annual reports for firms from Austria, Switzerland, and Germany. Using disclosure quality scores based on ratings of yearly "Best Annual Report" 'beauty contests' published in business magazines between 1996 and 2004,[46] they find a significant increase of disclosure quality in the course of the adoption of international standards, particularly IFRS. Importantly, their results also hold in multivariate analyses controlling for individual reporting incentives.[47]

For a sample of German listed firms from 1997 to 2005, Glaum et al. (2013) examine changes in the accuracy of analysts' earnings forecasts due to the introduction of international accounting standards and whether such changes can be attributed to increased disclosure. Measuring disclosure quality with scores obtained from a yearly "Best Annual Report" 'beauty contest' organized by the German business journal *manager magazin*,[48] they find that the quality of disclosures in the notes to the financial statements as well as in management reports is significantly higher for firms reporting under IFRS or US GAAP compared to firms reporting under German GAAP. Overall, Glaum et al. (2013) conclude that the introduction of international standards improved disclosure quality and the accuracy of analysts' forecasts, whereby the latter effect can, to some extent, be attributed to the former.

The overview of prior research shows that results concerning the effect of the adoption of IFRS on the quality of financial reporting are not unambiguous. Regarding transparency, on the one hand, studies provide clear evidence for an increase in disclosure quality under IFRS. This is in line with the notion that international accounting standards require more disclosures than German GAAP (Leuz and Verrecchia, 2000; Ashbaugh, 2001). On the other hand, research on the effects of IFRS adoption on earnings management is not unambiguous which reflects ambiguous theoretical reasoning.[49] While some advocate that international standards limit accounting choices compared to German GAAP (d'Arcy, 2000) and, thus, might reduce the scope for earnings management (Barth et al., 2008), it has been acknowledged that there is a range of explicit and implicit options and vague criteria under IFRS, too (Nobes, 2006 and 2013), that offer opportunities to manage earnings (Callao and Jarne, 2010). Furthermore, the application of any set of accounting standards requires substantial judgment, estimates, and the use of private information (Jeanjean and Stolowy, 2008).

Following the assumption that IFRS are of higher quality than local GAAP within the EU on which the introduction of IFRS is based, the inconclusive research findings affirm the notion that high quality standards are not necessarily sufficient for providing high quality financial information (Ball et al., 2003). For example, Christensen et al. (2013) show that positive capital market effects of IFRS adoption only materialized in countries that experienced concurrent changes in their accounting enforcement mechanisms. In fact, the accounting numbers observed are the result of the financial reporting system as a whole, including standards, their interpretation as well as enforcement and litigation (Barth et al., 2008). Thus, besides the use of a variety of metrics, different time periods, data sources, and diverse research designs (Barth et al., 2008), institutional factors such as varying degrees of investor protection or enforcement of accounting standards and the essential role of incentives for accounting decisions (see e.g. Ball et al., 2003) may have contributed to the inconclusiveness of prior research.

Against this background, it is important to note that prior research inevitably had to study rather short-time horizons after the adoption of IFRS. This may have contributed to understating positive effects on the transparency of financial reporting for several reasons. First, the initial years of IFRS application are likely to be influenced more heavily by the first-time adoption rules of the relevant standard IFRS 1 which includes several exceptions from retrospective application of IFRS. This can be seen as a *'structural break in the time series of firms' accounting numbers that will take several years to wash out'* (Brüggemann et al., 2013, p. 30). Second, the younger a standard-setting regime is, the more principle-based it likely is, since common guidelines and interpretations are developed over time (Nelson, 2003; Callao and Jarne, 2010). Assuming shared guidelines and interpretations to enhance consistent application and to reduce the scope for discretionary accounting decisions,[50] comparing GAAP that have been applied for decades to a recently adopted reporting regime leaves the latter with a 'disadvantage'.

Third, substantial non-compliance with the effective IFRS (Street and Gray, 2002; Verriest et al., 2013; Glaum et al., 2013b), especially in the early phase of IFRS accounting, could also adversely affect the quality of summary measures of the accounting process, such as earnings. We expect IFRS compliance to improve over time assuming that the more experienced accountants, auditors and users are, the better the quality of IFRS financial

[45] See footnote 7 for a description of these strategies.

[46] The "Best Annual Report" 'beauty contests' are published by the business magazines *Capital* and *Focus Money* in Germany (1996–2003), *Bilanz* in Switzerland (2001–2004), and *Trend* in Austria (1997–2004).

[47] For a discussion of Daske and Gebhardt (2006) see Gallery (2006).

[48] These scores also form the basis for our analyses. For a description of the "Best Annual Report" 'beauty contest' published by *manager magazin* see section 4.2. Please note that Glaum et al. (2013) have access to more detailed scores which is beyond what has been published in the business journal. This enables them to differentiate between the disclosure quality of notes and that of management reports.

[49] See Doukakis (2014) who describes various arguments regarding the effect of mandatory IFRS adoption on earnings management and does neither hypothesize nor find effects of the regulatory change on accrual-based and real earnings management for observations from 22 European countries between 2000 and 2010.

[50] The effect of common guidelines and interpretations on earnings management is not unambiguous. While the scope for accounting choices is probably reduced as standards become more rules-based, incentives for real activities management might increase concurrently.

statements is. Fourth, Germany's enforcement institution, the German FREP, started to examine financial statements in 2005. In addition to this important change, we also expect enforcement to undergo a learning curve as well as increasing awareness among preparers and auditors about the consequences of non-compliance.[51] Since accounting enforcement is key to financial reporting quality (e.g. Hope, 2003; Christensen et al., 2013), we expect a decrease in earnings management as a result of these effects.

Being interested in the effects of IFRS adoption on transparency in Germany, we assess the effects on both, the quality of corporate disclosures as well as on the degree of earnings management. While the literature does not provide unanimous support for the superiority of IFRS, we consider that the IASB intends IFRS to be *'high quality, understandable, enforceable and globally accepted financial reporting standards …* [which] *should require high quality, transparent and comparable information in financial statements and other financial reporting'* (Preface to IFRSs, par. 6(a)). Thus, the objectives of the IASB correspond to the objectives regarding transparency and comparability formulated by the "IAS Regulation". Accordingly, we expect an increase of transparency in the course of the adoption of IFRS, i.e. an increase of disclosure quality and a decrease of the degree of earnings management. Additionally, we follow our argumentation above and expect transparency under IFRS to increase over time as preparers, users, auditors and enforcers become more experienced and proficient in the application of IFRS, compliance improves, the effects of the first-time adoption rules diminish, and common guidelines and interpretations of the standards emerge. Hence, we formulate our first hypotheses as follows:

H1: *Transparency of financial reporting is higher under IFRS than under German GAAP.*

H2: *Transparency of financial reporting under IFRS increases over time.*

3.2 Association between Disclosures and Earnings Management

Next to the effects of IFRS adoption on earnings management and disclosure quality, we are interested in the relation between these two dimensions of transparency. One motivation of the IASB to require financial statements to comprise disclosures is to ensure that financial reporting faithfully represents what it purports to represent, e.g. by enhancing the reliability of management's estimates and assumptions (see e.g. IAS 1.BC81; IAS 36.BC199-.BC209). In support of this motivation, anecdotal evidence suggests that insufficient disclosures create opportunities to manage earnings through the use of biased estimates and assumptions.[52]

Theoretically, both corporate disclosures as well as earnings management are associated with information asymmetry. Intuitively, the disclosure of private information reduces information asymmetries between insiders, i.e. managers of the firm, and outsiders of the firm, particularly investors (Diamond and Verrecchia, 1991; Kim and Verrecchia, 1994). Empirical research provides support for a relation between disclosure and information asymmetry between investors and managers as well as for the economic benefits resulting from the reduction of information asymmetry (e.g. Lang and Lundholm, 1993 and 1996; Botosan, 1997).

Theoretical arguments also suggest a relation between information asymmetry and earnings management. In particular, analytical models assume information asymmetry between managers and investors to be a precondition for earnings management (Trueman and Titman, 1988; Dye, 1988). Richardson (2000) provides empirical support for this notion and finds a positive association between the level of information asymmetry and earnings management. The author concludes that the higher the level of information asymmetry, the higher the degree of earnings management, suggesting that *'information known about the firm and its earnings may limit the extent of earnings management performed by firm managers'* (p. 344).

Drawing upon these relations, research also examined the link between disclosure quality and earnings management or, more generally, earnings quality. Lobo and Zhou (2001) infer from the above that *'firms that disclose more information have less flexibility to manage earnings'* (p. 4) and, accordingly, disclosure quality is negatively related to the degree of earnings management. However, Francis et al. (2008) as well as Mouselli et al. (2012) point out that prior literature provides conflicting theoretical arguments regarding the nature of the relationship between disclosure quality and earnings quality. On the one hand, one could argue that firms with low earnings quality (high information asymmetry) have incentives to provide higher quality disclosures in order to reduce information asymmetry. On the other hand, one could view earnings quality and disclosure quality as complements and expect management's incentives to disclose additional information to decrease with lower earnings quality, because external parties have stronger concerns regarding the credibility of such disclosures, and vice versa.[53]

[51] While negative capital market effects resulting from SEC error announcements are well documented (e.g. Dechow et al., 1996), Hitz et al. (2012) find first evidence for negative effects in terms of abnormal returns, abnormal trading volumes and abnormal bid-ask spreads of FREP error announcements in Germany as well.

[52] See, for example, the following extracts from responses in relation to the impairment-only approach for goodwill accounting to the IASB's request for information during the Post-implementation Review on IFRS 3 "Business Combinations" in 2014. The European Securities and Markets Authority states (ESMA, 2014, p. 6): *'ESMA identified shortcomings related to the description of the management approach to determining the value(s) assigned to each assumption, whether those values(s) reflect past experience or, if appropriate, are consistent with external sources of information as required by paragraph 134(d)(ii) of IAS 36. The high level of subjectivity in determining many assumptions and estimates combined with disclosures requirements that prove difficult to be enforced creates an incentive for earnings management.'* Similarly, the SIX Exchange Regulation recommends to require additional disclosures (e.g. *'Disclosure of the terminal value in percent of the total recoverable amount'*) in its comment letter to the same IASB request and states (SIX Exchange Regulation, 2014, p. 4): *'We believe that the disclosure of this information would not only be useful for investors, but might also mitigate the use of unrealistically optimistic assumptions.'*

[53] See Francis et al. (2008) and Mouselli et al. (2012) for this discussion. Since Mouselli et al. (2012) use classical earnings management proxies and refer explicitly to earnings management when interpreting their results, presumably the opposing theoretical views can be transferred to the

Similar to this controversy about the nature of the relationship, theory predicting a negative (positive) relation between disclosures and earnings management (earnings quality) is not conclusive about the direction of causality.[54] As argued by Francis et al. (2008) and Blanco et al. (2014), causality might flow from earnings quality to disclosure quality, because firms that provide higher quality information via their earnings signal also have stronger incentives to provide additional information that would further reduce information asymmetry and yield related benefits (e.g. lower cost of capital). Additionally, improvements in the information environment (i.e. higher earnings quality) strengthen the incentives to provide high quality disclosures, because non-disclosure would more likely be interpreted as bad news.

