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International Financial Reporting Standards and Experts' Perceptions of Disclosure Quality

From 2005, over 7,000 listed firms in the European Union and many more around the world are required to adopt International Financial Reporting Standards (IFRS). The introduction of a uniform accounting regime is expected to ensure greater comparability and transparency of financial reporting around the world. However, recent research has questioned the quality of financial statements prepared under IFRS standards, particularly in the presence of weak enforcement mechanisms and adverse reporting incentives (Ball *et al.*, 2003). In this paper, we assess the quality of the financial statements of Austrian, German and Swiss firms which have already adopted internationally recognized standards (IFRS or U.S. GAAP). The study makes use of available disclosure quality scores extracted from detailed analyses of annual reports by reputed accounting scholars ('experts'). This work complements other contemporary research on the quality of IFRS financial statements where the properties of earnings are used as an evaluation metric (Barth *et al.*, 2005). Our evidence shows that disclosure quality has increased significantly under IFRS in the three European countries we analyse. This result holds not only for firms which have voluntarily adopted IFRS or U.S. GAAP, but also for firms which mandatorily adopted such standards in response to the requirements of specific stock market segments. Although we cannot establish direct causality due to the inherent self-selection issues for most of our sample firms, the evidence shows that the quality of financial reports has increased significantly with the adoption of IFRS.

Key words: Best annual report contests; Disclosure; Information quality; International Financial Reporting Standards (IFRS).

From 2005, over 7,000 listed firms in the European Union and many more around the world will have to adopt International Financial Reporting Standards (IFRS). The mandatory adoption of IFRS has been motivated by the need to ensure greater comparability and a higher transparency and quality of financial reporting across the EU member states (see EC Regulation No 1606/2002). This key step on

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the road towards a global set of uniform accounting standards has inspired other standard setters around the world, such as the Australian Accounting Standards Board (AASB), to adopt IFRS alike.

However, the jury is still out on the desirability of such a significant switch of accounting regime. Despite general concerns about the abolition of local accounting standards customized towards the needs of a particular institutional environment (e.g., Schildbach, 2004), there is still considerable debate about the expected quality of financial statements prepared under IFRS standards, both in practice and academia. Consider the prominent example of the French Premier Jacques Chirac, who expressed firm resistance to the adoption of IFRS (AccountancyAge, 2003).

Academics also present different views on the quality of the financial statements of firms adopting IAS/IFRS. Most notably, Ball *et al.* (2003) illustrate, in the case of four East Asian countries, that adopting 'IAS-type' accounting standards will not necessarily lead to higher quality reporting in the presence of lax enforcement mechanisms and strong adverse reporting incentives. Similarly, other studies have revealed severe compliance problems, particularly in the early stage of IFRS (e.g., Cairns, 2000), thus questioning the transparency of such financial reports.

In order to assess the transparency and quality of IAS/IFRS as compared to local GAAP and/or U.S. GAAP financial statements for a large and representative set of firms, other available studies focus on specific properties of the summary measures of the accounting process, particularly on the relation between earnings and stock returns (Bartov *et al.*, 2005, Barth *et al.*, 2005). These studies, however, by their design do not analyse the potential differences and changes in the information provided in the actual annual reports of firms adopting IFRS.

In this study, we assess the quality of the financial statements of firms which have already adopted internationally recognized standards (IFRS or U.S. GAAP) by comparing disclosure quality scores extracted from detailed analyses of the annual reports. We extract such quality scores from the annual financial report 'beauty contests' hosted by various business journals in several countries and conducted by leading academic scholars. By collecting and utilizing these scores—which had initially been assigned by the expert teams based on time-consuming analyses of the financial reports over the available years for three representative countries—we are able to combine the advantages of detailed financial statement analyses with those of a representative large sample-based research study.

We focus here on three countries (Austria, Germany and Switzerland) that have undergone a significant accounting regime change over the last decade. For these countries we investigate the effects of the transition from a setting where firms predominantly followed similar local reporting standards based on the German accounting origin tradition, to the current situation where the majority of the larger listed firms report their results according to internationally recognized standards (IAS/IFRS or U.S. GAAP). These three countries hosted in 2004 more than half (52 per cent) of the worldwide population of IFRS reporting firms, and therefore have either explicitly been utilized in prior IFRS-related studies (e.g., Leuz and Verrecchia, 2000; Bartov *et al.*, 2005) or have implicitly played the predominant role in the 'multinational' IFRS studies (e.g., Barth *et al.*, 2005).

Our results show that disclosure quality, as perceived by experts in their ratings of annual reports, has increased significantly under IFRS, both statistically and economically, in the three countries analysed. This result holds both in the cross-section and for firms switching from local to internationally recognized standards over time. Importantly, it does not hold only for firms which have voluntarily adopted IFRS or U.S. GAAP, but also for the subset of firms which mandatorily adopted such standards in response to the requirements of the German stock exchange for specific market segments. Although it is difficult to establish direct causality due to the inherent self-selection issues for most of the sample firms, our evidence shows at least that the disclosure quality of financial reports has significantly increased with the adoption of IFRS financial statements. In sum, our research contributes to the global discussion on the economic consequences of adopting IFRS.

THE TRANSITION PROCESS TOWARDS INTERNATIONAL FINANCIAL REPORTING STANDARDS

Since the mid-1990s there has been a rapid growth in the adoption of IAS/IFRS worldwide. As presented in Table 1, Panel A, the number of companies coded in Worldscope as IAS/IFRS adopters rose by 300 per cent in the period 1996 to 2004.[1] By 2004, 65 per cent of the IAS/IFRS adopters were from countries in the European Union and Switzerland. Companies from countries with a German accounting origin (Austria, Germany and Switzerland) dominate within the EU and account for more than 50 per cent of the worldwide IAS/IFRS adopters. These three countries are further characterized by the close similarity of many other institutional features (see, e.g., Ordelheide and KPMG, 2001).

The number of IAS/IFRS adopters from EU countries will further rise sharply by the fiscal year 2005 as Regulation (EC) No 1606/2002 requires all companies governed by the law of an EU member state whose securities are admitted to trading on a regulated market of any member state to prepare their consolidated accounts in conformity with IFRS for fiscal years starting on or after 1 January 2005.[2] EU domiciled firms currently reporting under full U.S. GAAP are allowed to change to IFRS for fiscal year 2007 at the latest.[3]

The process of changing to international accounting in Germany started in the early 1990s, when Daimler-Benz published its first Form 20-F with a reconciliation of net income and shareholder's equity from German GAAP (HGB) to U.S. GAAP[4] and Puma presented a full second set of financial statements under IAS.

[1] We checked and corrected for inconsistencies in Worldscope using the notes to the financial statements as found on Thomson Research in order to identify precisely the years of switch to IAS/IFRS or U.S. GAAP.

[2] See Regulation (EC) No 1606/2002, Article 4.

[3] See Regulation (EC) No 1606/2002, Article 9 (b).

[4] See Radebaugh *et al.* (1995) for a detailed discussion of the Daimler case.

TABLE 1

NUMBER OF FIRMS ADOPTING IFRS

Panel A: IFRS adopters around the world

	1996	1997	1998	1999	2000	2001	2002	2003	2004
World	207	271	325	443	679	777	831	858	828
China	63	76	83	117	128	137	134	131	136
EU and Switzerland	103	143	182	257	402	467	525	536	538
% IFRS EU and Switzerland	*50%*	*53%*	*56%*	*58%*	*59%*	*60%*	*63%*	*62%*	*65%*
Germany	11	26	49	100	176	202	232	243	256
Switzerland	74	83	87	92	131	141	152	139	122
Austria	0	4	9	23	39	47	61	58	50
German accounting origin	85	113	145	215	346	390	445	440	428
% IFRS three countries	*41%*	*42%*	*45%*	*49%*	*51%*	*50%*	*54%*	*51%*	*52%*

Panel B: Distribution of local GAAP, IFRS and U.S. GAAP adopters in the sample

		1996	1997	1998	1999	2000	2001	2002	2003	2004
Germany	HGB	183	184	154	107	85	94	32	27	27
	IFRS	8	10	27	48	56	67	62	62	62
	U.S. GAAP	2	4	11	32	54	46	50	39	39
	All	193	198	192	187	195	207	144	128	128
Switzerland	FER					56	60	59	64	56
	IFRS					72	80	77	79	72
	U.S. GAAP					7	9	9	9	7
	All					135	149	145	152	135
Austria	AHGB				63	45	43	28	20	19
	IFRS				23	39	43	47	53	53
	U.S. GAAP				3	8	8	4	7	5
	All				89	92	94	79	80	77
% IFRS in sample		*4%*	*4%*	*8%*	*16%*	*14%*	*23%*	*23%*	*22%*	*23%*

Source: Panel A is based on the Worldscope item 'Accounting Standards Followed'. This information is verified with the notes in the actual annual reports, available from Thomson Research, and corrected, if mistakes are detected. In those cases where our sample firms in Panel B are not covered by Worldscope, we analyse their annual reports and add these firms to our information in Panel A.

Table 1, Panel A demonstrates that the number of German companies using IAS/IFRS or U.S. GAAP increased rapidly, in particular after 1998 when German legislators accepted in § 292a of the HGB financial statements prepared under international accounting standards (without explicitly mentioning IAS/IFRS or

U.S. GAAP) as an alternative set of group financial statements.[5] In the meantime, the vast majority of the major listed German firms adopted either IAS/IFRS or U.S. GAAP well before it became mandatory.

The development in Austria closely followed Germany. In 1999 § 59a of the Austrian HGB (AHGB) even allowed companies to use international accounting standards retrospectively for the annual reports of 1998.[6]

The change to international accounting has often been triggered by the decision to list shares on a U.S. stock exchange or in a special segment of the German stock market. In 1997, Deutsche Börse AG launched the New Market (*Neuer Markt*) for innovative and fast-growing industries, and in 1999 a market segment was introduced for small caps whose listing requirements called for financial statements to be prepared under either IAS/IFRS or U.S. GAAP. In 2003, Deutsche Börse AG restructured its markets on three levels of transparency (prime standard, general standard, entry standard). Listing under the prime standard became a prerequisite for inclusion in a major stock index (DAX, MDAX, TecDAX, and SDAX) and required the use of international financial reporting standards prior to 2005.[7] Thus, for the German market, we have a set of companies which voluntarily adopted IAS/IFRS or U.S. GAAP before 2005 and a set of firms which have been required to do so by Deutsche Börse AG from as early as 1997.[8]

The Vienna stock exchange also set up a prime market in 2002, which requires companies to report under either IAS/IFRS or U.S. GAAP. Companies already listed in the official market (*Amtlicher Handel*) could seek an exemption to continue to use Austrian GAAP until 2004, but then had to prepare reconciliations to either IAS/IFRS or U.S. GAAP.[9]

The Swiss stock exchange (SWX) since 1996 has accepted IAS or U.S. GAAP for listing in the SWX market as an alternative to local GAAP (FER) financial statements. It also required IAS or U.S. GAAP for the SWX New Market that operated from 1999 to 2003. Some large Swiss companies have applied U.S. GAAP or IAS from as early as 1988 when listing abroad, in addition to reporting under Swiss GAAP.[10]

[5] See § 292a HGB as introduced by the *Kapitalaufnahmeerleichterungsgesetz*—KapAEG, BGBl I, April 24, 1998. These 'internationally accepted' accounting standards are IAS/IFRS and U.S. GAAP. See DRSC (2000): DRS 1.10-13.

