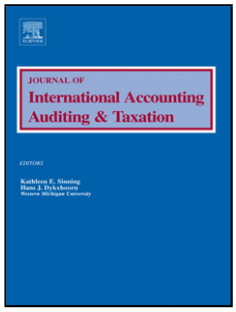


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# A Reinvestigation into Accounting Quality Following Global IFRS Adoption: Evidence via Earnings Distributions

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**Abstract**

Despite over 140 countries adopting IFRS in some form, its effect on accounting quality remains unclear. Potential explanations for divergent findings in the literature include the focus on a narrow sample of EU countries and the use of noisy discretionary accrual models to measure accounting quality. This study circumvents these issues by investigating the impact mandatory IFRS adoption has on accounting quality using earnings distributions. Using a sample of 5,691 firms in 46 countries that have adopted IFRS, I find that while the distribution discontinuity does not completely disappear, it decreases in severity for both a total and a constant sample of firms. Results are consistent for both EU and non-EU countries and are more pronounced for countries with high enforcement and where users' demand for high quality reporting is high. Furthermore, I investigate the level of discretionary accruals and real earnings management around the earnings benchmark and conclude that a systematic relationship cannot be found for either method pre- or post-IFRS adoption.

***Keywords:*** *IFRS, Earnings Distributions, Discontinuities, Accounting Quality*

# 1. Introduction

Although the International Financial Reporting Standards (IFRS) literature is expansive, consensus on its effectiveness in improving accounting quality[1] has not yet been reached. Even studies focusing on the 2005 IFRS adoption in the European Union (EU)[2] that use the same measure of accounting quality find both confirming (Chen et al., 2010; Zeghal et al., 2011, 2012) and opposing results (Jeanjean & Stolowy, 2008; Callao & Jarne, 2010; Capkun et al., 2012; Ahmed et al., 2013a,b). These divergent findings could result from (1) mismeasurement and power concerns of using discretionary accruals, especially in a global setting (Dechow et al., 2003; Wysocki, 2004), (2) lack of post-adoption observations in early studies, (3) noise around the 2005 adoption event, including changes in enforcement regulation (Christensen et al., 2013), or (4) the narrow focus on developed, mostly Western European countries, which does not represent the IASB's current reach.

To address these points, I use an alternative, more relative accounting quality measure that works to capture multiple dimensions of manager manipulation: the discontinuities of earnings distributions at the zero earnings threshold. I use a sample of 46 countries that adopted IFRS at different times. I plot and compare scaled earnings distributions for both a total and a constant sample of firms in the pre- and post-IFRS adoption periods. Findings reveal that, while there are still significantly greater-than-expected observations in the interval directly above zero and significantly fewer-than-expected observations in the interval directly below zero, the size of the discontinuity decreases. Additionally, the ratio of small profit to small loss firms also decreases for a total and constant sample of firms. These results are robust to different earnings and scaling measures, addressing methodological concerns raised by Beaver et al. (2007) and Durtschi & Easton (2005, 2009). Using this alternative accounting quality measure, these findings suggest that mandatory IFRS adoption achieves its first-order objective of improving the quality of global financial reporting.

[1] The use of the terms accounting quality, reporting quality, and financial reporting quality are used interchangeably throughout this work.

[2] EU Regulation 1606/2002 required the consolidated accounts of listed companies in regulated EU markets to adhere to IFRS as issued by the IASB for the reporting period ending on or after December 31, 2005.

To investigate differences in reporting environments and assess the validity of the distribution measure, I conduct a series of cross-sectional analyses. I find a similar increase in accounting quality for both EU and non-EU samples, although the increase is larger for the latter group. This indicates that the benefits of IFRS are realized in developing countries and that mandated IFRS adoption, not concurrent changes to enforcement, was the catalyst for improved accounting quality in the EU. Furthermore, I revisit the role of reporting environment and IFRS adoption and find that the discontinuity decreases more in countries with high regulatory enforcement and completely disappears for common law countries. These findings should aid the IASB in identifying reporting environments that are conductive for successful future IFRS projects.