Contrarily, experimental research indicates that users are more likely to see through earnings management practices when financial information is presented in a more transparent manner (e.g. Hirst and Hopkins, 1998) and that incentives to conduct earnings management are reduced as the likelihood of a detection increases (Hunton et al., 2006). This is in line with the standard setter's rationale that enhanced disclosure requirements limit management's discretion over assumptions and estimates thereby reducing the scope for earnings management. Shalev (2009) provides evidence for a negative association between the quality of business combinations disclosures and the degree of earnings management and adds a related perspective on causation arguing that *'lower disclosure level increases managers' flexibility to manage earnings in the future'* (p. 245).

Empirical evidence regarding the interaction between disclosures and earnings management is scarce, in particular for Continental European countries and the IFRS reporting regime. Francis et al. (2008) examine the relation between earnings quality and voluntary disclosure for a sample of 677 US firms in 2001. They find a significant relation that is complementary in nature, i.e. the higher the quality of earnings the more voluntary disclosures are provided by the firm. For a US sample between 2001 and 2006, Blanco et al. (2014) examine the relation between the quantity of segment disclosures and earnings quality. Documenting a significant positive association between current levels of the two constructs, they further examine the association between current (past) segment disclosure and past (current) levels of earnings quality. Since only current segment disclosure is related to past earnings quality levels, Blanco et al. (2014) argue that earnings quality is more likely to be a determinant of segment disclosure than vice versa. However, Jo and Kim (2007) provide evidence for a negative association between the frequency of disclosure and earnings management for SEO firms in the US and argue for the opposite direction of causality, i.e. increased disclosure lowers information asymmetry and facilitates the detection of earnings management which, accordingly, reduces incentives for earnings management.

Mouselli et al. (2012) examine the relationship between disclosure quality, defined as the number of future-oriented earnings statements in the narrative sections of annual reports, and the absolute value of discretionary accruals. For a UK sample and a period from 1997 to 2004, the authors find a negative association and conclude *'that firms with higher disclosure quality engage less in discretionary accruals'* (p. 37). A second study with a focus on UK firms has been conducted by Iatridis (2011) for the years from 2005 to 2009. Using a checklist to measure the quality of annual reports, the author provides initial evidence for a negative association between disclosure quality and the degree of earnings management under IFRS. These results are consistent with earlier findings of Lobo and Zhou (2001) who show that disclosure quality and earnings management are negatively related for a sample of firms with disclosure ratings of the Association for Investment Management and Research (AIMR) during the period from 1990 to 1995. Taken together, these findings suggest that firms that provide high (low) quality disclosures exhibit less (more) earnings management, i.e. the greater the amount and the higher the quality of disclosures, the smaller the room for (opportunistic) earnings management. In contrast, Shaw (2003) finds that *'higher disclosure quality is not always synonymous with less earnings management'* (p. 1050) when examining the association between financial analysts' ratings of disclosure quality and discretionary accruals for an earlier period from 1985 to 1989. In particular, the author concludes that firms that provide higher quality disclosures engage more aggressively in earnings smoothing than firms that provide lower quality disclosures.

Building on extant literature, we expect disclosure quality and earnings management to be related. In particular, since disclosures potentially facilitate the detection of earnings management by reducing information asymmetry, which has been described as a precondition to conduct earnings management, we expect a negative relation between these dimensions of transparency. Anecdotal evidence as well as the standard setter's rationale for requiring disclosures further support the assumption that the greater the amount and the better the quality of firms' disclosures are, the tighter the constraint which they put on (opportunistic) earnings management behavior. This line of argumentation regarding the relationship is intuitive, especially from an intertemporal perspective as argued by Shalev (2009). Being aware of alternative views as presented above, we therefore formulate our hypothesis on the association of disclosure quality and earnings management (*H3*) as follows:

H3: *Higher quality disclosures have a constraining effect on earnings management.*

4. RESEARCH DESIGN

4.1 Measurement of Earnings Management

Following prior literature, we principally rely on the Jones (1991) model to obtain a proxy for the degree of earnings management. However, we use the performance adjusted modified Jones model as in Kothari et al. (2005) and estimate the accrual process as a function of sales growth (adjusted for

relationship between disclosure quality and earnings management, in particular.

[54] See Blanco et al. (2014) for the following discussion.

growth in credit sales), property, plant and equipment (*PPE*) and return on assets (*ROA*). Beginning of period total assets (*A*) serve as denominator in this equation:

$$\frac{TA_{it}}{A_{it-1}} = \alpha_0 + \beta_1 \frac{1}{A_{it-1}} + \beta_2 \frac{\Delta Sales_{it} - \Delta Receivables_{it}}{A_{it-1}} + \beta_3 \frac{PPE_{it}}{A_{it-1}} + \beta_4 ROA_{it-1} + \varepsilon_{it}$$

In this model, TA_{it} is total accruals and is calculated as follows (*Rephrased in Worldscope items total accruals is calculated as* /ΔWC02201 –ΔWC02003/ –/ΔWC03051 –ΔWC18232 –WC04828/ – WC01151):

$$TA_{it} = (\Delta Current\ assets_{it} - \Delta Cash_{it}) - (\Delta Current\ liabilities_{it} - \Delta Current\ portion\ of\ long\ term\ debt_{it} - \Delta Income\ tax\ payable_{it}) - Depreciation\ and\ amortization\ expense_{it}$$

We separately estimate this model for each industry in our sample.[55] The residuals of this model serve as firm-year specific estimators for the degree of earnings management. As earnings management might be income-increasing or income-decreasing, we analyze the absolute value of discretionary accruals. As robustness checks, we use the standard Jones (1991) model and the modified Jones model of Dechow et al. (1995) as well as the PM/ATO diagnostic of Jansen et al. (2012), an alternative earnings management measure that does not depend on estimates of accruals.

4.2 Measurement of Disclosure Quality

A variety of proxies have been used in prior research to assess the quality of disclosures including self-constructed disclosure indices, external disclosure ratings or disclosure scores from annual report 'beauty contests'.[56] Examples of researcher-constructed indices include Botosan (1997) and Francis et al. (2008). This approach requires the researcher's subjective assessment regarding the items to be included as well as their weighting. In addition to that, the coding is labour-intensive. For these reasons, self-constructed indices are typically hard to replicate and often result in small sample sizes. On the other hand, these indices can be applied to any firm which disposes of one limitation of proxies derived from external ratings which only include firms covered by the rating agency. Examples of studies using such external ratings include Healy et al. (1999) and Botosan and Plumlee (2002). One concern with these external ratings is that they reflect analysts' perceptions of disclosure quality rather than the firms' actual disclosure quality (Lang and Lundholm, 1996). However, analysts are among the primary users of financial reporting and should be familiar with the individual firm and its industry. Moreover, the most widely used external rating, the disclosure ratings published in the CFA institute (former: Association for Investment Management and Research (AIMR)) reports, is not available for all time periods. Further, the committee evaluating disclosure quality differs by industry and time.[57]

In this study, we follow a third approach by using scores extracted from an annual report 'beauty contest', namely the "Best Annual Report" (*"Bester Geschäftsbericht"*) ranking of the German business journal *manager magazin*. Similar rankings have also been used in prior research (e.g. Daske and Gebhardt, 2006; Hail, 2002; Glaum et al., 2013). Our measure provides a compromise solution to the trade-off between the advantages and disadvantages of researcher-constructed and externally provided scores. By using this measure we avoid some concerns with regard to the self-constructed scores because we can neither influence the assessment itself nor the weighting. As a matter of course, the score is still subject to judgment by the scholars who performed the ranking. As the "Best Annual Report" ranking has been computed for a long time period and for a large number of firms, we have more than 1,500 firm-year observations in our sample which mitigates another concern with self-constructed disclosure indices. Furthermore, the time period from 1995 to 2012 is suitable for our research as it covers both German GAAP requirement periods as well as a number of international GAAP requirement periods.

The "Best Annual Report" ranking has recently been used in a study of Glaum et al. (2013).[58] As they provide an extensive description of the ranking, we focus on the main characteristics. The 'beauty contest' is conducted annually and includes mainly firms from the exchange indices DAX, MDAX, SDAX, TecDAX and Nemax-50[59] of the German stock exchange as well as European firms included in the STOXX index. In each year, annual reports including financial statements are evaluated with regard to different categories, such as 'language' and 'design' of the report and, most importantly, regarding the 'content' of disclosures. To capture the development of accounting and regulation, rankings need to change over time (Daske and Gebhardt, 2006). In some years, the aforementioned categories were complemented by the categories 'financial communication' and 'reporting efficiency' and an additional expert jury evaluation. Furthermore, the weighting of the individual categories changed over time. Therefore, we focus solely on the 'content' score as our measure for disclosure quality.

The 'content' category has been part of the ranking throughout the whole sample period from 1995 to 2012. For this score, each annual report is assessed by analysts of the University of Münster using a checklist of more than 300 items. The

[55] The industry classification is based on SIC codes (Ernstberger et al., 2013, and Frankel et al., 2002).

[56] See Artiach and Clarkson (2011) for a comprehensive discussion of the first two approaches.

[57] See Artiach and Clarkson (2011), pp. 24–32, for a more detailed discussion.

[58] See Glaum et al. (2013), pp. 91–92.

[59] The Nemax–50 index included firms from sunrise industries such as IT, biotechnology and telecommunications. This index has been closed in 2003 as a result of the dot–com bubble.

checklist covers the notes to financial statements, the management report as well as other disclosures that are provided additionally within the annual reports.[60] The items reviewed are weighted based on surveys of financial experts (Armeloh, 1998), resulting in a total disclosure score between 0 and 100.

With regard to the notes to financial statements which contain information about accounting policies, individual balance sheet items as well as income and expense positions and additional supplementing information regarding the firm's financial situation and performance, the evaluation considers whether and how detailed the information has been disclosed. Similarly, the management report which provides more future-oriented information, such as information about the firm's risks and opportunities, is evaluated by assessing whether and in which form (e.g. general verbal or quantitative information) the information is reported (Glaum et al., 2013). Thus, the checklist covers both the quantity and the quality of disclosures which is why the 'content' score of the "Best Annual Report" contest is a good approximation for disclosure quality as a measure of transparency.