[6] See Wagenhofer (2005, pp. 83–5).

[7] Companies already listed at the Frankfurt Stock Exchange as of 1 January 2003 are required to use international accounting standards for fiscal years starting on or after 1 January 2005. See § 95 *Börsenordnung für die Frankfurter Börse* at: www.deutsche-boerse.com (download: 11 November 2005).

[8] Companies may be allowed to provide annual reports prepared according to national GAAP together with reconciliation to either IFRS or U.S. GAAP. See § 62 *Börsenordnung für die Frankfurter Wertpapierbörse* at: www.deutsche-boerse.com (download: 11 November 2005).

[9] See Wiener Börse (2005, p. 12).

[10] See Helbling (2001, p. 295). For example, Nestlé has applied IAS/IFRS since 1989.

INTERNATIONAL ACCOUNTING STANDARDS AND REPORTING QUALITY

Changes in accounting regulation are intended to improve financial reporting. In particular, the switch to IAS/IFRS in the EU by the year 2005 has been motivated by the desire to seek higher quality accounting standards that should result in higher quality financial reports, and ultimately higher liquidity of the financial markets and lower cost of capital for adopting firms.

This persuasive line of argument is difficult to operationalize if one wants to measure the effects of a change in accounting regulation. There is no consensus on what are the characteristics of high quality accounting standards.[11] Notwithstanding this fact, it is commonly assumed that IAS/IFRS and U.S. GAAP standards provide higher information quality to outside investors as compared to most local reporting regimes outside the Anglo-Saxon sphere.

This assumption is mainly based on the greater quantity of mandatory disclosures, and on supposedly higher information content resulting from measurement rules which have been developed with the aim of providing relevant and reliable information to outside investors. Within the EU, this common belief relates particularly to the accounting regimes of Continental European countries, including the German accounting origin countries, which have been criticized for allowing too much discretion and for being heavily influenced by tax accounting rules.

However, higher quality financial reporting standards do not automatically lead to higher quality financial reports. Severe non-compliance with IFRS has been documented by Cairns (2000) and Street *et al.* (2000), but is also a problem with U.S. GAAP, in particular for companies not listed on a U.S. stock exchange and thus not subject to U.S. legal liability or the stricter enforcement by the SEC.[12]

In the context of lax enforcement mechanisms, Ball *et al.* (2003) illustrate the case of four East Asian countries. There, even under supposedly high-quality 'IAS-type' financial standards but also under adverse reporting incentives, it is shown that the financial statements will, *de facto*, not be transparent. They operationalize transparency as the timely recognition of economic losses.

This and other empirical research has tried to measure and judge the quality of IAS/IFRS financial statements by relying on measures of the properties of earnings, such as timeliness and conservatism or value relevance. Bartov *et al.* (2005) measure the value relevance in cross-sectional returns regressions with earnings as independent variables based on U.S. GAAP, IAS/IFRS and local German GAAP. As the regression coefficients on IAS/IFRS earnings are higher than those for German GAAP earnings, they argue that IAS/IFRS earnings are of higher information quality than German GAAP earnings, but of lower quality than U.S. GAAP earnings. However, the results from these return-based metrics are difficult to interpret and subject to certain limitations (see Holthausen and Watts, 2001; Holthausen, 2003).

[11] See, for example, the discussion and analysis by Collins *et al.* (2002).

[12] See Glaum and Street (2003), Gebhardt and Heilmann (2004) and Bradshaw and Miller (2005).

In order to address these limitations, Barth *et al.* (2005) apply a more comprehensive set of properties as 'earnings quality' measures. In addition to value relevance, timeliness and conservatism metrics, they apply measures for earnings management (the variability of the change in net income; coefficient of small positive to small negative earnings; the ratio of the variability in net income to the variability of operating cash flows). When summarizing their results across the different metrics, they conclude a superiority of the quality of the financial reports of IAS/IFRS adopters over a matched sample of local GAAP reporting firms from twenty-three countries between 1990 and 2004. It should be noted, though, that their results are driven by the large adopting countries, Austria, Germany, Switzerland and China, which by 2004 comprise together more than 75 per cent of their sample firms (see also our Table 1, Panel A).

Other research has not tried to measure the quality of the IFRS financial statements directly. But it either assumes higher quality under IFRS up-front or, alternatively, tries to infer a higher quality from analysing the resulting perceived positive economic effects. For a set of early IAS adopters, Ashbaugh and Pincus (2001) find that analysts' earnings forecast accuracy increased post IAS-adoption. Leuz and Verrecchia (2000) find for their 1998 DAX 100 sample that firms that voluntarily switched to international accounting have lower bid ask-spreads and higher trading volume as compared to firms that continued to apply German GAAP. They find only minor differences when comparing IAS and U.S. GAAP adopters. Using the same methodology, Leuz (2003) compares firms quoted on the German New Market which, due to the listing requirements of the Deutsche Börse, have to apply internationally recognized accounting standards. He fails to find any statistically or economically significant differences in bid ask-spreads and trading volume for IAS and U.S. GAAP adopters. Finally, Daske (2006) fails to find lower implied cost of equity capital for German firms adopting internationally recognized standards during the transition period until 2001.

None of the prior studies assesses the quality of the financial reports by looking directly into the actual annual reports. The one exception is Leuz and Verrecchia (2000), who apply for their small sample of early non-local GAAP adopters (14 IAS; 7 U.S. GAAP) annual report ratings based on a disclosure index published in the German business journal *Capital* in 1998 as a measure of the quality of accounting reports. We will follow the same approach, but rely not only on a much broader sample, but also study adopting companies with different firm characteristics, reporting incentives and adoption styles when choosing IAS/IFRS or U.S. GAAP.

RESEARCH METHOD

The changes in disclosure quality in annual reports after the adoption of IFRS are measurable by detailed analysis and a comparison of published financial statements.[13] Such a comprehensive approach is taken, for example, in compliance

[13] Electronic copies of the annual reports of firms around the world can be found on Thomson Research.

studies, which analyse financial statements utilizing detailed, auditor type disclosure check-lists.[14] However, such an approach is very time-consuming and, accordingly, the resulting evidence is typically small-sample-based and thus potentially not representative of the underlying population.

An alternative is to utilize available scores which have been collected by financial analysts or their associations. In the U.S., the ratings of the Financial Analysts Federation (FAF) Corporate Information Committee have been used to judge the disclosure quality of financial statements (e.g., Lang and Lundholm, 1996). Internationally, Hope (2003) applies similar scores from the Center for International Financial Analysis Research (CIFAR). Typically, these scores are only available for larger firms, well covered by financial analysts. Such scores are not available for the vast majority of firms which have adopted IFRS.[15] Also, conceptually, the validity of these scores has been questioned due to concerns about the independence of financial analysts and their incentives which might influence the assignment of their scores and relative ratings.

In 2001/2002, Standard & Poor's (S&P) carried out an independent global 'Transparency and Disclosure' study examining the transparency of about 1,500 (including U.S.) companies worldwide.[16] The study is based on a checklist of 98 possible items of information ('attributes') of which only 35 referred to information disclosure in the annual reports. Instead, 28 attributes referred to ownership structure and investor relations, and 35 to boards of directors, management structure and process. As such, the S&P scores can be considered to capture primarily corporate governance related issues and have therefore been mainly utilized in corporate governance research.[17] Further, there are no time series-data available for the global S&P scores.

The method we apply in this paper is to utilize 'quality scores' extracted from the yearly 'Best Annual Report' beauty contests which have been held for several years in various countries. Such scores or rankings have also been applied by others in disclosure research (see Leuz and Verrecchia, 2000; Hail, 2002). These quality scores are still subjective, and subject to weighting and aggregation of information, but at least they are typically performed by independent and reputable scholars. The levels of detail in their analysis (e.g., the items and categories covered and the information extracted from the actual annual reports) are typically much greater than under the CIFAR or S&P scores (see below). Also, our quality scores are available as a time-series of up to eight fiscal years.

[14] See, for example, Cairns (2000), Glaum and Street (2003) and Gebhardt and Heilmann (2004).

[15] CIFAR scores are not available beyond 1995, when the last edition of *International Accounting and Auditing Trends* was published, see Khanna *et al.* (2004, p. 483).

[16] See Standard & Poor's (2002) for further details. The study covered 351 firms domiciled in Europe.

[17] See Khanna *et al.* (2004) for a notable exception.

The 'Best Annual Report' Contests

We employ measures of the information quality of annual reports from the annual competitions for the best annual reports in the business journals *Capital* and *Focus Money* (Germany 1996–2003), *Bilanz* (Switzerland 2001–04) and *Trend* (Austria 1997–2004). These journals ask experts to rate annual reports based on scoring models for the financial statements, the notes to financial statements, the report on the current state and future development of the business (*Lagebericht*), and supplementary as well as voluntary information. The evaluation criteria adopted by the experts are not identical across the three countries and they have been adjusted or even significantly changed over time in order to reflect changes in the reporting environment. However, they can be seen as concurrent expert evaluations based on the actual contents of the annual reports, irrespective of the accounting system applied. Further, as displayed in Table 1, Panel B, over the period 2000 to 2004, about 23 per cent of the worldwide IAS/IFRS adopters are included in our sample.

In Germany, there have been two competing annual report contests hosted by *Manager Magazin* under the scientific supervision of Professor Baetge (University of Münster) and by *Capital* (later *Focus Money*) under the scientific supervision of Professor Küting (University of Saarbrücken). Since the results for the *Manager Magazin* contest are only partially disclosed in the articles and were not made available to us, we used the *Capital* scores which are derived from quantitative scoring models.[18] From 1996 to 1998, scores were assigned in three categories, the information quality of the financial reports (*Informationsqualität*), the design and layout of the annual report (*Präsentationsqualität*) and a rating based on a survey of financial analysts through the Society of Investment Professionals in Germany (DVFA) (*Analystenurteil*). From fiscal year 1999, the third category, with ratings by financial analysts, has been hosted by *Capital* as a separate contest with the assignment of a prize for 'Best Investor Relations' and only the two remaining categories now constitute the 'Best Annual Report' contest. From fiscal year 2001, the annual report contest was sponsored by the business journal *Focus Money* until this contest was discontinued in 2004.

In Germany, the scales and the criteria for the total quality score on which the rankings of firms have been based has changed considerably over time. However, the information quality section which attempts to capture differences in the information content of the financial statements and the notes to the financial statements has been consistently collected by Professor Küting under a similar scorecard-based approach across all years. Our analysis is restricted to the information quality scores only and they are adjusted across the years to a common base.

In Switzerland, the business journal *Bilanz* has hosted annual report contests since the mid-1990s. The detailed results for all firms analysed have been made available for the fiscal years 2001–04. The total ranking for these years has been based on the evaluation of two categories: *Value Reporting* collected by the Swiss

[18] The *Capital* (later *Focus Money*) scores can be considered more transparent to outside users and have also been used in prior international research (see Leuz and Verrecchia, 2000, pp. 102–3).

Banking Institute of the University of Zurich under the supervision of Professor Labhart; and *Design and Layout* by a group of public relations and design experts. As the first category was primarily designed to capture differences in the information content of the financial disclosures, we restrict our analysis to the scores for this category only.