In a next step, I investigate the levels of signed accrual and real earnings management for firms around the discontinuity at the zero earnings threshold. This analysis serves two functions: (1) it isolates what is being captured in the earnings distributions, thus, validating the methodology and (2) it investigates the relation between accrual and real earnings management conditional on the effects of IFRS adoption. Similar to Dechow et al. (2003), I do not find a clear pattern for the role of signed accrual and real earnings management in this setting. However, empirical results indicate that benchmark beating firms generally are more likely to have higher levels of real earnings management. The effect of IFRS adoption, although negative, does not significantly deter this discretionary behavior.

In a further analysis, I plot operating income (EBIT) pre- and post-IFRS adoption and find that the discontinuity is insignificant following IFRS adoption whereas the discontinuity persists with bottom-line income. Importantly, this indicates that IFRS improves the quality of core earnings and managers rely on continuing operation items (e.g. special items) to meet their reporting goals following IFRS adoption.

This paper contributes to the extant literature in a number of ways. First, this study adds to the debate on the effect of IFRS adoption on accounting quality by implementing an alternative measure of

accounting quality that expands on the earlier work of Jeanjean & Stolowy (2008)[3]. A major advantage of this study is the use of a worldwide sample with differing IFRS adoption dates. By including rolling adoption dates from 2005 to 2012, this study alleviates the confounding events around the isolated 2005 adoption date and mitigates the effect of the global financial crisis. Additionally, the political push to spread IFRS to all countries, no matter the economic size, indicates how relevant IFRS studies focusing outside of Western Europe are to the next wave of research in this area.

This study also contributes to a stream of literature investigating the interplay between different earnings management methods conditional on changes to the reporting environment. While studies that investigate the relationship following the implementation of Sarbanes-Oxley (SOX) in the U.S. find a substitutive relationship (Cohen et al. 2008; Bartov & Cohen 2009), studies that investigate IFRS adoption in Europe report mixed results (Doukakis 2014). This study expands on this area of research by investigating the interplay between accrual and real earnings management with respect to benchmark beating in a global IFRS adoption setting.

Finally, this work extends the emerging literature that uses earnings distributions to gauge the effectiveness of accounting policy changes. By holding country, industry, and firm characteristics constant, earnings distributions are an ideal methodology to isolate and evaluate changes in firms' reporting behavior. This method has been used to study national policies like the U.S.' SOX and Japan's Financial Instruments and Exchange Law (J-SOX) (Gilliam et al. 2015; Enomoto & Yamaguchi 2016), as well as industry-specific regulations such as the Federal Deposit Insurance Corporation Improvement Act (FDICIA) in banking (Altamuro & Beatty, 2010). This study contributes to this literature by investigating the change in accounting quality following a mandatory switch from local GAAP to IFRS.

The remainder of this paper proceeds as follows: Section 2 highlights the relevant existing literature on accounting quality following IFRS adoption and earnings distributions, and outlines the hypotheses.

[3] The early IFRS study by Jeanjean & Stolowy (2008) investigates the effect of IFRS on benchmark beating using earnings distributions for a small sample of three countries (United Kingdom, Australia, and France) and a limited time horizon (2004-2006).

Section 3 describes the data collection and cleaning process, the IFRS adoption identification strategy, and the accounting quality measures used. The results of the earnings distributions and empirical analyses are discussed in Section 4. Section 5 provides robustness analyses and Section 6 concludes.

## 2. Related Literature and Hypotheses Development

### 2.1 Accounting Quality following Mandatory IFRS Adoption

The most common setting for investigating mandatory IFRS adoption is the 2005 adoption of IFRS in the European Union, Australia, South Africa, and Hong Kong[4,5]. Using this exogenous shock, Chen et al. (2010), Zeghal et al. (2011), and Zeghal et al. (2012) generally find an increase in accounting quality through higher quality accruals, timelier reporting, and lower likelihood of artificially meeting reporting thresholds. It is important to note, however, that their findings are dependent on characteristics of the reporting environment and that the high costs of IFRS adoption leading to noncompliance are often not fully incorporated (Larson & Street, 2004; Jermakowicz & Gornik-Tomaszewski, 2006; Haller & Wehrfritz, 2013).