4.3 Research Approach

Univariate analyses

To test our hypotheses, we start by conducting several t-tests and Mann-Whitney-Wilcoxon-tests for the differences in means and medians. First, we test the differences in means and medians of discretionary accruals and disclosure quality scores across the two reporting regimes. In line with our first hypothesis, we expect an increase of transparency in the course of the adoption of IFRS, i.e. an increase of disclosure quality and a decrease of the degree of earnings management.

In a second step, we analyze the differences across the early and mature phase of the individual firms' IFRS accounting. For these analyses, we define 'early' as the first four years of the individual firms' IFRS accounting, irrespective of whether the adoption was voluntary or not. We choose this cut-off point to obtain a balanced sample size and period length across the two groups.[61] The results are robust to other reasonable specifications of the phases, e.g. definition of the first three or the first five years of the individual firms' IFRS application as 'early'.

Multivariate analyses – earnings management

The univariate approach does not account for the effects of different firm characteristics and incentives or for changes over time on our metrics of transparency. Therefore, we also conduct different sets of regression analyses. The first set is intended to test the effect of IFRS adoption on discretionary accruals, whilst the second set is intended to test the effect of IFRS adoption on disclosure quality. By combining both models, we aim to test the constraining effect of disclosures on earnings management. We construct the following model (I) for earnings management analyses. All variables are defined in Appendix 1.

$$\begin{aligned}|DA| = {} & \alpha_0 + \beta_1 IFRS_{it} + \beta_2 Total\ Assets_{it} + \\ & \beta_3 Leverage_{it} + \beta_4 Sales\ growth_{it} + \beta_5 Cfo_{it} + \\ & \beta_6 Change\ PPE_{it} + \beta_7 CfoD_{it} + \beta_8 LossD_{it} + \\ & \beta_9 Big4_{it} + \beta_{10} New\ Market_{it} + \sum \gamma_i Industry_i + \\ & \sum \delta_i Year_i + \varepsilon_{it}\end{aligned} \quad \text{(I)}$$

The choice of control variables is based on prior literature and follows Houqe et al. (2012) and van Tendeloo and Vanstraelen (2005). *IFRS* is a dummy variable equal to 1 for firm-year observations with IFRS reporting.[62] We include *Total Assets* to control for size-related incentives for earnings management because prior research suggests that larger firms make more income-decreasing accounting choices in response to greater political and regulatory scrutiny (Watts and Zimmerman, 1986). However, more recent studies predict that size is positively associated with earnings quality because of relatively higher costs of internal control procedures for small firms.[63] Given the fact that we analyze the absolute value of discretionary accruals (|*DA*|) and interpret earnings management opportunistically, the latter would result in a negative association between |*DA*| and *Total Assets*. Next, we include *Leverage* to control for the leverage-related incentives for earnings management. The direction of the effect of leverage on earnings management, however, is not unambiguous. On the one hand, it is argued that higher leveraged firms are closer to debt covenant violations and are therefore more willing to engage in (income-increasing) earnings management (Watts and Zimmerman, 1986; DeFond and Jiambalvo, 1994; Houqe et al., 2012). On the other hand, it is argued that higher leveraged firms have incentives to engage in income-decreasing earnings management activities for the sake of contractual renegotiations (Becker et al., 1998; van Tendeloo and Vanstraelen, 2005). As we analyze the absolute value of discretionary accruals, this would result in a positive association between |*DA*| and *Leverage*. Prior literature suggests a positive relation between the degree of earnings management and growth because growth companies have higher incentives to manage earnings opportunistically in order to attract investors (Houqe et al., 2012). To capture this effect we include *Sales Growth* and the change in property, plant and equipment (*Change PPE*) in our model. Furthermore, we include *Cfo* to control for the association between operating cash flow and accruals. Following van Tendeloo and Vanstraelen (2005), we expect a positive relation between *Cfo* and the absolute value of discretionary accruals.

Additionally, we include the dummy variables *CfoD* and *LossD* which are intended to control for

[60] The overall 'content' score of the annual report contest which forms our proxy for disclosure quality is derived from the weighted scores for the notes to financial statements (44.88%), management report (43.12%) and other disclosures (12.00%). For detailed information about the "Best Annual Report" contest and the 'content' score see Baetge et al. (2012), pp. 63–68 and Oberdörster (2009), pp. 88–100.

[61] For firms adopting IFRS mandatorily in 2005, the cut-off point chosen results in four "early IFRS years" and four "mature IFRS years".

[62] The distinction between IFRS and local GAAP preparers is based on the Datastream item 'Accounting Standards Followed' (WC07536) using the coding of Daske et al. (2013).

[63] See Dechow et al. (2010) for a discussion of the determinants of earnings management.

the higher incentives for firms making losses and experiencing negative operating cash flows to engage in earnings management. Next, we include the dummy variable *Big4* to control for the constraining effect of larger auditors on the degree of earnings management (Francis et al., 1999; Becker et al., 1998). In Germany, there are firms which had to mandatorily adopt either IFRS or US GAAP prior to 2005 because Deutsche Börse AG required the financial statements of firms listed on the New Market – a market segment for innovative and fast-growing firms – to be prepared in accordance with international standards. Therefore, we include the dummy *New Market* in our analyses. Finally, we include dummy variables for years and industries.[64] We run the regressions with heteroskedasticity-adjusted robust standard errors clustered by firm and year (Petersen, 2009) and demeaned variables. We hypothesize that the introduction of IFRS leads to a decrease in the degree of earnings management. Accordingly, we expect the coefficient β_1 in the regression above to be negative and significant.

To separately analyze the effect of the early and the mature phase of the individual firms' IFRS accounting on discretionary accruals, we construct model (II) below. Here, the dummy *IFRS* is replaced by the two dummy variables *Early IFRS* and *Mature IFRS*, which indicate whether the firm-year observation belongs to the early or mature phase of IFRS reporting. In accordance with our hypotheses H1 and H2, we expect that the coefficient for *Mature IFRS* is not only negatively significant, but also indicates a stronger decrease of the level of earnings management than the coefficient for *Early IFRS*.

$$|DA| = \alpha_0 + \beta_1 Early\ IFRS_{it} + \beta_2 Mature\ IFRS_{it} + \beta_3 Total\ Assets_{it} + \beta_4 Leverage_{it} + \beta_5 Sales\ growth_{it} + \beta_6 Cfo_{it} + \beta_7 Change\ PPE_{it} + \beta_8 CfoD_{it} + \beta_9 LossD_{it} + \beta_{10} Big4_{it} + \beta_{11} New\ Market_{it} + \sum \gamma_i Industry_i + \sum \delta_i Year_i + \varepsilon_{it} \quad \text{(II)}$$

Multivariate analyses – disclosure quality

We construct the following model (III) to examine the effect of IFRS adoption on disclosure quality. In this equation, *DQ* is the score of the category 'content' of the "Best Annual Report" 'beauty contest' of *manager magazin*. For details about the calculation of all other variables please refer to Appendix 1. The selection of control variables is again based on prior literature and follows Glaum et al. (2013).[65] In general, disclosure quality is associated with firm size, financing needs, and performance (Lang and Lundholm, 1993; Leuz and Verrecchia, 2000). Therefore, we include *Total Assets* to proxy for size, *Leverage* to capture the incentives of more highly leveraged firms, and *ROA* to control for firm performance.

Furthermore, the ratio of a firm's foreign sales to its total sales (*Foreign Sales*) is included to proxy for the higher incentives for disclosure for more internationally active firms, whereas the percentage of closely held shares (*Close*) is included to proxy for ownership concentration. *Beta* is included to proxy for company risk. In addition, we include the dummy variables *Big4* and *US-Listing* to control for the effects of two firm-specific choices, i.e. the choice of a large auditor and the choice to cross-list overseas, on disclosure quality. We expect that both decisions have a positive influence on disclosure quality. Finally, we also include the dummy *New Market* in these analyses. As in models (I) and (II), we include fixed effects for years and industries, employ heteroskedasticity-adjusted robust standard errors clustered by firm and year (Petersen, 2009) and use demeaned variables. In accordance with hypothesis H1, we expect the coefficient β_1 for *IFRS* in the following model (III) to be significantly positive.

$$DQ = \alpha_0 + \beta_1 IFRS_{it} + \beta_2 Total\ Assets_{it} + \beta_3 Leverage_{it} + \beta_4 ROA_{it} + \beta_5 Foreign\ sales_{it} + \beta_6 Close_{it} + \beta_7 Beta_{it} + \beta_8 Big4_{it} + \beta_9 USListing_{it} + \beta_{10} New\ Market_{it} + \sum \gamma_i Industry_i + \sum \delta_i Year_i + \varepsilon_{it} \quad \text{(III)}$$

As in our earnings management analyses, we analyze the effect of the early and mature phase of the individual firms' IFRS accounting on disclosure quality by estimating model (IV).

$$DQ = \alpha_0 + \beta_1 Early\ IFRS_{it} + \beta_2 Mature\ IFRS_{it} + \beta_3 Total\ Assets_{it} + \beta_4 Leverage_{it} + \beta_5 ROA_{it} + \beta_6 Foreign\ sales_{it} + \beta_7 Close_{it} + \beta_8 Beta_{it} + \beta_9 Big4_{it} + \beta_{10} USListing_{it} + \beta_{11} New\ Market_{it} + \sum \gamma_i Industry_i + \sum \delta_i Year_i + \varepsilon_{it} \quad \text{(IV)}$$

Multivariate analyses – effect of disclosures on earnings management

To examine the relation between disclosure quality and earnings management, we include the variable *DQ* into our first model and estimate the following model (V). In accordance with our hypothesis H3, we expect the coefficient β_2 to be significantly negative.

$$|DA| = \alpha_0 + \beta_1 IFRS_{it} + \beta_2 DQ_{it} + \beta_3 Total\ Assets_{it} + \beta_4 Leverage_{it} + \beta_5 Sales\ growth_{it} + \beta_6 Cfo_{it} + \beta_7 Change\ PPE_{it} + \beta_8 CfoD_{it} + \beta_9 LossD_{it} + \beta_{10} Big4_{it} + \beta_{11} New\ Market_{it} + \sum \gamma_i Industry_i + \sum \delta_i Year_i + \varepsilon_{it} \quad \text{(V)}$$

Following the reasoning of Shalev (2009) that disclosures limit managers' flexibility in subsequent periods, we also conduct this analysis using prior year disclosure scores (DQ_{t-1}) to obtain deeper insights into the interplay between our dimensions of transparency. Furthermore, we estimate equation (V.) replacing *IFRS* by the two dummy variables *Early IFRS* and *Mature IFRS* as well as the interaction terms *Early IFRS*DQ* and *Mature IFRS*DQ* to examine whether the relationship differs across reporting regimes and time.