In Austria, since 1989, the business journal *Trend* has asked experts to evaluate and rank the annual reports of all Austrian firms listed in the *Amtlicher Handel* of the Vienna stock exchange. Starting with annual reports for the fiscal year 1997, the formerly purely subjective evaluation scheme has been supplemented with a quantitative scorecard with predefined criteria used by the *Projektgruppe für Unternehmenskommunikation* (*PUK*), a group of researchers at the Vienna University of Economics and Business Administration (WU Wien). This evaluation scheme is based on the informational needs of financial statement users identified in prior research and interviews with peer user groups. In a second step, groups of experts then add their evaluation to augment the quantitative first-step analyses in order to come up with a final ranking.

While this two-step evaluation scheme was consistently applied to all fiscal years from 1997 until 2004, the categories, the individual items considered within a category and the team of experts varied from year to year. For the fiscal years 1997 until 2002, the PUK defined three evaluation categories and assigned weights to the calculation of the total score: financial information (*Betriebswirtschaft*) (50 per cent), non-financial information (*Publizistik*) (30 per cent), and report layout (*Design*) (20 per cent). For 2003 and 2004, this scheme was changed to two categories with equal weights: financial information (*Business Reporting*) and non-financial information (*Mediumsqualität*). In addition, from fiscal year 2000, the jury analysed in detail only the top 20 per cent in the first quantitative round (*Feinanalyse*), and from fiscal year 2003 this second-round score was determined only for the top 20 per cent of annual reports and added to the first-round scores. This modification caused not only a change in the range of the summary score from formerly 0–100 per cent in 1997–2002 to 0–200 points in 2003 and 2004, but also a structural change in the distribution of scores between the top 20 per cent and the rest of the companies. Furthermore, the team of experts in the jury changed over time. For example, Professor Bertl (1997–99), Professor Wagenhofer (2000–03) and Professor Janschek (2004) have each been in charge of the evaluation of the financial information category. Finally, as information on the scores for the individual categories has not been available for most of our study period, we can only make use of the total summary scores which include non-financial aspects of the annual report. As such, the Austrian scores can be considered more 'noisy' disclosure quality measures.

The numbers of firms included in the annual contests differ over time (Table 1, Panel B). Whereas these numbers have been fairly stable for the Austrian and Swiss contest, the size of the German compilation was reduced considerably from 2002, when sponsorship of the contest was transferred from *Capital* to *Focus Money*. As the primary focus of contests is to 'crown' the best annual report, the samples of firms covered in the competitions are biased towards larger listed

companies in all three countries. Still, as noted already for the period 2000–04, about 23 per cent of all IAS/IFRS adopting firms worldwide are covered by the three competitions.

Appendix A summarizes the details of the evaluation methods used in annual report contests as well as the methods used to calculate the final scores and rankings. Appendix B provides the descriptive statistics for the raw scores we utilize, as taken from the original sources (magazine articles or web pages).

Disclosure Quality Scores

The original scoring models employed different score ranges, for example, from 0–100, 0–200, 0–500. For our analysis across countries and time, we standardize all raw scores to a common range from 0–100 (SCORE). Further raw scores are converted to a standardized score with a mean of zero and a standard deviation of one (Z-SCORE). In addition to the absolute measures, we employ the ranks of the individual companies in the different years. As these comprise different numbers of companies across years, relative rankings are calculated as the ratio of the rank of firm i to the number of firms in the ranking for a given year n (RANK).

All three measures (SCORE, Z-SCORE, RANK) have their unique advantages and disadvantages for this analysis. While the absolute measure SCORE yields the most direct and intuitive results, it can only be analysed or pooled across years when the evaluation criteria have remained constant over time. The Z-SCORES seek to adjust for the variation across scores under different evaluation schemes, but also to remove shifts or trends over time in the mean score as well as changes in the variation of the underlying population. The relative RANK scores are intended to be useful for comparisons over time. However, as the number of firms reporting under internationally recognized standards increases over time, it will become more difficult for late-switching firms to increase in rank relative to their peer group than for early switching firms, if switching from local GAAP to IFRS or U.S. GAAP really increases reporting quality. This might affect the inferences drawn from the RANK measure in a pre-versus-post analysis of firms switching from local GAAP to an international GAAP reporting regime.

Empirical Analyses

The research question is whether there are systematic differences in the scores that can be related to the set of accounting standards applied by the companies. Our univariate analyses first test for statistical differences in the average and median SCORE (Z-SCORE) and RANK across accounting regimes using conventional t-tests and nonparametric Wilcoxon Rank-Sum tests (level of significance reported for two-sided tests). We further test for such differences by means of percentile bootstrap confidence intervals. The bootstrap method works under less restrictive assumptions about the distributional properties of the population and appears to be especially suited for statistical inferences to be derived from small samples (see, e.g., Efron and Tibshirani, 1993).

Our multivariate analysis attempts to analyse the effect of applying internationally recognized accounting standards on the disclosure quality of firms, after

controlling for firm characteristics and thus firm-level reporting incentives. However, this is not a trivial task, as the voluntary nature of the decision to adopt IFRS or U.S. GAAP could introduce a (self-) selection bias in the coefficients of a regression of financial reporting standards and firm characteristics on our financial reporting quality scores. The econometric approaches typically chosen to control for self-selection of the accounting regime (e.g., Heckman, 1987)[19] are not suitable for our research because there are no suitable instrumental variables which would predict the standard selection choice in the first stage, but would not affect the disclosure quality choice in the second.

For that reason, in addition to the typical panel regressions on our total sample we perform two analyses for specific subgroups of firms for which self-selection appears to be less of an issue. Our second multivariate analysis focuses on the set of switch firms only. Using the switch firm sample, we first regress our dependent variables SCORE and RANK solely on a dummy variable capturing the accounting regime switches to IFRS or U.S. GAAP. We assess the importance of this switch variable by testing for a positive and significant regression coefficient. Then various incentive and control variables are included in order to assess their relative ability to capture the effect of the change in disclosure quality at the time of the adoption of IFRS or U.S. GAAP. We judge the relative importance of the international reporting dummy by the change of its coefficient's magnitude and level of significance in our second regression including the other control variables.

Our third multivariate analysis investigates only the subset of firms on the German New Market and in the TechDAX or SDAX indexes from 2002 which mandatorily applied IAS/IFRS or U.S. GAAP, but some of which fully adopted these standards a year or two after they became listed under a transitional option.[20] Although these companies thus exercised the option to adopt internationally recognized standards at a later date, they were still forced by regulation to adopt IFRS or U.S. GAAP.

All multivariate analyses regress our SCORE and RANK variables as dependent variables on the various firm characteristics and on a dummy variable for reporting under IFRS or U.S. GAAP, taking the base value for zero for local GAAP reporters (INT_STAND). We restrict our analysis to Germany and Switzerland, for which we have comparable quality scores over time. We pool the data across years and report regression results with Huber-White standard errors adjusted for firm-specific autocorrelation in the disclosure scores. As a sensitivity test, we further perform yearly OLS regressions and report the average regression coefficients and *t*-statistics across all available individual years.

Our multivariate analyses utilize a very similar set of control variables to prior research (see Leuz and Verrecchia, 2000). These variables have been identified as determinants of the disclosure quality of individual firms. In general, disclosure

[19] See Leuz and Verrecchia (2000), Bartov *et al.* (2005).

[20] The transitional option was granted by Deutsche Börse, *Regelwerk Neuer Markt*, Abschnitt 2, Tz. 7.3.2. for a period of up to two fiscal years after becoming listed on the New Market.

quality is positively related to firm size, the number of analysts following a firm, its financing needs and its performance. We therefore include firm size defined as either the log of market capitalization at fiscal year end (MCAP) or the log of total assets at fiscal year end (TA), the number of financial analysts following a firm (NO), leverage defined as total debt divided by market capitalization (LEV), free float (FFLOAT), capital intensity defined as the ratio of net property, plant and equipment to total assets (CAPINT), and profitability measured as return on assets (ROA). We further use a dummy variable for a listing on a U.S. stock exchange, NYSE or NASDAQ (US_LISTING), and a dummy for firms listed on the German New Market or TechDAX (NM_TECH). We also include year and industry (one digit-SIC code) dummies in our panel regressions.

RESULTS

Descriptive Statistics

Table 2 presents descriptive statistics for our disclosure quality variables derived from the annual report contests in Germany (Panel A), Switzerland (Panel B) and Austria (Panel C). We report yearly summary statistics for the SCORE variable as well as average values of these statistics across all fiscal years for the SCORE, Z-SCORE and RANK variable.

The mean (median) score for German companies rises from 60.63 (60.00) for fiscal year 1996 annual reports to 69.93 (72.10) for fiscal year 2003 annual reports. A rise in the average (median) scores from 24.31 (21.18) to 44.37 (43.40) can also be observed for the Swiss companies in the 2001–04 period. Even though the averages (medians) are not fully comparable as the evaluations are based on slightly adjusted scoring models over time, a significant positive trend towards higher disclosure quality is evident in both countries. The coefficient of a time variable regressed on SCORE is significantly positive at the 1 per cent level for both Germany and Switzerland (not tabulated). The 'true' increase in disclosure quality will be even greater than reflected in these scores as the contests' scorecards have generally become more comprehensive over time.

A comparison over time of the Austrian scores is not appropriate, as the scoring models have been changed considerably during the sample period. However, in the comments in the *Trend* articles, the experts' juries in 1998, 1999, 2000, 2001 and 2003 stated an overall increase in information quality of the annual reports analysed.

The large difference in magnitude of the average SCOREs assigned across the three countries further illustrates the different evaluation schemes applied. Whereas the Swiss experts have assigned, on average, around 38 out of 100 per cent over the years of their sample period, the Austrian experts assigned around 51 and the Germans even around 63 per cent.

For the Z-SCORE and the RANK variables, we report only average values across the fiscal years as the yearly information is very similar. The Z-SCORE variables are standardized by design to a mean value of zero (and a standard deviation of one). Likewise, the RANK variables display a mean close to 0.50 with a range from $1/n$ to one.