Using the same 2005 IFRS adoption sample, Ahmed et al. (2013a), Callao & Jarne (2010), and Capkun et al. (2012) document that earnings smoothness, benchmark beating activities, and the level of discretionary accruals actually increase following IFRS adoption. Jeanjean & Stolowy (2008), the only IFRS study to my knowledge that uses the earnings distribution methodology, finds no change in the frequency of benchmark beating in U.K. and Australian firms and finds an increase in benchmark beating for French firms. Taken together, it remains unclear what effect IFRS had on accounting quality in the 2005 setting.

From a global perspective, Houqe et al. (2012) and Cai et al. (2014) investigate the effect of mandatory IFRS adoption on the level of discretionary accruals in over 30 countries and find that

[4] See Soderstrom & Sun (2007) for an excellent and extensive summary of the literature regarding accounting quality and IFRS adoption in developing countries.

[5] Voluntary adoption of IFRS has an inherent self-selection bias regarding firms' own incentives to adopt IFRS either legitimately or merely as a label (Barth et al. 2008; Daske et al., 2013; Christensen et al., 2015). To circumvent this endogeneity issue, I explicitly focus on the mandatory IFRS adoption setting.

accounting quality as measured by discretionary accruals improves following IFRS adoption, but only in environments with strong investor protection and enforcement, respectively. A meta-analysis on the existing IFRS literature finds no substantive change to discretionary accruals, even when taking country-specific characteristics, such as legal origin and enforcement, into account (Ahmed et al. 2013b)[6].

There are a number of potential explanations for the divergence of findings in the literature. First, since accounting quality cannot be directly observed and collected from commercial databases, there remains a debate on what exactly constitutes accounting quality and how it should be measured. The popular residual discretionary accrual models have been criticized for their measurement errors and low power settings, which limit their ability to capture subtle examples of earnings management (Dechow et al., 1995; Bernard & Skinner, 1996; McNichols, 2000; Dechow et al., 2003; Burgstahler & Chuk, 2015). Additionally, discretionary accrual models may not be appropriate in the cross-country setting because of data restrictions (Wysocki 2004). This paper uses earnings distributions to circumvent the measurement issues inherent in a global setting.

Second, many early IFRS studies only extend a few years before and after the 2005 EU adoption date. As Zeff (2007) and Barth (2015) note, the application of IFRS, for most countries, has a learning curve involving understanding new accounting procedures, training staff, and updating accounting information systems, all of which take several years to implement correctly. Therefore, studies that only extend a few years after the adoption year may not be capturing the true IFRS effect, but merely a transition effect. This study uses a nearly 20 year time horizon to address this issue.

Third, there were several concurrent changes to reporting infrastructure regarding enforcement around the IFRS adoption date in the EU in 2005, which makes disentangling the IFRS effect exceedingly difficult (Christensen et al., 2013). The use of rolling adoption dates across countries in this work alleviates this clustering effect and provides a cleaner setting to measure the effect of IFRS adoption on reporting quality.

[6] This finding casts doubt on the role that reporting environment plays in IFRS adoption, which is addressed in Section 4.2.

Fourth, while the majority of existing IFRS studies focus on developed countries, the IASB's current mission is to spread IFRS to the developing countries in the hopes of stabilizing their economies and fostering trade[7]. Furthermore, multinational organization funding in developing countries generally requires the adoption of IFRS with sanctions for non-compliance (Lamoreaux et al., 2015). Additionally, many subsidiaries of multinational corporations, who are required to report using IFRS, are located in these emerging markets (Ezzamel & Xiao, 2011). As such, IFRS plays a significant role in developing countries, yet the effect of IFRS on reporting quality in this setting is still relatively unknown. This paper investigates 46 countries that vary in terms of development, adoption date, and adoption style.