4.4 Data Description

Our focus on Germany[66] allows us to use a specific proxy for disclosure quality, the disclosure scores of the annual report 'beauty contest' of the German business journal *manager magazin*. Hence, our

[64] The industry classification is based on SIC codes (Ernstberger et al., 2013, and Frankel et al., 2002).

[65] In addition to the control variables used in our analysis, there are other candidate variables, e.g. number of analysts following or capital intensity (Daske and Gebhardt, 2006). We limit the control variables to those presented in this section to minimize the risk of multicollinearity.

[66] See footnote 5 for further reasons for limiting our sample to Germany.

sample composition is based on the firms included in this annual report competition and covers a time period from 1995 to 2012. The disclosure scores are merged with financial data taken from Thompson Reuters Datastream.[67] In order to strengthen our database for the analyses of the degree of earnings management, we include information for the whole sample period for all companies that have been covered at least once by the contest, if available. Due to the fact that not all firms are continuously included in the ranking published by *manager magazin*, the sample for the analyses of disclosure quality is smaller. We exclude firms from countries other than Germany, firms reporting in accordance with US GAAP[68], banking institutions and insurance firms as well as observations with missing data for the prior year. In total, we end up with 2,590 firm-year observations for the earnings management analyses and 1,502 firm-year observations for the analyses of disclosure quality.

5. RESULTS

5.1 Univariate Analyses

Panel A of table 1 shows the development of mean, median and standard deviation of the disclosure score from 1995 to 2012 differentiated by the reporting regime. Simple eyeball statistics show no clear trend for mean and median with local peaks and local valleys. With regard to the two reporting regimes, IFRS statements exhibit higher values in most years.[69] Panel B of table 1 shows overall mean (median) values and the results of t-tests (Mann-Whitney-Wilcoxon-tests) for German GAAP compared to IFRS and for the early vs. mature phase of the individual firms' IFRS accounting for the disclosure score as well as for the degree of earnings management (|*DA*|). This analysis shows significantly higher means and medians under IFRS for disclosure quality and, remarkably, also higher values for the degree of earnings management. This result holds when German GAAP is compared to the early phase of the individual firms' IFRS accounting. When comparing the early phase of the individual firms' IFRS accounting to the mature phase, there is no statistically significant increase in the disclosure quality score, whereas the t-test shows a decrease significant at the 1%-level for the degree of earnings management.

In summary, these simple analyses provide first evidence that IFRS adoption leads to better disclosure quality in terms of the content of disclosures. Contrarily, our analyses show that the extent of discretionary earnings management increases as a result of the change in the reporting regime, but decreases afterwards. However, a comparison of mean and median values does not account for alternative determinants of disclosure quality and the degree of earnings management, such as reporting incentives, firm characteristics and, most importantly, time effects. Therefore, the next subsection discusses our multivariate results.

5.2 Multivariate Analyses

Panel A of table 2 exhibits summary statistics of the variables used in our multivariate analyses and panel B shows frequencies of the dummy variables used. All variables are defined in Appendix 1. For the majority (69%) of our firm-year observations, financial statements are prepared in accordance with IFRS, whereas 31% are prepared under German GAAP. We differentiate between the early and the mature phase of the individual firms' IFRS accounting by assuming that the mature phase of IFRS reporting begins in the fifth year after the adoption. By doing so, we classify 45% of IFRS observations as early, and 55% as mature. Furthermore, 64% of the financial reports are audited by a Big 4 auditor, while 15% of the firm-year observations stem from firms that are cross-listed in the US.[70] With regard to the degree of earnings management, average (median) absolute discretionary accruals are at 0.078 (0.044). This indicates that discretionary accruals make up 7.8% (4.4%) of beginning of period total assets.

The lower (upper) triangle of table 3 presents Pearson (Spearman) correlations of the variables used in our analyses. The correlation between the degree of earnings management and the disclosure score is significantly negative. This is a first indication in support of our hypothesis of a constraining effect of disclosures on earnings management. With regard to the dummy variable *IFRS*, we see a significantly positive correlation with the disclosure score which strengthens the results from the univariate analyses. However, the correlation between *IFRS* and |*DA*| is insignificant (Spearman) or significantly positive (Pearson), respectively. As the latter result seems to be driven by the early phase of the individual firms' IFRS accounting, the correlation matrix provides some support for our hypothesis H2.

[67] All variables have been windsorized at the 0.5 percentile and the 99.5 percentile.

[68] Other researchers often treat IFRS and US GAAP equally and analyze the effect of the adoption of 'international standards' (e.g. Leuz and Verrecchia, 2000, or Daske and Gebhardt, 2006). We solely focus on the adoption of IFRS in our main analyses and use US GAAP observations for additional robustness checks.

[69] There are two companies in our sample which reported in accordance with German GAAP in the year 2005.

[70] Following Leuz and Verrecchia (2000), we include observations which are either listed in the US or are available on the US OTC market.

Table 1. Development of disclosure quality score and univariate analyses

Panel A: Development of disclosure quality score 1995-2012

		1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
	German GAAP	60.74	56.61	55.51	58.04	58.94	57.72	59.72	57.59	59.90	55.55	53.48	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	IFRS	66.48	64.57	67.03	63.17	62.59	60.90	59.41	57.10	61.47	58.35	59.96	56.92	59.88	57.12	60.13	57.11	58.33	56.92
Mean	Total	61.70	57.33	56.74	58.86	59.92	59.01	59.54	57.18	61.19	57.91	59.84	56.92	59.88	57.12	60.13	57.11	58.33	56.92
	German GAAP	64.16	56.00	53.54	56.18	56.57	56.76	57.41	56.17	61.92	56.08	53.48	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	IFRS	67.54	65.60	67.05	65.39	62.24	60.73	61.03	58.11	61.06	58.87	59.69	55.80	59.37	56.96	59.92	57.44	57.63	56.45
Median	Total	64.62	56.65	54.67	56.62	57.96	57.76	59.01	57.35	61.18	58.28	59.69	55.80	59.37	56.96	59.92	57.44	57.63	56.45
	German GAAP	10.03	6.75	7.12	6.40	6.09	6.88	7.62	8.51	9.82	9.53	9.40	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	IFRS	4.07	7.72	8.81	10.02	6.44	9.38	6.82	8.82	6.96	9.17	8.39	8.37	8.22	7.54	7.45	8.30	8.57	8.79
Standard deviation	Total	9.49	7.16	8.09	7.27	6.35	8.00	7.10	8.70	7.46	9.22	8.41	8.37	8.22	7.54	7.45	8.30	8.57	8.79

Panel B: Comparison of means and medians

Variable		German GAAP	IFRS	Difference German GAAP / IFRS		Early IFRS	Mature IFRS	Difference German GAAP / Early IFRS		Difference Early IFRS / Mature IFRS	
	Mean	57.47	58.88	1.40	**	58.04	58.89	0.56	*	0.85	
DQ	Median	56.33	58.43	2.11	***	57.48	58.78	1.15	*	1.30	
	Mean	0.062	0.087	0.03	***	0.100	0.076	0.038	***	-0.024	***
|DA|	Median	0.034	0.048	0.01	***	0.048	0.048	0.014	***	-0.000	

*Panel A of Table 1 exhibits the development of disclosure quality over time. Panel B shows mean and median values of the disclosure quality score and discretionary accruals for German GAAP, IFRS, early IFRS and mature IFRS, respectively. Early IFRS is defined as the first four years of the individual firm's IFRS adoption, whether this adoption was voluntary or not. Data for the disclosure quality score has been extracted from the annual report 'beauty contest' of manager magazin. ***, ** and * indicate that the means (medians) are significantly different at the 1%-level, 5%-level and 10%-level, respectively, using a two tailed t-test with Satterthwaite's degrees of freedom (Mann-Whitney-Wilcoxon test). All variables are defined in Appendix 1.*

Table 2. Descriptive statistics and frequencies of dummy variables

Panel A: Descriptive statistics of variables used in multivariate analyses

Continuous Variables	Mean	Std. Dev.	Min	Q1	Median	Q3	Max	Firm-Years
DQ	58.32	8.15	39.33	52.67	57.76	63.52	79.83	1,577
|DA|	0.078	0.107	0.000	0.015	0.044	0.094	0.614	3,095
Total Assets	2.39	2.57	0.18	0.97	1.67	2.89	39.86	2,594
Leverage	1.76	3.20	0.02	0.40	0.91	1.97	45.86	2,882
Sales growth	0.23	1.86	-0.91	-0.01	0.07	0.17	57.92	2,821
Cfo	0.14	0.22	-0.62	0.04	0.11	0.21	1.22	2,594
Foreign sales	39.84	30.45	0.00	7.96	40.45	67.28	94.60	3,095
ROA	0.02	0.12	-0.65	0.01	0.03	0.07	0.26	3,092
Close	32.43	30.59	0.00	0.00	28.80	56.76	98.74	3,095
Beta	0.60	0.49	-0.15	0.07	0.60	0.98	1.67	3,095
Change PPE	0.02	0.16	-0.76	-0.01	0.01	0.04	0.92	2,594

Panel B: Frequencies of dummy variables

Dummy Variables	Firm-Years	0	1	1 in %
IFRS	3,095	965	2,130	69%
Early IFRS	3,095	2,139	956	31%
Mature IFRS	3,095	1,921	1,174	38%
German GAAP	3,095	2,130	965	31%
US-Listing	3,095	2,631	464	15%
LossD	3,095	2,495	600	19%
CfoD	3,095	2,648	447	14%
Big4	3,095	1,118	1,977	64%
New Market	3,095	3,053	42	1%

Panel A of Table 2 exhibits the summary statistics of the main variables used in our analysis, Panel B summarizes the frequencies of dummy variables. Data for the disclosure quality score has been extracted from the annual report 'beauty contest' of manager magazin. The data for all other variables is based on the Thomson Reuters Worldscope database. All variables are defined in Appendix 1.