TABLE 2

ANNUAL REPORT CONTEST SCORES: DESCRIPTIVE STATISTICS

Panel A: Germany

Year	Variable	*N*	Mean	Median	Q1	Q3	Min	Max
1996	SCORE	200	60.63	60.00	50.00	70.00	20.00	90.00
1997	SCORE	202	51.84	52.33	41.33	63.33	4.67	85.67
1998	SCORE	204	58.84	59.67	48.67	70.33	4.67	86.33
1999	SCORE	222	60.15	61.50	50.33	72.67	0.00	93.33
2000	SCORE	199	66.24	66.00	58.00	79.60	0.00	100.00
2001	SCORE	209	69.01	67.60	61.30	79.90	17.50	92.40
2002	SCORE	155	68.41	67.60	60.10	79.30	26.20	89.50
2003	SCORE	136	69.93	72.10	59.80	80.05	19.60	90.40
Avg.	SCORE		63.13	63.35	53.69	74.40	11.58	90.95
Avg.	Z_SCORE		0.00	0.01	−0.65	0.77	−3.50	1.88
Avg.	RANK		0.48	0.48	0.23	0.73	0.01	1.00

Panel B: Switzerland

Year	Variable	*N*	Mean	Median	Q1	Q3	Min	Max
2001	SCORE	158	24.31	21.18	16.60	28.77	0.00	71.17
2002	SCORE	177	40.82	39.00	34.17	46.83	23.00	73.17
2003	SCORE	177	42.71	41.33	35.50	48.50	27.50	71.33
2004	SCORE	200	44.37	43.40	36.13	51.58	22.50	73.92
Avg.	SCORE		38.05	36.23	30.60	43.92	18.25	72.40
Avg.	Z_SCORE		0.00	−0.17	−0.71	0.57	−1.86	3.21
Avg.	RANK		0.50	0.50	0.25	0.74	0.01	1.00

Panel C: Austria

Year	Variable	*N*	Mean	Median	Q1	Q3	Min	Max
1997	SCORE	92	56.50	57.27	47.73	64.39	23.88	82.02
1998	SCORE	90	57.28	55.19	46.86	67.49	17.04	90.75
1999	SCORE	93	56.74	57.38	45.71	67.91	15.04	89.10
2000	SCORE	95	45.88	46.03	31.78	55.67	9.84	89.44
2001	SCORE	98	39.88	38.44	26.18	50.72	11.25	87.86
2002	SCORE	83	40.60	39.03	31.14	50.63	11.70	65.63
2003	SCORE	83	48.85	48.89	34.82	63.20	9.40	85.20
2004	SCORE	81	62.34	63.86	50.57	74.87	22.71	91.38
Avg.	SCORE		51.01	50.76	39.35	61.86	15.11	85.17
Avg.	Z_SCORE		0.00	−0.02	−0.75	0.70	−2.35	2.21
Avg.	RANK		0.51	0.51	0.26	0.76	0.01	1.00

Source: The raw score information has been assigned by teams of reputed academic accounting experts based on the information quality of published annual reports. It is published by the business journals *Capital*/*Focus Money* (Germany), *Bilanz* (Switzerland) and *Trend* (Austria). For details, see Appendix A.
SCORE is the raw score converted to a common range from 0–100 points.
Z_SCORE is the raw score standardized to a score with a mean of zero and a standard deviation of one.
RANK is the ratio of the rank of firm *i* to the number of firms in the ranking for a given year *n*.

Univariate Results: Financial Reporting Standards

Table 3 summarizes the univariate results on the differences in mean and median SCORE and RANK across the three different accounting regimes. For brevity, we report only differences in the means and medians of the SCORE and RANK variables (the level of significance is identical for the SCORE and Z-SCORE variable in the yearly analyses). These results are presented separately for each fiscal year and we further report the average values across all fiscal years.

For German firms (Panel A), the mean and median scores (ranks) for the IFRS annual reports are significantly higher (lower) than those for the local GAAP reports. This result holds for each of the eight individual years of analysis. The *p*-values for the difference in mean and median for both the SCORE and RANK variables are smaller than 0.001 for each individual year under the bootstrap method (not tabulated). In addition, the magnitude of the difference in the average scores of IFRS and HGB reports also appears to be economically significant. Across the eight years, IFRS financial reports are assigned disclosure scores that on average are 11.49 points (or 18.9 per cent) higher than local GAAP reports.

The mean and median scores (ranks) assigned to the U.S. GAAP annual reports are also higher (lower) than the local GAAP reports for most of the years except for 1999 and 2000. However, as compared to IFRS versus German HGB, the differences in mean and median are much smaller (on average 3.14 points or 5.2 per cent across the eight years) and often insignificant or only weakly significant.

For Swiss firms (Panel B), the mean and median scores are again significantly higher for the IFRS than for the local GAAP preparers. The same result is found for the U.S. GAAP adopters, which are assigned significantly higher scores (and lower ranks) than the local FER reporters. Once more, the level of significance is generally even higher under the untabulated bootstrap tests, in which case even the differences in 2001 between FER and IFRS reporters are highly significant at the 1 per cent level. On average, across the four fiscal years 2001–04, Swiss GAAP FER reports have mean scores of only 36.18 points, while IFRS reports are assigned 41.18 (i.e., 14 per cent higher), and U.S. GAAP reports even higher at 48.39 out of 100.

For the Austrian firms in Panel C, the mean and meridian scores for annual reports prepared according to local GAAP AHGB are also significantly lower than for annual reports under IFRS and U.S. GAAP. This result holds on average across the sample years as well as for each of the eight years using conventional *t*-tests, nonparametric Wilcoxon Rank-Sum tests, and the bootstrap method. Under the Austrian evaluation scheme, AHGB annual reports have been assigned 38.90 points over the eight year period, while U.S. GAAP reports achieved 53.81 (38 per cent higher) and IFRS reports even higher at 55.64.

Taken together, these results show that the application of IFRS has consistently led to higher quality financial report ratings across the three countries studied. The differences are in most years statistically significant at the .001 level and appear to be economically significant in magnitude as well.

However, local GAAP, IFRS and U.S. GAAP reporters are not randomly drawn from an underlying population of similar firms. Instead, the univariate results are based on the differing characteristics of the firms reporting under a

TABLE 3

DISCLOSURE QUALITY AND FINANCIAL REPORTING STANDARDS: ALL FIRMS

Panel A: Germany

Fiscal year	Reporting standards	Score						Rank					
		n	Mean	Diff. *t*-stats	Median	Diff. *Z*-stats	*SD*	*n*	Mean	Diff. *t*-stats	Median	Diff. *Z*-stats	*SD*
1996	HGB	183	59.92		60.00		13.35	183	0.41		0.41		0.29
	IFRS	8	77.50***	3.65	80.00***	3.13	12.82	8	0.13***	–2.74	0.06***	–3.13	0.17
	U.S. GAAP	2	60.00	.	60.00	.	14.14	2	0.38	.	0.38	.	0.36
1997	HGB	181	51.03		52.33		14.56	181	0.49		0.48		0.28
	IFRS	10	68.17***	3.64	71.33***	3.14	15.28	10	0.21***	–3.12	0.09***	–3.14	0.27
	U.S. GAAP	4	65.17*	1.94	67.00*	1.80	13.56	4	0.24*	–1.81	0.19*	–1.80	0.24
1998	HGB	153	57.71		59.67		13.98	153	0.50		0.45		0.28
	IFRS	27	69.26***	4.03	70.67***	3.94	12.55	27	0.27***	–4.00	0.17***	–3.94	0.24
	U.S. GAAP	10	59.67	0.08	57.83	0.15	16.85	10	0.47	–0.09	0.50	–0.15	0.33
1999	HGB	107	62.06		62.67		15.84	107	0.48		0.47		0.26
	IFRS	47	69.09**	2.52	71.67**	2.71	16.35	47	0.35***	–2.61	0.26***	–2.71	0.29
	U.S. GAAP	32	56.28*	1.71	57.00*	–1.65	19.59	32	0.56	–1.63	0.64*	1.65	0.30
2000	HGB	82	64.07		64.00		14.44	82	0.54		0.54		0.27
	IFRS	53	73.57***	4.03	74.60***	3.87	13.73	53	0.36***	–4.05	0.31***	–3.87	0.26
	U.S. GAAP	52	63.52	0.08	62.80	–0.08	17.26	52	0.54	0.04	0.58	0.08	0.29

2001	HGB	94	65.35		65.35		12.15	94	0.58		0.58		0.27
	IFRS	62	73.86***	4.26	78.10***	4.37	13.90	62	0.38***	−4.64	0.29***	−4.37	0.29
	U.S. GAAP	45	69.62*	1.89	68.80	1.30	11.29	45	0.50	−1.38	0.46	−1.30	0.28
2002	HGB	32	63.11		61.55		13.51	32	0.63		0.70		0.30
	IFRS	62	73.34***	3.63	76.75***	3.50	12.67	62	0.38***	−4.02	0.32***	−3.50	0.27
	U.S. GAAP	50	68.85**	2.01	66.55**	2.26	11.97	50	0.50**	−2.07	0.53**	−2.26	0.26
2003	HGB	25	63.94		60.90		14.52	25	0.63		0.73		0.32
	IFRS	62	74.33***	3.88	77.65***	3.36	10.95	62	0.41***	−3.70	0.38***	−3.37	0.26
	U.S. GAAP	38	69.23*	1.72	68.35*	1.92	13.55	38	0.52*	−1.78	0.57*	−1.92	0.28
Avg.	HGB		60.90		60.81				0.53		0.55		
	IFRS		72.39		75.10				0.31		0.24		
	U.S. GAAP		64.04		63.54				0.46		0.48		
Avg.	IFRS vs. HGB	Δ	11.49***	3.71	14.29***	3.50			−0.22***	−3.61	−0.31***	−3.50	
	U.S. GAAP vs. HGB	Δ	3.14	1.35	2.73	0.82			−0.07	−1.25	−0.06	−0.82	
	U.S. GAAP vs. IFRS	Δ	−8.35**	−2.09	−11.56**	−2.08			0.15**	2.19	0.25**	2.08	

TABLE 3

(CONTINUED)

Panel B: Switzerland

Fiscal year	Reporting standards	Score						Rank					
		n	Mean	Diff. *t*-stats	Median	Diff. *Z*-stats	*SD*	*n*	Mean	Diff. *t*-stats	Median	Diff. *Z*-stats	*SD*
2001	FER	56	22.62		19.75		12.37	56	0.53		0.53		0.28
	IFRS	72	26.12	1.50	22.70	1.45	13.53	72	0.46	–1.52	0.45	–1.46	0.28
	U.S. GAAP	7	39.81***	3.54	37.97***	3.25	9.21	7	0.15***	–3.59	0.15***	–3.25	0.08
2002	FER	60	38.55		36.92		7.76	60	0.57		0.60		0.25
	IFRS	80	43.56***	3.37	42.75***	3.41	9.34	80	0.41***	–3.50	0.36***	–3.42	0.28
	U.S. GAAP	9	49.65***	3.87	48.33***	3.30	9.76	9	0.24***	–3.73	0.19***	–3.30	0.20
2003	FER	59	40.49		40.00		7.20	59	0.56		0.54		0.24
	IFRS	77	46.48***	4.00	46.00***	3.96	9.63	77	0.38***	–4.04	0.32***	–3.96	0.27
	U.S. GAAP	9	50.69***	3.58	53.50**	2.38	12.11	9	0.30***	–2.87	0.13**	–2.38	0.30
2004	FER	64	43.07		42.01		8.17	64	0.53		0.54		0.24
	IFRS	79	48.55***	3.60	48.67***	3.47	9.70	79	0.38***	–3.55	0.34***	–3.47	0.26
	U.S. GAAP	9	53.41***	3.34	51.85**	2.31	12.10	9	0.30***	–2.70	0.24**	–2.31	0.26
Avg.	FER		36.18		34.67		8.88		0.55		0.55		0.25
	IFRS		41.18		40.03		10.55		0.41		0.37		0.27
	U.S. GAAP		48.39		47.91		10.80		0.25		0.18		0.21
Avg.	IFRS vs. FER	Δ	5.00***	3.12	5.36***	3.07		Δ	−0.14***	–3.15	−0.19***	–3.08	
	U.S. GAAP vs. FER	Δ	12.21***	3.58	13.24***	2.81		Δ	−0.30***	–3.22	−0.38***	–2.81	
	U.S. GAAP vs. IFRS	Δ	7.21*	1.77	7.88*	1.69		Δ	−0.16	1.60	−0.19*	–1.69	