### 2.2 Earnings Distributions as an Accounting Quality Measure

Using distributions of reporting items around certain thresholds has long been used as a tool for evaluating accounting quality. Seminal work by Burgstahler & Dichev (1997) provides large sample evidence of benchmark beating activities related to positive earnings, while other studies focus on alternative reporting benchmarks such as meeting and beating analysts' forecasts (Degeorge et al., 1999)[8].

Despite its popularity, this methodology has been criticized by researchers for some supposedly haphazard research design choices. From a methodology perspective, Durtschi & Easton (2005, 2009) question the validity of many prominent distribution studies stating that mechanical issues could potentially explain their findings including scaling choices, sample selection choices, or systematic differences between firms that fall immediately above and below the thresholds.

Nevertheless, a number of studies have solely focused on establishing manager manipulation as the cause of the discontinuity in earnings distributions. Burgstahler & Chuk (2015) respond to these critiques arguing that low power settings were selected when making these claims, which exacerbated the supposed issues. The authors use unscaled earnings split into size quantiles and find that the discontinuity is consistent in each subsample, lessening the scaling concerns. Jacob & Jorgensen (2007) investigate

[7] An expansive report of the extent of the IASB's coverage is provided in the following link: http://www.ifrs.org/Features/Pages/Global-reach-of-IFRS-is-expanding.aspx.

[8] The analysts' estimate benchmark has an inherent issue of disentangling expectation versus earnings management. Disentangling these effects is outside the scope of this work, thus the focus on the bottom-line earnings benchmark.

quarterly versus annual earnings and confirm that the discontinuity is only prevalent in the final quarter where the incentive to manage earnings is highest. Finally, Donelson et al. (2013) identify firms that have been prosecuted by the SEC for fraudulent reporting and were forced to issue restatements. They find that the discontinuity disappears in the restatements, which suggests that discretionary behavior by managers caused the original discontinuity.

Additionally, there is an emerging trend of using earnings distributions to assess the effectiveness of changes in accounting regulation. Gilliam et al. (2015) investigate accounting quality following the 2002 adoption of SOX and find that the discontinuity in earnings disappears following the regulatory change. A similar analysis regarding Japan's J-SOX by Enomoto & Yamaguchi (2016) finds that the discontinuity of earnings changes decreases following the regulation change. Additionally, Altamuro & Beatty (2010) investigate changes to internal controls for the banking industry after the passing of FDICIA, noting a decrease in the occurrence of benchmark beating observations. Following this trend, my study assesses the effectiveness of global IFRS adoption using the same measure.

### 2.3 Hypotheses Development

The lack of consensus regarding changes in accounting quality following mandatory IFRS adoption and applicability issues of the traditional accounting quality measures in international settings motivate the use of earnings distributions to investigate the effect that global IFRS adoption has on accounting quality, as outlined in the first hypothesis:

> **Hypothesis 1:** The global mandatory adoption of IFRS is associated with a decrease in the discontinuity of earnings distributions around the zero earnings benchmark.

The second hypothesis tests whether the discontinuities in earnings distributions truly captures managers' manipulation of earnings. I investigate the levels of signed accrual earnings management (AEM) and real earnings management (REM) in the interval directly above the zero earnings threshold, relative to the interval directly below the zero earnings threshold[9]. If the earnings distributions are

[9] It is interesting to note that the IFRS literature has majorly ignored the role of real earnings management; this is surprising given the assumed relationship between IFRS adoption and discretionary accruals and the latter's supplementary relationship with real earnings management (Zang, 2012).

capturing discretionary reporting activities, I would expect to observe higher levels of earnings management activities above the profit benchmark. This leads to the second hypothesis:

> **Hypothesis 2:** The observations above the zero earnings benchmark have higher observed levels of earnings management activities relative to other firms.