Table 3. Pearson-Spearman Correlations among Regression Variables

	DQ	***|DA|***	***Total Assets***	***Leverage***	***Sales growth***	***Cfo***	***Foreign Sales***	***ROA***	***Close***	***Change PPE***	***IFRS***	***Early IFRS***	*Mature IFRS*	*German GAAP*	*US-Listing*	*LossD*	*CfoD*	*Big4*	*New Market*	*Beta*
DQ	**1**	-0.179	0.151	0.114	-0.076	0.236	0.148	0.031	-0.101	0.060	0.270	0.000	0.255	-0.270	0.081	-0.115	-0.190	0.181	-0.163	0.290
		(0.00)	(0.00)	(0.00)	(0.01)	(0.00)	(0.00)	(0.31)	(0.00)	(0.05)	(0.00)	(1.00)	(0.00)	(0.00)	(0.01)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
|DA|	-0.160	**1**	-0.119	-0.138	0.106	-0.165	-0.121	0.022	0.046	-0.029	0.030	0.012	0.017	-0.030	-0.018	0.089	0.228	-0.079	0.090	-0.151
	(0.00)		(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.48)	(0.13)	(0.34)	(0.33)	(0.69)	(0.58)	(0.33)	(0.55)	(0.00)	(0.00)	(0.01)	(0.00)	(0.00)
Total Assets	0.113	-0.085	**1**	0.857	-0.204	0.542	0.021	-0.532	-0.029	0.119	-0.142	-0.116	-0.029	0.142	-0.073	0.102	-0.035	0.116	-0.164	0.223
	(0.00)	(0.00)		(0.00)	(0.00)	(0.00)	(0.50)	(0.00)	(0.35)	(0.00)	(0.00)	(0.00)	(0.35)	(0.00)	(0.02)	(0.00)	(0.25)	(0.00)	(0.00)	(0.00)
Leverage	0.059	-0.040	0.665	**1**	-0.211	0.394	0.013	-0.619	-0.090	0.104	-0.124	-0.105	-0.022	0.124	-0.086	0.206	0.036	0.099	-0.060	0.217
	(0.02)	(0.03)	(0.00)		(0.00)	(0.00)	(0.67)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.47)	(0.00)	(0.00)	(0.00)	(0.23)	(0.00)	(0.05)	(0.19)
Sales growth	-0.103	0.182	-0.007	-0.029	**1**	-0.111	-0.016	0.276	-0.033	0.311	0.023	0.056	-0.029	-0.023	0.062	-0.215	-0.007	-0.037	0.104	0.040
	(0.00)	(0.00)	(0.71)	(0.13)		(0.00)	(0.60)	(0.00)	(0.28)	(0.00)	(0.46)	(0.07)	(0.34)	(0.46)	(0.04)	(0.00)	(0.82)	(0.23)	(0.00)	(0.00)
Cfo	0.154	-0.110	0.320	0.080	0.006	**1**	0.050	-0.100	0.001	0.087	-0.021	-0.040	0.016	0.021	0.037	-0.147	-0.524	0.108	-0.155	0.219
	(0.00)	(0.00)	(0.00)	(0.00)	(0.76)		(0.10)	(0.00)	(0.98)	(0.00)	(0.49)	(0.20)	(0.60)	(0.49)	(0.22)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Foreign Sales	0.165	-0.173	-0.006	-0.011	-0.058	0.043	**1**	0.108	-0.066	0.029	0.189	0.034	0.147	-0.189	0.101	-0.122	-0.094	0.096	-0.140	0.228
	(0.00)	(0.00)	(0.76)	(0.56)	(0.00)	(0.03)		(0.00)	(0.03)	(0.34)	(0.00)	(0.26)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
ROA	0.023	-0.053	-0.129	-0.266	0.006	0.169	0.074	**1**	0.064	0.026	0.122	0.026	0.092	-0.122	0.048	-0.593	-0.243	-0.002	-0.118	-0.033
	(0.37)	(0.00)	(0.00)	(0.00)	(0.76)	(0.00)	(0.00)		(0.04)	(0.40)	(0.00)	(0.40)	(0.00)	(0.00)	(0.12)	(0.00)	(0.00)	(0.94)	(0.00)	(0.29)
Close	-0.066	-0.024	-0.056	-0.084	-0.011	-0.009	0.046	0.083	**1**	0.013	-0.181	-0.168	-0.019	0.181	-0.061	-0.083	-0.120	-0.030	-0.111	-0.195
	(0.01)	(0.18)	(0.00)	(0.00)	(0.57)	(0.66)	(0.01)	(0.00)		(0.67)	(0.00)	(0.00)	(0.54)	(0.00)	(0.05)	(0.01)	(0.00)	(0.32)	(0.00)	(0.00)
Change PPE	-0.003	0.051	0.012	-0.130	0.208	0.036	0.010	0.132	0.021	**1**	-0.032	0.011	-0.040	0.032	0.025	-0.160	-0.037	0.000	-0.029	0.112
	(0.90)	(0.01)	(0.54)	(0.00)	(0.00)	(0.07)	(0.62)	(0.00)	(0.29)		(0.30)	(0.72)	(0.19)	(0.30)	(0.42)	(0.00)	(0.22)	(0.99)	(0.34)	(0.00)
IFRS	0.058	0.106	-0.080	-0.092	-0.013	-0.038	0.070	-0.044	-0.181	-0.037	**1**	0.419	0.565	-1.000	0.098	-0.007	-0.017	0.141	0.001	0.302
	(0.02)	(0.00)	(0.00)	(0.00)	(0.49)	(0.05)	(0.00)	(0.01)	(0.00)	(0.06)		(0.00)	(0.00)	(1.00)	(0.00)	(0.81)	(0.57)	(0.00)	(0.98)	(0.00)
Early IFRS	-0.021	0.134	-0.024	-0.045	0.049	-0.019	-0.044	-0.019	-0.145	0.029	0.450	**1**	-0.513	-0.419	-0.006	-0.006	0.007	-0.011	0.079	0.043
	(0.40)	(0.00)	(0.21)	(0.02)	(0.01)	(0.34)	(0.02)	(0.29)	(0.00)	(0.20)	(0.00)		(0.00)	(0.00)	(0.85)	(0.85)	(0.83)	(0.71)	(0.01)	(0.16)
Mature IFRS	0.068	-0.026	-0.050	-0.045	-0.058	-0.018	0.108	-0.024	-0.035	-0.059	0.526	-0.523	**1**	-0.565	0.098	-0.002	-0.023	0.143	-0.071	0.246
	(0.01)	(0.14)	(0.01)	(0.02)	(0.00)	(0.37)	(0.00)	(0.19)	(0.05)	(0.00)	(0.00)	(0.00)		(0.00)	(0.00)	(0.96)	(0.46)	(0.00)	(0.02)	(0.00)
German GAAP	-0.058	-0.106	0.080	0.092	0.013	0.038	-0.070	0.044	0.181	0.037	-1.000	-0.450	-0.526	**1**	-0.098	0.007	0.017	-0.141	-0.001	-0.302
	(0.02)	(0.00)	(0.00)	(0.00)	(0.49)	(0.05)	(0.00)	(0.01)	(0.00)	(0.06)	(0.00)	(0.00)	(0.00)		(0.00)	(0.81)	(0.57)	(0.00)	(0.98)	(0.00)
US-Listing	0.039	-0.011	-0.120	-0.094	-0.013	-0.021	0.103	0.039	-0.068	0.017	0.066	0.017	0.047	-0.066	**1**	-0.096	-0.059	0.104	-0.055	0.083
	(0.12)	(0.56)	(0.00)	(0.00)	(0.51)	(0.29)	(0.00)	(0.03)	(0.00)	(0.37)	(0.00)	(0.34)	(0.01)	(0.00)		(0.00)	(0.05)	(0.00)	(0.07)	(0.01)
LossD	-0.075	0.090	0.162	0.294	-0.020	-0.142	-0.092	-0.659	-0.098	-0.204	0.097	0.054	0.041	-0.097	-0.037	**1**	0.327	-0.002	0.131	-0.046
	(0.00)	(0.00)	(0.00)	(0.00)	(0.30)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.02)	(0.00)	(0.04)		(0.00)	(0.10)	(0.00)	(0.13)
CfoD	-0.146	0.227	0.051	0.129	0.030	-0.509	-0.118	-0.401	-0.090	-0.051	0.052	0.054	-0.001	-0.052	-0.039	0.345	**1**	-0.095	0.111	-0.067
	(0.00)	(0.00)	(0.01)	(0.00)	(0.12)	(0.00)	(0.00)	(0.00)	(0.00)	(0.01)	(0.00)	(0.00)	(0.95)	(0.00)	(0.03)	(0.00)		(0.00)	(0.00)	(0.00)
Big4	0.143	-0.101	0.058	0.017	-0.049	0.066	0.127	-0.005	0.127	-0.003	0.062	0.001	0.058	-0.062	0.001	-0.011	-0.078	**1**	-0.052	0.161
	(0.00)	(0.00)	(0.00)	(0.35)	(0.01)	(0.00)	(0.00)	(0.77)	(0.00)	(0.89)	(0.00)	(0.98)	(0.00)	(0.00)	(0.95)	(0.55)	(0.00)		(0.09)	(0.00)
New market	-0.106	0.093	-0.072	-0.030	0.033	-0.073	-0.092	-0.020	-0.048	-0.067	0.025	0.091	-0.063	-0.025	-0.041	0.048	0.071	-0.040	**1**	-0.091
	(0.00)	(0.00)	(0.00)	(0.11)	(0.08)	(0.00)	(0.00)	(0.27)	(0.01)	(0.73)	(0.17)	(0.00)	(0.00)	(0.17)	(0.02)	(0.01)	(0.00)	(0.03)		(0.00)
Beta	0.217	-0.039	0.069	0.000	0.018	0.106	0.189	-0.049	-0.185	0.074	0.157	0.019	0.132	-0.157	0.087	-0.001	-0.018	0.135	-0.085	**1**
	(0.00)	(0.03)	(0.00)	(1.00)	(0.35)	(0.00)	(0.00)	(0.01)	(0.00)	(0.00)	(0.00)	(0.30)	(0.00)	(0.00)	(0.00)	(0.98)	(0.31)	(0.00)	(0.00)	

Pearson (Spearman) correlation coefficients are shown in the lower (upper) triangle of the table. Two-tailed p-values are presented in parentheses. All variables are defined in Appendix 1.