Panel C: Austria

Fiscal year	Reporting standards	Score						Rank					
		n	Mean	Diff. *t*-stats	Median	Diff. *Z*-stats	*SD*	*n*	Mean	Diff. *t*-stats	Median	Diff. *Z*-stats	*SD*
1997	AHGB	87	55.88		56.63		12.10	87	0.52		0.53		0.29
	IFRS	3	71.92**	2.28	74.13**	2.45	4.33	3	0.10**	–2.54	0.08**	–2.45	0.06
	U.S. GAAP	0	.	.	.	.	.		.	.	.	.	.
1998	AHGB	78	55.01		53.48		13.25	78	0.55		0.56		0.27
	IFRS	11	72.35***	3.93	77.39***	3.38	16.66	11	0.23***	–3.63	0.11***	–3.38	0.28
	U.S. GAAP	1	67.96	.	67.96	.	.	1	0.23	.	0.23	.	.
1999	AHGB	63	52.59		54.63		14.81	63	0.58		0.57		0.27
	IFRS	23	66.58***	3.95	68.57***	3.61	14.62	23	0.32***	–3.97	0.24***	–3.61	0.27
	U.S. GAAP	3	71.82**	2.23	67.91**	2.05	13.47	3	0.23**	–2.21	0.26**	–2.05	0.20
2000	AHGB	45	37.07		32.90		13.92	45	0.67		0.71		0.26
	IFRS	39	54.45***	5.66	53.29***	5.05	14.18	39	0.35***	–5.97	0.33***	–5.05	0.23
	U.S. GAAP	8	56.16***	3.59	58.23***	3.02	13.39	8	0.30***	–3.74	0.21***	–3.02	0.25
2001	AHGB	43	30.41		25.76		15.18	43	0.69		0.77		0.26
	IFRS	43	48.31***	5.55	48.28***	5.36	14.68	43	0.35***	–6.60	0.31***	–5.36	0.22
	U.S. GAAP	8	47.68***	2.91	50.98	2.68	16.62	8	0.36***	–3.17	0.26***	–2.68	0.29
2002	AHGB	28	31.99		32.25		11.14	28	0.71		0.75		0.25
	IFRS	47	45.05***	4.94	43.59***	4.46	11.05	47	0.40***	–5.17	0.36***	–4.46	0.26
	U.S. GAAP	4	52.89***	3.65	51.02***	2.71	5.23	4	0.22***	–3.92	0.25***	–2.70	0.09

TABLE 3

(CONTINUED)

Fiscal year	Reporting standards	Score						Rank					
		n	Mean	Diff. *t*-stats	Median	Diff. *Z*-stats	*SD*	*n*	Mean	Diff. *t*-stats	Median	Diff. *Z*-stats	*SD*
2003	AHGB	20	21.39		15.41		17.17	20	0.72		0.83		0.28
	IFRS	53	38.19***	4.05	26.49***	3.89	21.93	53	0.43***	−4.34	0.43***	−3.89	0.26
	U.S. GAAP	7	35.77***	2.78	27.63***	2.68	21.57	7	0.40***	−2.95	0.39***	−2.68	0.22
2004	AHGB	19	26.87		22.94		15.48	19	0.76		0.83		0.24
	IFRS	53	48.31***	6.02	46.72***	4.65	21.44	53	0.41***	−5.57	0.38***	−4.65	0.25
	U.S. GAAP	5	44.36**	2.47	36.18*	1.92	25.59	5	0.46**	−2.52	0.42*	−1.92	0.34
Avg.	AHGB		38.90		36.75		14.13		0.65		0.69		0.26
	IFRS		55.64		54.81		14.86		0.32		0.28		0.23
	U.S. GAAP		53.81		51.42		15.98		0.31		0.29		0.23
Avg.	IFRS vs. AHGB	Δ	16.74***	4.55	18.06***	4.11		Δ	−0.33***	−4.72	−0.41***	−4.11	
	U.S. GAAP vs. AHGB	Δ	14.90***	2.94	14.67**	2.51		Δ	−0.34***	−3.09	−0.41**	−2.47	
	U.S. GAAP vs. IFRS	Δ	−1.84	−0.40	−3.39	−0.45		Δ	−0.01	0.41	0.01	−0.45	

particular reporting system, most of which have chosen that particular reporting system. Good examples are the relative scores of the IFRS compared to the U.S. GAAP reporters. In Austria, the differences in SCORE and RANK between IFRS and U.S. GAAP preparers is generally small in magnitude and statistically insignificant. Instead, in Switzerland, U.S. GAAP reports earn significantly higher SCORES than IFRS reports. In Germany, this result is reversed, with IFRS outperforming U.S. GAAP financial reports. When looking at the underlying population of firms, it quickly becomes apparent that, in the German U.S. GAAP group, a comparatively high percentage of firms had been listed at some point in time on the German New Market (57 per cent). Many of these firms were young, recently listed companies which have not been subject to rigorous SEC-type enforcement. Accordingly, these firms generally have been considered as low quality financial reporting firms (see Glaum and Street, 2003). Instead, in the U.S. GAAP reporting group in Switzerland (nine firms), two-thirds of our sample firms are cross-listed in the U.S. (67 per cent) and thus bond themselves to be high quality reporting firms under rigorous SEC enforcement (e.g., Lang *et al.*, 2003). The percentage of German companies applying U.S. GAAP and cross-listed in the U.S. in our sample (16 per cent) is much smaller.

Univariate Results: Switch Firms

In order to control for underlying firm characteristics, we use the firm as its own control to analyse the subset of companies which switched from local GAAP accounting standards (AHGB, HGB, FER) to either IFRS or U.S. GAAP. We compare the first fiscal year's score under internationally recognized standards to the last fiscal year's score under local GAAP. The results are reported in Table 4. We report both the average and median change in the SCORE and RANK variable ('change' analysis), as well as the change relative to the change in SCORE and RANK over the same period in time of the group of firms which did not switch their accounting standards and thus reported their results entirely under local GAAP ('difference-in-difference' analysis).

For the sixty-two German companies switching from HGB to IFRS during our 1996–2003 sample period, the mean and median quality scores improve significantly in the fiscal year post IFRS adoption ($p < .001$, Table 4, Panel A). On average, SCORE increases by 10.53 points from the last HGB to the first IFRS adoption. When we compare the magnitude of this change to a corresponding change of firms which still apply local GAAP over the same period, IFRS adoption results in scores that are nearly 9 points higher than those for the HGB reference group. This result is confirmed by the highly significant improvement in the relative ranks of IFRS adopters. They have gained, on average, 18 relative ranks after IFRS adoption and even 19 relative ranks compared to their local GAAP benchmark.

For the sixteen German firms which have adopted U.S. GAAP, the 7.01 points improvement in the average score (and the 4.9 points increase relative to the local GAAP benchmark in the difference-in-difference analysis) is lower than the improvement of IFRS adopters. However, from the level of scores pre- and

TABLE 4

DISCLOSURE QUALITY AND FINANCIAL REPORTING STANDARDS: SWITCH FIRMS

Panel A: Germany

Reporting standards	Score						Rank					
	n	Mean	Diff. *t*-stats	Median	Diff. *Z*-stats	*SD*	*n*	Mean	Diff. *t*-stats	Median	Diff. *Z*-stats	*SD*
HGB pre-switch	62	64.94		64.50		13.75	62	0.47		0.48		0.29
IFRS post-switch	62	75.47		76.60		10.06	62	0.28		0.26		0.22
Change	Δ	10.53***	4.53	12.10***	4.23		Δ	−0.18***	−3.55	−0.23***	−3.26	
Difference-in-difference	ΔΔ	8.96***	3.90	11.59***	3.78		ΔΔ	−0.19***	−3.63	−0.26***	3.96	
HGB pre-switch	16	72.89		74.33		10.73	16	0.30		0.21		0.27
U.S. GAAP post-switch	16	79.90		81.60		7.03	16	0.19		0.16		0.11
Change	Δ	7.01**	2.19	7.27*	1.89		Δ	−0.11	−1.47	−0.05	0.51	
Difference-in-difference	ΔΔ	4.90	1.44	2.90	1.00		ΔΔ	−0.13*	−1.94	−0.11	−1.23	

Panel B: Switzerland

Reporting standards	Score						Rank					
	n	Mean	Diff. *t*-stats	Median	Diff. *Z*-stats	*SD*	*n*	Mean	Diff. *t*-stats	Median	Diff. *Z*-stats	*SD*
FER pre-switch	6	31.82		30.62		12.65	6	0.48		0.49		0.19
IFRS post-switch	6	43.18		44.10		6.91	6	0.45		0.40		0.26
Change	Δ	11.36*	1.93	13.48	1.52			−0.02	−0.56	−0.09	−0.24	
Difference-in-difference	ΔΔ	2.11	0.56	3.88	0.40			0.07	0.21	−0.04	−0.24	

Panel C: Austria

	Score						Rank					
	n	Mean	Diff. *t*-stats	Median	Diff. *Z*-stats	*SD*	*n*	Mean	Diff. *t*-stats	Median	Diff. *Z*-stats	*SD*
Difference-in-difference	41	5.02*	1.81	1.96	1.38		41	−0.09*	−1.81	−0.08	−1.55	

post-switch, it becomes apparent that the firms voluntarily adopting U.S. GAAP standards are of the high disclosure quality type. For their pre-switch local GAAP financial statements, the average SCORE of 72.89 is remarkably high. After the adoption of U.S. GAAP, the already high level is then further increased. Although the magnitude of this increase appears to be economically significant, its statistical significance under the conventional test statistics is rather low due to the small number of companies. When using the bootstrap method instead to test for such differences, both the increase in SCORE as well as the decrease in RANK (absolute in change and relative in difference-in-difference) are significant, even at the 1 per cent level.

For Swiss firms (Table 4, Panel B), during the 2000–04 sample period for which we have data, there is only a small number of six firms switching to IAS/IFRS (and none switching to full U.S. GAAP reporting). This is probably because Swiss firms were granted the possibility of adopting non-local financial reporting standards in 1996 and no further change in regulation required a mandatory adoption of international standards before 2005. Accordingly, the situation in Switzerland during the sample period approaches an equilibrium whereby firms have chosen their reporting standards optimally, according to their perceived benefits and costs.

This situation is reflected in the relative SCORE and RANK variables. For the six firms switching from local GAAP to IFRS in the sample period, we observe an increase in the mean (median) scores from the very low mean (median) level of 31.82 (30.62) to 43.18 (44.10). This marks an average increase of 36 per cent (median increase of 44 per cent). However, when benchmarked against the average increase of the local GAAP reporters, the premium in points is only 2.11 (mean) and 3.88 (median), and not statistically significant. Similarly, when ranked against the other Swiss firms, of which many have already reported according to international standards, the relative decrease in the RANK measure is only moderate and statistically insignificant.

In Austria, during the sample period 1997–2004, forty-one firms switched to IFRS and only Mayr-Melnhof to U.S. GAAP (dropped from this analysis). The switch analysis for Austria is complicated by the fact that the evaluation schemes assigned by the experts have changed considerably over time. Accordingly, a comparison of the SCORE variable in a pre- versus post-change analysis is not appropriate and we report only the results for the relative difference-in-difference analysis which should balance differences over time due to the corresponding AHGB reference group. As compared to these local GAAP reporters, IFRS adopters gained on average plus 5.02 points (median 1.96 points). This difference is only weakly significant under the conventional tests, but turns out to be highly significant at the 1 per cent level with the bootstrap method. The same is true for the RANK measure, under which IFRS adopters gained on average 9 relative ranks.