There are a number of studies that attempt to establish a substitutive and/or complementary relationship between AEM and REM (Roychowdhury, 2006; Zang, 2012). However, it is not intuitively clear how this relationship is affected when there is a change in the reporting environment. Cohen et al. (2008) and Bartov & Cohen (2009) investigate the effect that SOX had on earnings management activities, finding that the enhanced scrutiny decreased accrual earnings management, yet increased real earnings management. Doukakis (2014) explores this potential substitution effect following IFRS adoption in European countries and finds mixed results. Therefore, I keep the global investigation exploratory.

## 3. Research Design

### 3.1 Data Collection and Identification Strategies

Due to varying dates and degrees of mandated IFRS adoption across the globe, I am careful to accurately identify timely, mandatory adopting firms to include in the analyses. My procedure is outlined in Table 1. From the complete Thomson Reuters Datastream universe, I include all countries that have made a meaningful attempt to adopt IFRS. To identify country-level IFRS adoption efforts, I cross-reference a variety of established sources including: the IASB jurisdiction profiles[10], Deloitte's *IAS Plus* "Use of IFRS by Jurisdiction" webpage[11], and PwC's "IFRS Adoption by Country" survey[12,13]. I limit the

[10] https://www.ifrs.org/use-around-the-world/use-of-ifrs-standards-by-jurisdiction/.
[11] http://www.iasplus.com/en/resources/use-of-ifrs.
[12] https://www.pwc.com/gx/en/services/audit-assurance/ifrs-reporting/publications.html.
[13] To determine the most accurate adoption date per country, I use the date most often cited among the three sources. In situations where the cross-referenced sources diverge without consensus, the IASB profile date is used.

sample to firms in countries that converge with IFRS, require IFRS for subsets of listed firms, or require IFRS for all listed firms[14]. Countries that merely permit IFRS are excluded.

I identify a firm's individual adoption date using the Datastream item "Accounting Standards Followed" (WC07536), as outlined in Appendix A1 of Daske et al. (2013). Those firms with no identifiable adoption or those that switch before or after the country's official adoption date are excluded. As a result, the final sample includes only firms that adopt IFRS in the correct year mandated by their country and have observations in both the pre- and post-IFRS sample, keeping the two samples constant.

**[INSERT TABLE 1 ABOUT HERE]**

To clean the data for analysis, I begin with all firms from IFRS adopting countries covered in Thomson Reuters Datastream that have net income, total assets, market value of equity, and sales data available in a given year. Any firm that identifies as reporting under U.S. GAAP is excluded. Because the study focuses on industrial firms with similar capital structures and oversight, financial institutions are omitted (i.e., Datastream industry codes (WC06011) between 4300-4600). Next, I only include firms that fit the IFRS identification strategy outlined above. Finally, I exclude the adoption year due to the use of lagged variables for scaling.

**[INSERT TABLE 2 ABOUT HERE]**

Table 3 shows that the final sample of IFRS adopting firms distributed across 46 countries is fairly aligned with other IFRS studies using the Thomson Reuters Datastream universe (e.g., Chen et al. 2010 and Zeghal et al. 2012). To give a more global perspective, the countries included are a mix of developed and developing economies, with developing countries comprising 36% of the sample[15]. The benefit of this sample is that it provides a picture of IFRS adoption spanning from 2005 until the latest wave of adoptions in 2012 by Argentina, Malaysia, Mexico, Nigeria, Peru, Russia, Sri Lanka, and the Ukraine

[14] As Zeff (2007) notes, countries that converge with IFRS oftentimes mislabel IFRS as "national standards" in their annual reports. Countries with IFRS convergence projects show staggered adoptions at the firm level, thus, I choose to keep firms that adopt IFRS after the convergence date in order to preserve some crucial markets (e.g., China, Malaysia, Philippines). However, the results remain constant if I omit these firms.

[15] Although there is a relatively large portion of Canadian and South Korean firms with relatively recent adoption dates, omitting them from the sample does not drastically change the shape of the distributions.