Table 4. Multivariate results for the effect of IFRS adoption on earnings management

Equation No.	*(I.)*		*(II.)*	
Dependent Variable	*|DA|*		*|DA|*	
Variables	*Coefficient*	*t-statistic*	*Coefficient*	*t-statistic*
IFRS	0.017 **	2.25		
Early IFRS			0.018 **	2.35
Mature IFRS			0.012	1.23
Total Assets	-0.004 **	-2.02	-0.004 ***	-2.03
Leverage	0.001	0.30	0.001	0.30
Sales growth	0.005	1.38	0.005	1.38
Cfo	0.028 ***	2.75	0.028 ***	2.73
Change PPE	0.035 ***	3.01	0.035 ***	3.01
CfoD	0.063 ***	8.55	0.063 ***	8.56
LossD	0.011	1.48	0.011	1.51
Big4	-0.013 **	-2.37	-0.014 **	-2.38
New Market	0.028	1.01	0.028	1.03
Industry dummys	Included		Included	
Year dummys	Included		Included	
Firm Years	2,590		2,590	
R^2	0.1481		0.1486	
Adj. R^2	0.1361		0.1362	

*This table shows the coefficients and t-statistics for estimating equations (I.) and (II.) as an OLS regression that includes fixed effects for fiscal year and industry (not tabulated). The analysis employs heteroskedasticity-adjusted robust standard errors clustered by firm and year (Petersen (2009)). The regression is estimated with an intercept included (not tabulated). ***, **, and * denote p-value significance at the 1%, 5% and 10% levels, with two-tailed tests. All variables are defined in Appendix 1.*

Table 4 shows the results of estimating equations (I.) and (II.) with discretionary accruals as the dependent variable.[71] First, when we solely compare IFRS reporting observations to German GAAP observations, the estimation of equation (I.) shows that discretionary accruals are higher under IFRS even when controlling for firm characteristics, reporting incentives and time, as the coefficient for *IFRS* is positive and significant at the 5% level. As was the case in our univariate results, this is contrary to our hypothesis H1 but consistent with prior short-term studies that document that IFRS observations exhibit more earnings management than German GAAP observations (van Tendeloo and Vanstraelen, 2005; Callao and Jarne, 2010).

With regard to the distinction between the early phase of IFRS reporting and the mature phase, the estimation of equation (II.) shows that the early phase exhibits significantly higher discretionary accruals as compared to German GAAP, whereas the mature phase does not. This result holds, when we estimate the equation without the early phase observations, which leads us to conclude that there is no significant change in the earnings management behavior of firms in the long run as the increase in earnings management through discretionary accruals in the first years of IFRS application ceases to exist. We suggest that this results from improving compliance, learning curves of preparers and auditors, decreasing effects of the first-time adoption rules of IFRS 1, emerging common guidelines and interpretations as well as the increased effectiveness of enforcement.

In a next step, we investigate the effect of IFRS adoption on disclosure quality by estimating equation (III.) as presented in table 5.[72] As the coefficient for *IFRS* is positive and significant, we conclude that IFRS adoption has a positive effect on the quality of disclosures. Together with our univariate results, this supports our hypothesis H1 and is in line with prior research (Leuz and Verrecchia, 2000; Daske and Gebhardt, 2006; Glaum et al., 2013).

Table 5 further shows the results of estimating equation (IV.) which differentiates between the early and the mature phase of the individual firms' IFRS accounting. This analysis shows that both the firms' early phase and the firms' mature phase exhibit significantly higher disclosure quality scores as compared to German GAAP. Moreover, the coefficient for *Mature IFRS* is significantly higher than the coefficient for *Early IFRS* at the 5% level, indicating that disclosure quality not only increases as a result of IFRS adoption but continues to increase in the more mature phase of IFRS reporting. Since our results suggest a concurrent decrease in the level of earnings management, hypothesis H2 is supported by both of our transparency metrics.

The finding of increased earnings management under IFRS while, concurrently, the quality of disclosures provided increased significantly is remarkable, especially in the light of our expectation of a negative relation between the two dimensions of transparency. Table 6 shows the results of estimating equation (V.) with discretionary accruals as the dependent variable. In these regressions, the disclosure quality score serves as an additional explanatory variable.

While the coefficient for *IFRS* is still significant but only at the 10%-level, the coefficient for *DQ* is significantly negative at the 1% level, indicating that disclosures limit the scope for earnings management. This is in line with prior research which generally finds a negative (positive) association between disclosure quality and earnings management (quality). Similarly, replacing *DQ* by prior year disclosure scores (DQ_{t-1}) reveals a significantly negative association between past

[71] With regard to our control variables, the insignificance of *Leverage* and *Sales Growth* is surprising. We attribute this to collinearity, which, however, should not cause trouble here because variance inflation factors are smaller than 3 for all control variables (except industry and year dummies).

[72] Again, the insignificance of *Total Assets*, *Leverage* and *ROA* is surprising. However, *Leverage* is significantly correlated with *Total Assets* (ρ = 0.665) and *ROA* (ρ = –0.266). Without controlling for *Leverage*, the coefficients for *Total Assets* and *ROA* become significant, while our overall results remain unchanged. Furthermore, variance inflation factors are smaller than 3 for all control variables (except for the industry and year dummies). Therefore, we are not concerned about collinearity in the data. The coefficients for *Close* and *US-Listing* are insignificant. Exclusion of these variables does not change the results either.

disclosures and the degree of earnings management at the 5% level (not tabulated). This provides empirical support for the notion that disclosures limit earnings management opportunities in future periods. Together with our univariate results, these results support our hypothesis H3 that higher quality disclosures have a constraining effect on earnings management.

However, when estimating equation (V.) with the dummy variables *Early IFRS* and *Mature IFRS* as well as the interaction terms *Early IFRS*DQ* and *Mature IFRS*DQ*, the results show the following patterns: Compared to German GAAP, early IFRS observations show significantly higher discretionary accruals which is in line with our results above. Remarkably, this effect is partly offset by the level of disclosures, i.e. there is a constraining effect of disclosures on the association between earnings management and IFRS adoption (significantly negative coefficient for *Early IFRS*DQ*). With regard to the mature IFRS observations, both the impact of IFRS adoption on the level of earnings management (see results above) and the constraining effect cease to exist.

Table 5. Multivariate results for the effect of IFRS adoption on disclosure quality

Equation No.	***(III)***		***(IV)***	
Dependent Variable	***DQ***		***DQ***	
Variables	***Coefficient***	***t-statistic***	***Coefficient***	***t-statistic***
IFRS	2.381 **	2.00		
Early IFRS			2.025 *	1.71
Mature IFRS			3.608 **	2.32
Total Assets	0.100	0.50	0.077	0.41
Leverage	0.121	1.41	0.119	1.40
ROA	4.959	1.22	5.145	1.30
Foreign sales	0.034 **	2.44	0.035 **	2.47
Close	-0.012	-0.78	-0.013	-0.86
Beta	2.675 ***	3.32	2.683 ***	3.34
Big4	1.672 **	2.07	1.694 **	2.14
US-Listing	1.253	1.05	1.335	1.14
New Market	-4.839 **	-2.13	-4.81 **	-2.31
Industry dummys	Included		Included	
Year dummys	Included		Included	
Firm Years	1,502		1,502	
R^2	0.2153		0.2199	
Adj. R^2	0.1965		0.2008	

*This table shows the coefficients and t-statistics for estimating Equations (III.) and (IV.) as OLS regressions that include fixed effects for fiscal year and industry (not tabulated). The analysis employs heteroskedasticity-adjusted robust standard errors clustered by firm and year (Petersen (2009)). The regression is estimated with an intercept included (not tabulated). ***, **, and * denote p-value significance at the 1%, 5% and 10% levels, with two-tailed tests. All variables are defined in Appendix 1.*

We interpret this as follows: When accounting standards require a comparatively low level of disclosures (as under German GAAP) and/or when financial statements are influenced by low compliance, little experience, weak enforcement, and, importantly, lack of common guidelines and interpretations requiring judgmental decisions (as in the early IFRS phase), disclosures help to limit earnings management. When compliance, experience and enforcement improve and common guidelines and interpretations develop in the course of IFRS application, these factors likely help to limit earnings management so that the marginal effect of more disclosures is reduced.

Further, the fact that we find a negative association for the early phase of the individual firms' IFRS accounting strengthens our interpretation that disclosures have the potential to limit the scope for earnings management. Since IFRS require more disclosures and, as shown above, disclosure quality increases as a result of the adoption of IFRS; our setting offers a strengthening of disclosure regulation which makes disclosure quality more likely to be determined exogenously in the initial years of IFRS accounting.

5.3 Robustness Checks

Alternative discretionary accruals models and alternative sample compositions

We conduct various robustness checks to validate our results. First, we use alternative models of discretionary accruals, namely the standard Jones (1991) model and the modified Jones model from Dechow et al. (1995). All discretionary accruals models show similar results (not tabulated). Second, we check the robustness of our results for alternative sample compositions. To this end, we run our analyses only with firm-year observations which are included in the annual report ranking and without the individual adoption year, respectively. The latter is based on the notion that the adoption year is likely to be influenced by one-off effects which may influence our results. Both approaches show results similar to our main analyses (not tabulated).

Table 6. Multivariate results for the relationship between disclosure quality and earnings management

Equation No.	***(V.)***		***(V.) modified***	
Dependent Variable	*|DA|*		*|DA|*	
Variables	**Coefficient**	**t-statistic**	**Coefficient**	**t-statistic**
DQ	-0.001 ***	-2.73	-0.001 *	-1.79
IFRS	0.014 *	1.75		
Early IFRS			0.103 *	1.78
*Early IFRS * DQ*			-0.001 *	-1.65
Mature IFRS			0.003	0.09
*Mature IFRS * DQ*			0.000	0.41
Total Assets	-0.002	-1.27	-0.002	-1.19
Leverage	-0.002 *	-1.71	-0.002 *	-1.76
Sales growth	0.042 ***	5.37	0.041 ***	5.60
Cfo	0.028 ***	2.56	0.026 **	2.36
Change PPE	0.009	0.65	0.009	0.63
CfoD	0.046 ***	5.05	0.044 ***	4.91
LossD	0.015 **	1.97	0.014 **	1.96
Big4	-0.013 *	-1.71	-0.013	-1.59
New Market	-0.019	-0.79	-0.023	-1.04
Industry dummys	Included		Included	
Year dummys	Included		Included	
Firm Years	1,502		1,502	
R^2	0.1877		0.1926	
Adj. R^2	0.1677		0.1711	

*This table shows the coefficients and t-statistics for estimating Equation (V.) as an OLS regression that includes fixed effects for fiscal year and industry (not tabulated) as well as for estimating Equation (V.) including dummy variables for the early and mature phase of the individual firms' IFRS accounting and interaction terms for these dummy variables and the disclosure quality score. The analysis employs heteroscedasticity-adjusted robust standard errors clustered by firm and year (Petersen (2009)). The regression is estimated with an intercept included (not tabulated). ***, **, and * denote p-value significance at the 1%, 5% and 10% levels, with two-tailed tests. All variables are defined in Appendix 1.*

Alternative indicator for earnings management – PM/ATO diagnostic of Jansen et al. (2012)

Third, we take into account that discretionary accruals, despite their widespread use, are only one possible approach to proxy for earnings management and that this methodology has well-known shortcomings. To mitigate concerns regarding our main proxies, we use the PM/ATO diagnostic of Jansen et al. (2012) as an alternative earnings management measure. This diagnostic is based on the notion that contemporaneous changes of profit margin (PM) and asset turnover (ATO) in opposite directions could signal earnings management. For example, if a firm manages earnings downwards by overstating bad debt allowance, both net income and accounts receivable on the balance sheet will decrease. For a given level of sales, this results in a decreasing profit margin and in an increasing asset turnover.