Accordingly, in all three countries we detect a significant increase in the disclosure scores (both absolute and relative to a group of local GAAP reporters) with the adoption of IFRS financial statements.

Univariate Results: Financial Reporting Standards and Reporting Incentives
It is increasingly understood that not only the reporting standards *per se*, but also the varying reporting incentives of individual firms in a specific institutional setting largely determine the transparency and quality of financial reporting (e.g., Ball *et al.*, 2000; Ball *et al.*, 2003). In order to analyse the effects of differing reporting incentives at the firm level on our results, we study various subgroups of firms which have adopted internationally recognized reporting standards under supposedly different reporting incentives.[21]

Except for the firms listed in the U.S. and those either listed in the German New Market or included in the TechDAX or SDAX indexes of Deutsche Börse from 2002 and thus required by regulation to adopt internationally recognized standards, all other Austrian, German and Swiss firms which have switched before the fiscal year 2005 to either IAS/IFRS or U.S. GAAP have done so voluntarily. Firms which are granted by regulation a choice of which set of accounting standards they apply will optimally choose their financial reporting regime according to their individual perceived benefits and the costs of that decision. As a voluntary switch to non-local standards is understood as a costly signal to provide more and better information, firms which provide already relatively more information can produce this signal at less cost. Also, firms that have the incentives and are willing to provide more transparency will choose a regime switch to internationally recognized standards. Accordingly, in case firms voluntarily choose to adopt IFRS of U.S. GAAP, we cannot attribute a measurable increase in the disclosure effect to the reporting standards alone, but to some combination of the effects of the reporting standards and the reporting incentives. It is not clear which relative weight can be assigned to accounting standards in this case.

The results in Table 5, Panel A, generally confirm empirically the conjecture that the firms which voluntarily adopt non-local standards are a special subgroup of firms: The mean (median) local GAAP HGB-pre-switch score of 68.68 (67.33) and the relative mean (median) rank of 0.37 (0.28) for the 59 voluntary German switch companies are significantly higher than the scores and relative ranks of companies that continue to apply local GAAP. Thus, voluntary non-local GAAP adopters have, on average, disclosure scores that are more than 10 points higher—even under the same set of local GAAP accounting standards—than non-switching local GAAP reporters. This confirms the above argument that the firms which voluntarily switch are seeking higher transparency. The results are very similar for the Austrian firms. Again, the mean (median) scores assigned for the forty-two pre-switch local GAAP AHGB fiscal years of the Austrian switch companies are more than 13 (12) points higher than the mean (median) score of non-switch local GAAP reporters. An exception to our findings, however, is Switzerland, for which our results are inconclusive: The six Swiss firms which switch in the period 2000–04 show lower average SCOREs (but also lower average RANKs) under local GAAP FER in the pre-switch fiscal year as compared to the other non-switch FER reporters.

[21] As we analyse only firms within a similar German-origin institutional setting, our results may not be attributable to other institutional settings which may trigger different reporting incentives. In our research design we are unable to analyse the effects of reporting incentives *across* different institutional settings.

TABLE 5

DISCLOSURE QUALITY, REPORTING STANDARDS AND INCENTIVES: UNIVARIATE ANALYSIS

Panel A: Voluntary non-local GAAP adopters (Germany, Switzerland, Austria)

		Score						Rank					
		n	Mean	Diff. *t*-stats	Median	Diff. *Z*-stats	*SD*	*n*	Mean	Diff. *t*-stats	Median	Diff. *Z*-stats	*SD*
GER	HGB Pre-Switch Year	59	68.68		67.33		13.23	59	0.37		0.28		0.29
	HGB Non-Switch	584	56.10		58.10		14.48	584	0.56		0.56		0.27
	Difference	Δ	−12.58***	−6.40	−9.23***	−6.05		Δ	0.19***	4.97	0,28***	4.62	
SWISS	FER Pre-Switch Year	6	31.82		30.62		12.65	6	0.48		0.49		0.19
	FER Non-Switch	227	36.70		37.67		11.95	227	0.55		0.56		0.25
	Difference	Δ	4.88	0.99	7.05	0.89		Δ	0.07	0.72	0.07	0.77	
AUS	AHGB Pre-Switch Year	42	55.66		54.48			42	0.41		0.39		
	AHGB Non-Switch	264	42.44		42.01			264	0.69		0.76		
	Difference	Δ	−13.22***	−4.86	−12.47***	−4.30		Δ	0.28***	6.62	0.37***	5.78	

Panel B: Early (up to 1999) vs late (from 2000) non-local GAAP adopters (Germany)

		Score						Rank					
		n	Mean	Diff. *t*-stats	Median	Diff. *Z*-stats	*SD*	*n*	Mean	Diff. *t*-stats	Median	Diff. *Z*-stats	*SD*
	HGB Pre-Switch Early	10	62.07		61.67		16.88	10	0.34		0.27		0.31
	HGB Pre-Switch Late	68	67.23		66.17		12.97	68	0.45		0.41		0.29
	Difference	Δ	5.16	1.13	4.50	0.98		Δ	0.10	1.01	0.14	1.17	
	IFRS/U.S. GAAP Post-Switch Early	9	73.11		73.33		8.45	9	0.19		0.16		0.16
	IFRS/U.S. GAAP Post-Switch Late	41	75.99		77.60		10.40	41	0.31		0.23		0.23
	Difference	Δ	2.88	0.77	4.27	0.85		Δ	0.12	1.47	0.07	1.34	

TABLE 5

(CONTINUED)

Panel C: Mandatory non-local GAAP adopters (German New Market/TechDAX and SDAX from 2002)

		Score						Rank					
		n	Mean	Diff. *t*-stats	Median	Diff. *Z*-stats	*SD*	*n*	Mean	Diff. *t*-stats	Median	Diff. *Z*-stats	*SD*
All	HGB	50	55.66		57.95		16.12	50	0.71		0.79		0.26
	IFRS	107	63.96		63.33		13.13	107	0.56		0.55		0.25
	U.S. GAAP	132	59.31		60.70		13.67	132	0.66		0.68		0.20
	IFRS vs. HGB	Δ	8.30***	3.41	5.38***	3.38			−0.15***	−3.53	−0.24***	−3.76	
	U.S. GAAP vs. HGB	Δ	3.65	1.53	2.75*	1.91			−0.05	−1.47	−0.11**	−2.13	
	U.S. GAAP vs. IFRS	Δ	−4.65***	−2.64	−2.63**	2.49		Δ	0.10***	3.40	0.13***	3.03	
Switch	HGB pre-switch	19	60.01		61.00		12.54	19	0.62		0.61		0.25
	IFRS/U.S. GAAP post-switch	19	72.68		76.60		11.82	19	0.39		0.34		0.24
	Change	Δ	12.67***	3.21	15.60***	2.91		Δ	−0.23***	−2.98	−0.27***	−2.64	
	Difference-in-difference	ΔΔ	11.72***	3.19	15.20***	3.08		ΔΔ	−0.28***	−3.42	−0.34***	−3.02	

Panel D: U.S.-listed firms (Germany, Switzerland)

		Score						Rank					
		n	Mean	Diff. *t*-stats	Median	Diff. *Z*-stats	*SD*	*n*	Mean	Diff. *t*-stats	Median	Diff. *Z*-stats	*SD*
GER	U.S. Listed	87	77.34		80.20		12.66	87	0.23		0.17		0.23
	Non-U.S. Listed IFRS/U.S.	295	72.08		75.00		13.28	295	0.38		0.32		0.27
	Difference	Δ	−5.25***	−3.28	−5.20***	−3.88		Δ	0.14***	4.54	0.15***	4.73	
SWISS	U.S. Listed	43	55.06		56.68		12.42	43	0.14		0.06		0.16
	Non-U.S. Listed IFRS/U.S.	288	40.39		41.67		13.01	288	0.43		0.38		0.27
	Difference	Δ	−14.67***	−6.94	−15.02***	−6.19		Δ	0.29***	6.82	0.33***	7.16	

We further analyse whether the timing of the adoption plays an important role for the underlying reporting quality under internationally recognized standards. The focus is on German firms only for this analysis as these have the longest time-series of comparable data (1996–2003). Whereas the very early adoptions before 1998 of internationally recognized standards by German firms have been characterized as strategic long-term commitments towards more transparency (Leuz and Verrecchia, 2000), the late 'voluntary' IFRS adoptions in the transition period after the European Commission announced in 2002 the decision to require IFRS from 2005 have more the flavour of timing decisions than of a voluntary strategic disclosure choice. The later the companies adopted non-local GAAP, the closer this step is to the mandatory adoption of IFRS in 2005. Accordingly, if follow-up companies adopted IFRS as a 'cheap quality label' without changing much in their financial reporting (Ball *et al.*, 2003), one would expect to see significant differences in the levels and changes of the disclosure scores of early versus late non-local GAAP adopters. In Table 5, Panel B, we analyse whether there is a difference between early adopters (until the fiscal year 1999) and late adopters (from fiscal year 2000 onwards).[22] Instead, our results document rather small and insignificant differences in the mean (median) scores of the two groups. The pre- and post-switch scores are even higher for late adopters, but have to be seen in the context of their having improved over time, as have the financial reporting standards themselves, particularly IFRS. This effect probably is reflected in our findings that the average and median RANKs are better for the early adopters (contrary to our findings using the SCORE variable), but still the differences are not statistically significant. In addition, both the early adopters and the late adopters have significantly higher mean and median scores after switching to internationally recognized accounting standards.

German companies listed on the New Market or included in the TechDAX or SDAX indexes of Deutsche Börse are required to apply IAS/IFRS or U.S. GAAP. Companies listed in the SDAX, previously publishing their HGB annual reports, had to switch by the year 2002. For these firms, self-selection should be less an issue as they were (still) granted a choice between IFRS or U.S. GAAP, but not between local GAAP and internationally recognized standards. For these mandatory IFRS or U.S. GAAP adopters, we find in Table 5, Panel C, that mean (median) scores and relative ranks for non-local GAAP financial statements are significantly better compared to the remaining HGB financial statements. Companies mandatorily adopting IFRS have even higher mean (median) SCOREs of 63.96 (63.33) than those adopting U.S. GAAP in these segments of 59.31 (60.70), contrary to the common conjecture that high quality firms would select U.S. GAAP (see Leuz, 2003). This difference is significant at the 1 per cent level. Particularly interesting to analyse is the subset of nineteen German firms for which we have data around their mandatory switch to IFRS or U.S. GAAP. For these firms, the mean (median) pre-switch local GAAP HGB scores and relative

[22] The choice of the fiscal years 1999 and 2000 as cut-off years is made to reflect a comparatively balanced sample size and period length across the two groups. The results are not sensitive to other reasonable cut-off fiscal years (e.g., 1998 pre § 292a HGB and 1999 post § 292a HGB; or 2002 pre the EU announcement to require IFRS and 2003 post the announcement).

ranks are very close to the mean (median) scores and ranks of the non-switch HGB companies. After the mandatory switch to IFRS or U.S. GAAP, however, the mean (median) scores increased significantly, by 12.67 (15.60) SCORE points or 21 per cent (26 per cent). Similarly, the mean (median) rank improved significantly by 23 (27) standardized ranks. This increase in disclosure quality is equally significant, both statistically and economically, when we benchmark that change in score against the change in score of non-switching local GAAP reporters in a difference-in-difference analysis. Accordingly, our results show that not only voluntary, but also mandatory non-local GAAP adopters increase their annual report ratings significantly after the adoption of internationally recognized reporting standards.