Therefore, we construct a dummy variable *PM/ATO* equal to 1 if $\Delta PM > 0$ and $\Delta ATO < 0$ or $\Delta PM < 0$ and $\Delta ATO > 0$ and zero otherwise.[73] Table 7 shows univariate and multivariate results with regard to this measure. In general, the mean of *PM/ATO* increases significantly from 0.34 to 0.37 as a result of IFRS adoption. When comparing the mean for early and mature IFRS accounting, we see a further increase which is, however, statistically not different from zero.

In panel B of table 7, *PM/ATO* serves as dependent variable of logistic regressions with fixed effects for industries and years. Although the pseudo R^2 is low, the goodness of fit measures of Pearson and Hosmer-Lemeshow indicate that our model fits reasonably well. In general, our results above are supported by this analysis. The IFRS dummy is positively significant in equation (I.) which seems to be driven by the early IFRS observations as indicated in equation (II.). Furthermore, we also find a negative coefficient for the disclosure quality score in equation (V.) which supports our notion of a constraining effect of disclosures on earnings management.

Adoption of international standards – inclusion of US GAAP observations

Fourth, there are several firms which adopted US GAAP prior to 2005. To focus on IFRS, we exclude these observations in our main analyses. Table 8 presents the results of estimating equations (I.), (II.) and (V.) for the entire sample including US GAAP observations.[74] To this end, we construct the dummy variables *International*, *Early International* and *Mature International* which follow the same logic as before but consist of both IFRS and US GAAP observations.

For equation (I.), *International* is significantly positive though this association seems to be driven by the early phase of the individual firms' adoption of international standards as indicated in the results for equation (II.). As the coefficient for *Mature International* is not significant, we conclude that there is no statistically significant difference in discretionary accruals between German GAAP and the mature phase of accounting under internationally recognized standards.[75] Thus, our results for the effect of international standards on earnings management are robust to the inclusion of US GAAP observations.

[73] To prevent cases where the diagnostic is likely to detect only the reversal of earnings management, we require that upward earnings management is not followed by downward earnings management in the subsequent period and vice versa.

[74] Univariate results and results of the estimation of the disclosure models do not change due to the inclusion of US GAAP observations. Therefore, these results are not tabulated.

[75] Note that the proportion of IFRS observations as compared to US GAAP observations especially within the *Mature International* dummy increases over time as a result of the mandatory adoption of IFRS.

With regard to equation (V.), we again see a significantly negative coefficient for the disclosure quality score, which underpins our notion of a constraining effect of disclosures on earnings management. In this equation, however, the coefficient for *International* becomes insignificant. As the correlation between *International* and *DQ* is low (ρ = 0.059), we do not attribute the loss of significance to collinearity. Rather, a possible explanation is the following: When controlling for disclosure quality, the effect of the accounting regime on the degree of earnings management is reduced. This is also in line with our results above where the significance of the IFRS dummy drops from the 5% level to the 10% level once the disclosure quality score is included. Another possible explanation lies in the lower number of observations in equation (V.) as compared to equation (I).

Table 7. Results for robustness checks using the PM/ATO diagnostic of Jansen et al. (2012) as an alternative earnings management measure

Panel A: PM/ATO-diagnostic based on Jansen et al. (2012) - Comparison of means

Variable	*German GAAP*	*IFRS*	*Difference German GAAP / IFRS*	*Early IFRS*	*Mature IFRS*	*Difference German GAAP / Early IFRS*	*Diff. Early IFRS / Mature IFRS*
PM/ATO	0.34	0.37	0.03 *	0.36	0.39	0.02 *	0.03

Panel B: PM/ATO-diagnostic based on Jansen et al. (2012) - Multivariate analysis

Equation No.	***(I.)***		***(II.)***		***(V.)***	
Dependent Variable	*PM/ATO*		*PM/ATO*		*PM/ATO*	
Variables	***Coefficient***	***t-statistic***	***Coefficient***	***t-statistic***	***Coefficient***	***t-statistic***
IFRS	0.204 *	1.73			0.525 ***	3.84
Early IFRS			0.239 **	2.14		
Mature IFRS			0.067	0.48		
DQ					-0.012 **	-2.17
Total assets	0.019	0.88	0.020	0.91	0.061	1.31
Leverage	-0.002	-0.12	-0.002	-0.13	-0.025	-0.97
Sales growth	-0.150	-1.23	-0.152	-1.23	-0.098	-0.81
CFO	-0.328	-1.24	-0.331	-1.24	-0.483	-1.15
Change PPE	0.054	0.23	0.051	0.22	-0.225	-0.85
CfoD	-0.168 **	-2.19	-0.170 **	-2.22	-0.416 ***	-3.19
LossD	0.001	0.02	0.006	0.07	-0.068	-0.39
Big4	0.013	0.18	0.009	0.13	-0.048	-0.74
New market	-0.850 **	-2.26	-0.849 **	-2.27	-0.517	-1.06
Industry dummys	Included		Included		Included	
Year dummys	Included		Included		Included	
Firm Years	2,590		2,590		1,502	
p-value for Pearson goodness of fit Chi²	0.2739		0.2683		0.2320	
p-value for Hosmer-Lemeshow goodness of fit Chi² using 10 groups	0.8668		0.9546		0.6312	
Percent correctly predicted	0.6042		0.6062		0.6172	
McFadden's Pseudo R^2	0.0145		0.0151		0.0271	

*Panel A of this table shows mean values for another indicator for earnings management: The PM/ATO diagnostic based on Jansen et al. (2012). This measure is based on the notion that contemporaneous increases (decreases) in profit margin and decreases (increases) in asset turnover are a potential indicator for earnings management. ***, ** and * indicate that the means are significantly different at the 1%-level, 5%-level and 10%-level, respectively, using a two tailed t-test with Satterthwaite's degrees of freedom. Panel B presents regression results with the PM/ATO diagnostic as dependent variable. The regressions have been run as logistic regressions that include fixed effects for fiscal year and industry and an intercept (not tabulated). The analysis employs heteroskedasticity-adjusted robust standard errors clustered by industry. All variables are defined in Appendix 1.*

Distinction between mandatory and voluntary adoption of IFRS

Fifth, we run further analyses with regard to the distinction between voluntary and mandatory adoption, since prior research has shown that the effects of IFRS adoption may differ (see e.g. Soderstrom and Sun, 2007). For this reason, table 9 repeats our univariate analyses for voluntary and mandatory adopters. In this analysis, we define 'early' voluntary (mandatory) as the first four years of the individual firms' IFRS reporting as long as this period has been entirely voluntary (mandatory). For example, if a firm voluntarily adopted IFRS in the year 1997, the years 1997-2000 are defined as early voluntary, whereas the years 2000-2004 are defined as mature voluntary. In case the firm adopted IFRS in 2003, this firm is excluded from this analysis as we do not have sufficient mature voluntary observations.[76]

[76] The same logic applies for mandatory adopters, e.g. for firms which mandatorily adopted IFRS in 2005, the early phase is defined as the years 2005–2008 and the mature phase as 2009–2012.

In general, both voluntary and mandatory IFRS accounting years exhibit (significantly) higher means and medians for the disclosure quality score and for discretionary accruals as compared to German GAAP. When comparing the early and the mature phase of IFRS reporting, this analysis shows a significant increase in the disclosure quality score and a significant decrease in discretionary accruals for both voluntary and mandatory adoption years *(With regard to discretionary accruals, only the mean values decrease significantly (at the 1%-level)*. Hence, we conclude that our overall results regarding the development of disclosure quality and earnings management do not differ substantially between voluntary and mandatory adopters. Moreover, since mandatory IFRS reporting and accounting enforcement by the German FREP have been introduced contemporaneously, this analysis suggests that our results are not primarily driven by the mere introduction of enforcement.

Table 8. Results for robustness checks including US GAAP observations

Robustness of earnings management results: The effect of the adoption of international standards

Equation No.	***(I)***		***(II)***		***(V)***	
Dependent Variable	*|DA|*		*|DA|*		*|DA|*	
Variables	***Coefficient***	***t-statistic***	***Coefficient***	***t-statistic***	***Coefficient***	***t-statistic***
International	0.017 *	1.90			0.013	1.57
Early International			0.025 ***	3.60		
Mature International			0.010	1.31		
DQ					-0.001 ***	-3.17
Total Assets	-0.004 **	-2.30	-0.004 **	-2.38	-0.002	-1.53
Leverage	0.000	0.26	0.000	0.25	-0.001 *	-0.76
Sales growth	0.007 *	1.65	0.007 *	1.67	0.039 ***	5.52
Cfo	0.028 **	2.40	0.028 **	2.33	0.038 ***	4.28
Change PPE	0.034 ***	3.49	0.032 ***	3.38	0.015	1.11
CfoD	0.063 ***	9.30	0.063 ***	9.14	0.063 ***	9.14
LossD	0.010 *	1.73	0.011 *	1.84	0.008	1.30
Big4	-0.013 **	-2.28	-0.012 **	-2.15	-0.012 *	-1.87
New Market	0.043	1.31	0.044	1.35	0.049	1.39
Industry dummys	Included		Included		Included	
Year dummys	Included		Included		Included	
Firm Years	2,913		2,913		1,698	
R^2	0.1692		0.1729		0.1964	
Adj. R^2	0.1588		0.1623		0.1790	

*This table shows the coefficients and t-statistics for estimating equations (I.), (II.) and (V.) as an OLS regression that includes fixed effects for fiscal year and industry (not tabulated). The analysis employs heteroskedasticity-adjusted robust standard errors clustered by firm and year (Petersen (2009)). The regression is estimated with an intercept included (not tabulated). ***, **, and * denote p-value significance at the 1%, 5% and 10% levels, with two-tailed tests. All variables are defined in Appendix 1.*

Table 9. Analysis differentiating with regard to voluntary and mandatory adoption of IFRS

Panel A: Distinction between German GAAP and voluntary / mandatory IFRS adoption

		German GAAP	***Voluntary IFRS***	***Mandatory IFRS***	***Difference German GAAP / Voluntary IFRS***		***Difference German GAAP / Mandatory IFRS***	
	Mean	57.47	60.18	58.14	2.71	***	0.67	
DQ	*Median*	56.33	60.75	57.63	4.42	***	1.31	**
	Mean	0.062	0.099	0.081	0.038	***	0.020	***
|DA|	*Median*	0.034	0.048	0.048	0.013	***	0.013	***

Panel B: Distinction between early and mature voluntary adoption and between early and mature mandatory adoption

		Early Voluntary	**Mature Voluntary**	**Difference Early Voluntary / Mature Voluntary**		**Early Mandatory**	**Mature Mandatory**	**Difference Early Mandatory / Mature Mandatory**	
	Mean	59.44	61.84	2.40	**	56.92	58.57	1.65	**
DQ	*Median*	60.02	62.96	2.94	**	56.39	58.41	2.02	***
	Mean	0.107	0.067	-0.039	***	0.094	0.075	-0.019	***
|DA|	*Median*	0.048	0.049	0.001		0.050	0.047	-0.003	

*Panel A of this table shows mean and median values of disclosure quality scores and discretionary accruals for German GAAP as compared to voluntary and mandatory IFRS adoption. Panel B shows means and medians for early voluntary / mandatory versus mature voluntary / mandatory IFRS adoption. In this analysis, 'early' is defined as the first four years of the individual firms' IFRS adoption as long as this has been entirely voluntary or entirely mandatory. Data for the disclosure quality scores has been extracted from the annual report 'beauty contest' of manager magazin. ***, ** and * indicate that the means (medians) are significantly different at the 1%-level, 5%-level and 10%-level, respectively, using a two tailed t-test with Satterthwaite's degrees of freedom (Mann-Whitney-Wilcoxon test). All variables are defined in Appendix 1.*

6. CONCLUSION

The purpose of this study is to examine the effects of IFRS adoption on two different but related measures of the transparency of financial reporting, namely the degree of earnings management and disclosure quality. Based on a German sample ranging from 1995 to 2012, we not only investigate whether transparency increased in the course of IFRS adoption, but also whether there is a difference between the early and the mature phase of IFRS reporting. Furthermore, we assess the relation between disclosure quality and earnings management. Since IFRS require more disclosures than German GAAP, the regulatory change from national to international accounting standards offers a setting in which the tightening of disclosure requirements allows deeper insights into the constraining effect of disclosures on earnings management. Moreover, enhanced disclosures under IFRS have been brought forward as one argument to expect a decrease in earnings management as a consequence of the adoption of IFRS (see Doukakis, 2014) which makes the association between disclosure quality and earnings management around the regulatory change a matter of great interest.

Prior results for the effect of IFRS adoption on earnings management are mixed (e.g. Ahmed et al., 2013). For Germany, van Tendeloo and Vanstraelen (2005) and Callao and Jarne (2010) find no decrease of discretionary accruals studying some few years around voluntary and mandatory adoption of IFRS, respectively. We attempt to provide an alternative explanation to conflicting findings of prior research by studying a longer time period. Our results indicate that IFRS adoption initially leads to an increase in earnings management through discretionary accruals which is reduced in the mature phase of IFRS reporting. We attribute this to the following: In the early phase of IFRS accounting, compliance was lower as the parties involved (preparers, auditors, and users) were in the process of accumulating the necessary experience. Moreover, the extraordinary effects of the first-time adoption rules of IFRS 1 diminish over time. Further, both emerging guidelines and common interpretations and the creation and development of the German FREP are likely to have contributed to a stepwise increase in accounting quality and, thus, a reduction of earnings management. Considering the dimension of the IFRS adoption, financial reporting stakeholders should clearly be interested in the long-term development rather than in short-term, transitory effects. Thus, our study may mitigate concerns raised by prior studies examining short time horizons.

With regard to the quality of disclosures, we find a positive effect of IFRS adoption which is in line with the notion of enhanced disclosure requirements under IFRS as compared to German GAAP and supplements prior research (Leuz and Verrecchia, 2000; Daske and Gebhardt, 2006; Glaum et al., 2013). Moreover, our findings indicate that disclosure quality continues to improve under IFRS over time. Having documented these effects of IFRS adoption on our transparency metrics, we further show that disclosure quality and earnings management are significantly negatively related. This is in line with most prior studies which, however, focused on US and UK settings and therefore, only provide limited evidence for the IFRS reporting regime. Thus, we are among the first who consider a Continental European country and deliver evidence for a negative association between disclosures and the degree of earnings management under IFRS.

The negative relation holds for German GAAP and early IFRS observations. When compliance, experience and enforcement improve and guidelines and interpretations develop in the mature phase of IFRS application, these factors likely mitigate earnings management so that the marginal effect of better disclosures is reduced. Since we also find evidence for a negative association using prior year's disclosure levels and current year's earnings management levels and the switch to IFRS can be interpreted as an increase in disclosure quality that is more likely to be exogenous, our results support the notion that the greater the amount and the higher the quality of disclosures are, the smaller the room for earnings management is. This is in line with one of the IASB's intentions for disclosure requirements, i.e. to ensure that financial statements faithfully represent what they purport to represent. These findings are of interest to standard setters as well as users of financial reporting. The former should feel encouraged to demand high quality disclosures, especially with regard to management's estimates and assumptions, while the latter should be aware of the use of discretionary accounting in the absence of disclosures.

Our results are robust to various specifications of discretionary accruals, the alternative earnings management diagnostic developed by Jansen et al. (2012) and to other reasonable specifications of the early and the mature phase of IFRS accounting. Furthermore, we show that our results do not differ substantially for voluntary and mandatory adopters of IFRS and for the broader application of 'international standards' (IFRS and US GAAP).

However, the accounting numbers and disclosures observed are the results of not only accounting standards, but the whole financial reporting system, including accounting standards, their interpretation as well as enforcement and litigation (Barth et al., 2008) making it impossible to attribute any effects solely to changes in the standards applied.

Furthermore, although we only study a single country and control for a range of firm characteristics and incentives, we cannot be sure that our findings can solely be attributed to changes in the financial reporting system. Though, of course, we explicitly address factors which we suggest to contribute to the results observed, especially regarding the improvements over time. Moreover, since our sample is based on the firms covered by the "Best Annual Report" competition published in the *manager magazine* it is biased towards larger firms which may limit the generalizability of our findings. Nonetheless, bigger firms account for a large share of IFRS applicants and, in our view, there are no obvious reasons for contrary expectations regarding the development of financial reporting quality of smaller firms under IFRS.

With our study, we respond to the demand for studying a longer time horizon after IFRS adoption (Callao and Jarne, 2010) which might help to

reconcile conflicting results of prior research and the underlying assumption of the European regulators introducing IFRS to improve comparability and transparency of financial statements. However, future research should study longer time series for countries other than Germany and different proxies for financial reporting quality. Additionally, further research needs to be done to disentangle the effects of different factors that are contributing to changes in financial reporting quality after the adoption of IFRS. Moreover, by showing that disclosures can have a constraining effect on earnings management, we shed light on the apparent association between these two constructs. This association and how standard setters and regulators can benefit from it could also be a worthwhile area for future research.

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Appendix 1. Variable Definitions

Variable	*Description*
TA	Total accruals used for the estimation of discretionary accruals. Calculated as change in current assets adjusted for change in cash less change in current liabilities adjusted for change in current portion of long term debt and change in income tax payable less depreciation and amortization expense.
A	Total assets used as denominator for the estimation of discretionary accruals.
Δ Sales	Change in sales used for the estimation of discretionary accruals.
Δ Receivables	Change in receivables used for the estimation of discretionary accruals.
DQ	Disclosure quality score from the best annual report 'beauty contest' of the German business journal manager magazine.
|DA|	Absolute value of discretionary accruals from the Kothari (2005) model as described in section 4.1.
Total Assets	Total assets scaled by beginning of period market value of equity.
Leverage	Total liabilities divided by beginning of period market value of equity.
Sales growth	Change in sales divided by beginning of period sales.
Cfo	Cash from operations divided by beginning of period market value of equity.
Change PPE	Change in property, plant and equipment divided by beginning of period market value of equity.
Foreign sales	Ratio of foreign sales to total sales.
ROA	Return on assets calculated as net income before extraordinary items plus interest expenses divided by total assets.
Close	Percentage of closely held shares.
Beta	Measure of systematic risk based on how returns co-move with the market.
IFRS	Dummy variable equal to 1 if the financial statements are prepared in accordance with International Financial Reporting Standards (IFRS) and 0 otherwise.
Early IFRS	Dummy variable equal to 1 if IFRS is applied and the observation belongs to the first four years of the individual firms IFRS reporting and 0 otherwise.
Mature IFRS	Dummy variable equal to 1 if IFRS is applied and the observation does not belong to the first four years of the individual firms IFRS reporting and 0 otherwise.
US-Listing	Dummy variable equal to 1 if the firm is cross-listed (either directly or OTC) in the United States and 0 otherwise.
LossD	Dummy variable equal to 1 if the firm encounters losses and 0 otherwise.
CfoD	Dummy variable equal to 1 if the firm encounters negative operating cash flows and 0 otherwise.
Big4	Dummy variable equal to 1 if the firm's financial statements are audited by a Big4 auditor (Ernst & Young, PriceWaterhouseCoopers, KPMG, Deloitte Touche Tohmatsu, (Arthur Andersen)) and 0 otherwise.
New Market	Dummy variable equal to 1 if the firm is listed at the German New Market and 0 otherwise.
International	Dummy variable equal to 1 if the financial statements are prepared in accordance with International Financial Reporting Standards (IFRS) or US GAAP and 0 otherwise.
Early International	Dummy variable equal to 1 if IFRS or US GAAP is applied and the observation belongs to the first four years of the individual firms IFRS/US GAAP reporting and 0 otherwise.
Mature International	Dummy variable equal to 1 if IFRS or US GAAP is applied and the observation does not belong to the first four years of the individual firms IFRS/US GAAP reporting and 0 otherwise.
PM/ATO	Earnings management diagnostic based on profit margin and asset turnover (Jansen et al., 2012)