Finally, in Table 5, Panel D, we compare the scores and relative ranks of companies applying either IAS/IFRS or U.S. GAAP that are not listed in the U.S. to those firms which are listed on a U.S. stock exchange (NYSE or NASDAQ) and are thus under the enforcement of the SEC and under U.S. legal liability.[23] We focus here on German and Swiss firms, as Telekom Austria is the only Austrian U.S.-listed firm in the sample. Pooled across all years, the mean (median) scores are significantly higher and the mean (median) relative ranks are significantly lower for the companies that are subject to the stricter enforcement of the SEC ($p < .001$ under all test statistics). This finding is in line with prior research on the bonding effects of U.S. listing (e.g., Lang *et al.*, 2003; Hail and Leuz, 2004). It applies both to the German and to the Swiss sample firms, but is particularly strong for the U.S.-listed Swiss firms reporting on average scores that are nearly 15 points (or 36 per cent) higher than non U.S.-listed Swiss IFRS or U.S. GAAP reporters.

Taken together, the univariate results support the notion that individual firm-level incentives play an important role in determining the overall disclosure quality of financial reports. Firms which have switched voluntarily to a higher disclosure regime have been shown to seek transparency as compared to other non-switch firms, even under local GAAP standards. Similarly, firms which choose to list in the U.S. have been shown to bond themselves to higher transparency. However, our analyses, and particularly our results for the mandatory adopters of IFRS, also suggest that the financial reporting standards play an important role in determining transparency as the annual report ratings have improved significantly with and after IFRS adoption.

Multivariate Results: Financial Reporting Standards and Reporting Incentives

So far, we have controlled for only one firm characteristic at a time. Now we present multivariate results controlling for a set of firm characteristics. The definition and data sources (Panel A), the descriptive summary statistics (Panel B) and the pairwise Spearman correlation coefficients (Panel C) for our control variables are in Table 6. The summary statistics relating to these variables are generally

[23] We collect the information on an international firm's listing on NYSE from http://www.nyse.com/international/nonuslisted/int_listed.html and on NASDAQ from http://www.nasdaq.com/asp/NonUsOutput.asp?page=G&region=europe.

TABLE 6

REPORTING INCENTIVES AND CONTROL VARIABLES

Panel A: Control variables and data sources

Variable	Definition	Data source
Industry dummies	One-digit SIC code based on Thomson Financial General Industry Classification	Worldscope
Year dummies	Fiscal year, based on Worldscope classification	Worldscope
MCAP	Log market capitalization at fiscal year end	Worldscope
TA	Log total assets at fiscal year end	Worldscope
NO	Average number of analysts following the firm during a fiscal year	IBES
LEV	Total debt divided by market capitalization	Worldscope
FFLOAT	Free float	Worldscope
CAPINT	Property, plant & equipment divided by total assets	Worldscope
ROA	Return on Assets, average over the last five years—if not available, last ROA instead	Worldscope
US_LISTING	Dummy variable, 1 if listed on NYSE or NASDAQ, 0 otherwise	NYSE, NASDAQ
NM_TECH	Dummy variable, 1 if listed on New Market or TechDAX, otherwise	Capital/Focus Money
INT_ST	Dummy variable, 1 for IFRS or U.S. GAAP, 0 for local GAAP	Annual Reports

Panel B: Descriptive statistics

Panel B1: Germany

Variable	*N*	Mean	Median	Q1	Q3	Min	Max
MCAP	1,685	6.177	5.925	4.853	7.442	2.922	10.845
TA	1,685	6.674	6.444	5.098	8.006	3.198	12.806
NO	1,685	13.702	10.385	3.429	23.538	0.000	40.583
LEV	1,685	0.117	0.079	0.013	0.180	0.000	0.547
FFLOAT	1,685	0.431	0.430	0.164	0.648	0.070	0.997
CAPINT	1,685	0.241	0.219	0.090	0.357	0.001	0.770
ROA	1,685	−0.434	4.612	1.369	7.689	−69.407	36.991
US_LISTING	1,685	0.076	0.000	0.000	0.000	0.000	1.000
NM_TECH	1,685	0.165	0.000	0.000	0.000	0.000	1.000
INT_ST	1,685	0.418	0.000	0.000	1.000	0.000	1.000

TABLE 6

(CONTINUED)

Panel B2: Switzerland

Variable	*N*	Mean	Median	Q1	Q3	Min	Max
MCAP	714	5.491	5.575	2.945	6.781	2.861	11.266
TA	714	6.306	6.154	3.810	7.643	3.515	13.434
NO	714	5.727	3.000	0.000	7.900	0.000	38.083
LEV	714	0.122	0.076	0.000	0.210	0.000	0.640
FFLOAT	714	0.391	0.371	0.017	0.683	0.017	1.000
CAPINT	714	0.203	0.168	0.000	0.331	0.000	0.962
ROA	714	2.682	2.490	–5.361	6.431	–5.361	22.339
US_LISTING	714	0.060	0.000	0.000	0.000	0.000	1.000
INT_ST	714	0.480	0.000	0.000	1.000	0.000	1.000

Panel C: Pairwise Spearman correlation coefficients

Panel C1: Germany

Variable	MCAP	TA	NO	LEV	FFLOAT	CAPINT	ROA	US_ LISTING	NM_ TECH	INT_ ST
MCAP	1									
TA	0.814	1								
NO	0.703	0.688	1							
LEV	0.135	0.320	0.108	1						
FFLOAT	0.280	0.330	0.349	0.167	1					
CAPINT	0.124	0.236	0.172	0.470	0.166	1				
ROA	0.180	−0.057	0.083	0.029	0.066	0.178	1			
US_LISTING	0.336	0.260	0.347	−0.001	0.170	0.095	0.100	1		
NM_TECH	−0.141	−0.347	−0.172	−0.292	−0.065	−0.337	−0.060	−0.001	1	
INT_ST	0.285	0.185	0.202	−0.007	0.154	−0.127	0.045	0.193	0.327	1

Panel C2: Switzerland

Variable	MCAP	TA	NO	LEV	FFLOAT	CAPINT	ROA	US_ LISTING	INT_ ST
MCAP	1								
TA	0.878	1							
NO	0.802	0.642	1						
LEV	0.259	0.331	0.110	1					
FFLOAT	0.482	0.421	0.391	0.294	1				
CAPINT	0.170	0.095	0.079	0.568	0.308	1			
ROA	0.579	0.362	0.401	0.279	0.513	0.400	1		
US_LISTING	0.378	0.319	0.526	−0.033	0.076	−0.086	0.086	1	
INT_ST	0.489	0.346	0.481	0.169	0.336	0.229	0.400	0.263	1

in line with expectations and prior research. In addition, they show that the German sample firms are on average larger than the Swiss sample firms (Panel B1 and B2). The mean number of analysts following a firm during the fiscal year in Germany (13.7) and in Switzerland (5.7) further confirms that our samples are biased towards larger, more actively covered firms as compared to the total population of listed firms in Germany and Switzerland. In Panel C, we present the Spearman correlations between our variables. As expected, the two variables which capture firm size (MCAP and TA) are highly positively correlated. Firm size is also strongly positively correlated with the number of analysts following a firm (NO). Firm size is further positively related to US_LISTING, and to the ROA in the Swiss case. Due to the high correlation of the size-related variables, we include only one of the variables MCAP, TA or NO in our regressions, and report for brevity in Table 7 only the results based on the total assets variable.[24]

Table 7, Panel A, summarizes the results of the panel regressions when utilizing the full sample of German (Model 1 and 2) and Swiss (Model 3 and 4) firms. We regress our independent variables on SCORE (Models 1 and 3) as well as on RANK (Models 2 and 4). In all four regressions, the international reporting standards dummy variables (INT_ST) are highly significant with the expected sign of the coefficient ($p < .001$, based on Huber-White adjusted standard errors). When regressed on SCORE, reporting under internationally recognized standards (IFRS or U.S. GAAP) increases the achieved score assigned by the experts by about 7.10 points in Germany (Model 1) and 3.25 in Switzerland (Model 3). Similarly, the rank decreases by about 14 relative ranks in Germany (Model 2) and 10 ranks in Switzerland (Model 4). As expected, the disclosure quality as perceived by the reporting experts increases significantly with firm size and U.S. listing. The magnitude of the coefficients on U.S. listing, both for Germany (3.21) and especially Switzerland (9.83), again underlines the importance of firms' bonding towards a high level of disclosure. Similarly, our results document significantly lower quality scores (−9.67) and higher relative ranks (0.19) for the young growth firms listed on the German New Market or similar follow-up segments (NM_TECH). An interesting result significant only for Germany is that accounting quality scores and relative ranks improve with the percentage of shares not held by blockholders (FFLOAT).

The multivariate regression coefficients could be biased due to the fact that most of our sample firms have voluntarily chosen to adopt international standards. In order to analyse the importance of the reporting incentive variables relative to the reporting standards applied, we focus in Table 7, Panel B, on the set of switch firms for which we have data available pre- and post-adoption of international standards ($n = 443$ observations). We first regress SCORE on a dummy variable capturing the accounting regime switches to IFRS or U.S. GAAP and assess the importance of this variable in Model 1. We find the coefficient on the reporting switch dummy variable to be positive (10.13) and statistically significant at the

[24] The total assets (TA) variable seems to be the size-related variable that is generally the least correlated with the other control variables. Our main results, particularly the level of significance of the international reporting dummy variable, are not sensitive to the inclusion of the one or other control variable.

TABLE 7

DISCLOSURE QUALITY, REPORTING STANDARDS AND INCENTIVES: MULTIVARIATE ANALYSIS

Panel A: All firms

	Germany		Switzerland	
	Model 1 score	Model 2 rank	Model 3 score	Model 4 rank
Industry dummies	Included	Included	Included	Included
Year dummies	Included	Included	Included	Included
MCAP	. .	. .	. .	. .
TA	2.50 (9.61)***	−0.04 (−8.69)***	1.87 (4.06)**	−0.05 (−5.12)**
NO	. .	. .	. .	. .
LEV	−0.31 (−2.70)***	0.19 (2.09)**	1.09 (0.19)	−0.20 (−1.54)
FFLOAT	4.50 (2.89)***	−0.08 (−2.74)***	3.42 (1.52)	−0.04 (−0.94)
CAPINT	−0.49 (−0.16)	−0.06 (−0.87)	−3.71 (−1.20)	0.21 (2.40)**
ROA	−0.02 (−0.59)	0.00 (0.94)	−0.34 (−2.83)***	0.00 (1.33)
US_LISTING	3.21 (1.81)*	−0.07 (−1.92)*	9.83 (3.56)***	−0.17 (−2.98)***
NM_TECH	−9.67 (−6.37)***	0.19 (6.38)***	. .	. .
INT_ST	7.10 (6.28)***	−0.14 (−6.42)***	3.25 (2.62)***	−0.10 (−2.84)***
Constant	41.58 (13.60)***	0.78 (12.26)***	22.23 (11.41)***	0.88 (20.30)***
N	1,527	1,527	714	714
Adj. R^2	43.4%	35.5%	26.9%	32.1%

Panel B: Subgroups of firms

	Firms switching to internationally recognized financial reporting standards		Mandatory adoption of internationally recognized financial reporting standards	
	Model 1 score	Model 2 score	Model 3 score	Model 4 rank
Industry dummies	Included	Included	Included	Included
Year dummies	Included	Included	Included	Included
MCAP	. .	. .	. .	. .
TA	. .	1.79 (3.63)***	1.59 (1.60)	−0.02 (−1.08)
NO	. .	. .	. .	. .
LEV	. .	−9.87 (−1.29)	−6.41 (−0.87)	0.06 (0.43)
FFLOAT	. .	4.61 (1.18)	2.57 (0.88)	−0.06 (−0.90)
CAPINT	. .	−2.11 (−0.37)	0.51 (0.09)	−0.02 (−0.19)
ROA	. .	−0.01 (−0.13)	0.10 (2.30)**	0.00 (−2.47)**
US_LISTING	. .	5.03 (1.66)*	−3.19 (−1.52)	0.07 (1.82)*
NM_TECH	. .	−12.73 (−2.80)***	−6.05 (−2.23)**	0.14 (2.32)**
INT_ST	10.13 (4.64)***	6.70 (3.37)***	7.97 (3.37)***	−0.15 (−3.12)***
Constant	62.32 (31.98)***	45.70 (11.51)***	60.58 (10.81)***	0.68 (6.77)***
N	443	443	333	333
Adj. R^2	30.0%	39.9%	42.1%	22.9%

1 per cent level (*t*-value of 4.64). Model 2 then includes various control variables reflecting the reporting incentives in order to assess their relative ability to capture the effect of the change in disclosure quality around the reporting switch. Although we find that the reporting incentive variables add to the explanation of the variation in SCORE (Adj. R^2 increases from 30 per cent to 39.9 per cent), we also find that the international reporting dummy remains highly significant (*t*-value of 3.37). The reporting switch dummy variable remains an important determinant of the perceived disclosure quality in magnitude (6.70) and in explanatory power (3.37). As such, the change in perceived disclosure quality that is associated with the adoption of internationally recognized standards cannot be fully attributed to changes in the adopting firm's reporting incentives (which we capture by our control variables).

In order to address the self-selection issue, we further run our multivariate regression on the set of firms which have mandatorily adopted internationally recognized financial reporting standards (n = 333 observations). Table 7, Panel B, also reports the analysis of the 333 firm-year observations which reflect the quality scores of companies which were at time forced by regulation to adopt internationally recognized standards. We regress the reporting dummy variable (INT_ST) together with the other control variables on SCORE (Model 3) and RANK (Model 4). Again, the international reporting dummy variable is highly significant ($p < .001$) in both regressions and appears to be economically significant based on the magnitude of the coefficients as well (7.97 in the SCORE-based Model 3 and −0.15 in the RANK-based Model 4).

We further conducted a series of multivariate tests in order to check the sensitivity of the results (not tabulated). Instead of pooling the observations across years, we ran yearly OLS regressions and found the international reporting dummy to be significant in the various years. Similar to our analyses in the univariate section, we ran regressions with bootstrapped standard errors and found similar results. Overall, the results are equally strong for the international reporting dummy variable, independent of the statistical method utilized.

In sum, our multivariate results show that the adoption of internationally recognized reporting standards has led to higher quality financial reporting as perceived by the experts, even when controlling for other firm characteristics, or when analysing only mandatory reporting changes.

CONCLUSIONS

The findings reported here provide large, sample-based evidence on the 'missing link' in the line of argument that 'higher quality' international accounting standards (IAS/IFRS; U.S. GAAP) lead to higher quality accounting reports that should ultimately lead to higher liquidity in the capital markets (Leuz and Verrecchia, 2000) and lower cost of capital to the reporting entities (Daske 2006). Our evidence is based on a unique and broad set of listed companies from Austria, Germany and Switzerland for which annual report ratings by independent accounting scholars ('experts') are available over a long time series, covering in particular the periods after the year 1998 when the IAS/IFRS standards were revised considerably.

Our results show that the perceived disclosure quality has increased significantly for companies applying internationally recognized accounting standards, particularly IFRS, both statistically and economically in all the three Continental European countries we analyse. This result holds both in the cross-section as well as for the firms switching from local to internationally recognized standards. Importantly, it does not hold only for firms which have voluntarily adopted IFRS or U.S. GAAP, but also for those which mandatorily adopted such standards in response to requirements by the German Stock Exchange for specific market segments. Although it is difficult to establish direct causality due to inherent self-selection issues for most of our adopting sample firms, our evidence strongly suggests that the quality of financial reports has significantly increased with the adoption of IFRS financial statements.

As Austria, Germany and Switzerland are all Continental European countries with a common (German) accounting tradition and with a close similarity of many institutional features in their socioeconomic systems, our study implicitly controls for other institutional factors at the country level that might influence the quality of accounting reports. Although the companies included in our sample comprise in total more than 22 per cent of the total population of worldwide IAS/IFRS adopters by the year 2004, the research design constrains our ability to analyse the effects of different institutional settings across countries and jurisdictions under an equal set of global accounting standards. Such an analysis will only become possible as more countries adopt IFRS.[25] The mandatory adoption of IFRS in the EU in 2005 and many other countries will offer a rich setting for such research in the near future.

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[25] See www.iasplus.com/country/useias.htm for the latest information on the countries which have adopted IFRS.

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APPENDIX A

SUMMARY OF ANNUAL REPORT RANKING METHODS

Panel A: Germany (1996–2003)

Fiscal year	Source	Jury	Criteria	Score	Total score	Adjustments
1996	*Capital* 10/1997, 60–100	Prof. Küting (University of Saarbrücken) Team of public relations experts Prof. Loistl (WU Wien)	Information quality (*Informationsqualität*) Layout (*Präsentationsqualität*) DVFA analysts' rating (*Analystenurteil*)	0–400 0–340 0–300	0–1040	Use only scores for information quality Adjust to 0–100%
1997 1998	*Capital* 9/1998, 38–79 *Capital* 10/1999, 40–74	Prof. Küting (University of Saarbrücken) Team of public relations experts Prof. Loistl (WU Wien)	Information quality (*Informationsqualität*) Layout (*Präsentationsqualität*) DVFA analysts' rating (*Analystenurteil*)	0–300 0–200 0–500	0–1000	Use only scores for information quality Adjust to 0–100%
1999	*Capital* 21/2000, 78–96	Prof. Küting (University of Saarbrücken) Team of public relations experts	Information quality (*Informationsqualität*) Layout (*Präsentationsqualität*)	0–300 0–200	0–500	Use only scores for information quality Adjust to 0–100%
2000	*Capital* 20/2001, 171–187	Prof. Küting (University of Saarbrücken) Team of public relations experts	Information quality (*Informationsqualität*) Layout (*Präsentationsqualität*)	0–500 0–500	0–1000	Use only scores for information quality Adjust to 0–100%
2001 2002 2003	*Focus Money* 30/2002, 14–25 *Focus Money* 32/2003, 12–19 *Focus Money* 33/2004, 18–23	Prof. Küting (University of Saarbrücken)	Information quality (*Informationsqualität*) Ratio-analyis (*Ertragsstärke*)	0–1000 0–1000	0–2000	Use only scores for information quality Adjust to 0–100%

Panel B: Switzerland (2001–2004)

Fiscal year	Source	Jury	Criteria	Weights	Total score	Adjustments
2001	*Bilanz* Okt. 2002, 170–182	Prof. Labhart (University of Zurich)	Value reporting	50%	0–5	Use only scores for value reporting Adjust to 0–100%
2002	*Bilanz* Okt. 2003, 130–143 www.isb.unizh.ch/publikationen	Interbrand Zintzmeyer & Lux	Design (*Gestaltung*)	50%		
2003	*Bilanz* Okt. 2004, 109–117	Prof. Labhart (University of Zurich)	Value reporting	50%	0–5	Use only scores for value reporting Adjust to 0–100%
2004	*Bilanz* 17/2005, 50–56 www.isb.unizh.ch/publikationen	Design Network Switzerland	Design (*Gestaltung*)	50%		

Panel C: Austria (1997–2004)

Fiscal year	Source	Jury	Criteria	Weights	Total score	Adjustments
1997	*Goldener Trend* 1998, 98–103	Prof. Bertl (WU Wien)	Financial information	50%	0–100%	none
1998	*Trend* 10/1999, 234–239	Prof. Langenbucher	(*Betriebswirtschaft*)		& Expert rating	
		(Uni. of Vienna)	Non-financial information	30%		
			(*Publizistik*)			
1999	*Trend* 10/2000, 242–248	Team of Design Experts	Layout (*Design*)	20%		
2000	*Trend* 11/2001, 161–172*Trend*	Prof. Wagenhofer	Financial information	50%	0–100%	none
2001	10/2002, 160–174	(Uni. of Graz)	(*Betriebswirtschaft*)		& Feinanalyse	
2002	*Trend* 10/2003, 140–160	Prof. Langenbucher	Non-financial information	30%		
	www.iasar.com	(Uni. of Vienna)	(*Publizistik*)			
		Team of Design Experts	Layout (*Design*)	20%		
2003	*Trend* 10/2004, 120–136	Prof. Wagenhofer	Financial information	50%	0–200 points	0–100%
2004	*Trend* 10/2005, 128–134	(University of Graz)	(*Business Reporting*)		second-stage	first stage
	aaa-2004.genesto.com/	Prof. Langenbucher	Non-financial information	50%	analysis only for	data only
	aaa-2005.genesto.com/	(Uni. of Vienna)	(*Mediumsqualität*)		top 20%	

APPENDIX B

RAW SCORES: DESCRIPTIVE STATISTICS

Panel A: Germany (information quality only)

Fiscal year	*N*	Mean	*SD*	Min	Max
1996	200	242.5	54.2	80.0	360.0
1997	202	155.5	45.9	14.0	257.0
1998	204	176.5	44.5	14.0	259.0
1999	222	180.4	55.2	0.0	280.0
2000	199	331.2	79.7	0.0	500.0
2001	209	690.1	130.2	175.0	924.0
2002	155	684.1	135.3	262.0	895.0
2003	136	699.3	133.6	196.0	904.0

Panel B: Switzerland (value reporting only)

Fiscal year	*N*	Mean	*SD*	Min	Max
2001	158	1.46	0.79	0.00	4.27
2002	177	2.45	0.56	1.38	4.39
2003	177	2.56	0.57	1.65	4.28
2004	200	2.66	0.64	1.35	4.44

Panel C: Austria (total score)

Fiscal year	*N*	Mean	*SD*	Min	Max
1997	92	56.5	12.1	23.9	82.0
1998	90	57.3	14.7	17.0	90.8
1999	93	56.7	15.8	15.0	89.1
2000	95	45.9	16.3	9.8	89.4
2001	98	39.9	17.1	11.3	87.9
2002	83	40.6	12.5	11.7	65.6
2003	83	48.8	18.3	9.4	85.2
2004	81	62.3	16.3	22.7	91.4