(34% of sample observations). Finally, I include a range of adoption styles including five convergence countries and six limited requirement countries, jointly resulting in a third (33%) of the total firm-year observations. Compared to the existing IFRS literature regarding financial reporting quality, this paper has substantial global coverage and provides a more dynamic picture of IFRS adoption.

**[INSERT TABLE 3 ABOUT HERE]**

## 3.2 Measures of Accounting Quality

### 3.2.1 Earnings Distribution Metrics

To investigate the change in accounting quality, I first plot the distribution of scaled earnings. The necessary assumption for using earnings distributions as an accounting quality measure is that, in the aggregate, earnings follow a smooth distribution. However, if low accounting quality is present, one would expect to see a discontinuity, or "kink", in the distribution around the important zero earnings threshold[16].

It is imperative in this setting to investigate the following research choices: the numerator (earnings measure), the denominator (size scaler), and the selected bin width. In this setting, the measure of earnings is net income (NI) and, following prior literature, the deflator is beginning market value of equity (MV). The appropriate bin width is calculated using the Freedman-Diaconis equation*:* $2(IQR)N^{(-1/3)}$ where $IQR$ is the interquartile range of scaled earnings and $N$ is the number of plotted observations. The optimal bin size for the total sample is 0.005 where small loss firms are in the interval range (-0.005, 0] and small profit firms are in the interval range [0, 0.005)[17]. The distribution plot is truncated for best viewing at [-0.25, 0.35].

In order to determine the significance of divergence from the assumed smooth distribution of earnings, I use the standardized difference statistic calculated for the interval immediately to the left and

[16] By selecting a specific setting with an ex ante expectation in benchmark beating behaviors, such as the mandatory adoption of IFRS, the strength of the earnings distribution test increases (Dechow & Skinner, 2000).
[17] To assure that using too small of bin size does not artificially create the distribution (Burgstahler & Chuk, 2015), I also use a more conservative bin size of 0.01 and find fundamentally the same results.

right of zero earnings (Burgstahler & Dichev 1997). The test statistic is the difference between actual and expected observations in the interval divided by the variance of the difference between actual and expected observations[18]. Furthermore, I calculate the ratio of the number of small profit firms in the interval above zero to the number of small loss firms in the interval below zero as a measure of the severity of the discontinuity following Leuz et al. 2003. A higher value indicates a larger discontinuity.

In a second step, I use a logit regression-based approach to identify the probability of a firm engaging in low quality reporting. By including IFRS as an explanatory variable, I can assess the likelihood of a firm reporting in the benchmark beating interval in the post-IFRS adoption period relative to the pre-IFRS adoption period. The model is as follows:

$$\begin{aligned} Profit_{it} = {} & \beta_0 + \beta_1 IFRS_{it} + \beta_2 EM_{it} + \beta_3 IFRS_{it} * EM_{it} + \beta_4 Size_{it} + \beta_5 Leverage_{it} \\ & + \beta_6 Sales\ Growth_{it} + \beta_7 OCF_{it} + \beta_8 Debt\ Issue_{it} + \beta_9 Equity\ Issue_{it} \\ & + \beta_{10} Turnover_{it} + \beta_{11} Closely\ Held_{it} + \beta_{12} Big4_i + \beta_{13} Exchange\ Count_i \\ & + \beta_{14} U.S.Cross - listed_i + fixed\ effects + \epsilon_{it} \end{aligned} \quad (1)$$

The dependent variable $Profit$ is an indicator variable that equals one if firms report scaled earnings between 0 and 0.005, which are those firms that are identified as "benchmark beaters". Following Barth et al. (2008), Chen et al. (2010), and Zeghal et al. (2012), I would expect to see a significant negative coefficient for $\beta_1$, indicating that, ceteris paribus, the propensity of firms to engage in benchmark beating activities decreases following mandatory IFRS adoption in cases accompanying low levels of managerial discretion[19]. $EM$ is a placeholder variable for the aggregate discretionary accrual (Agg. AEM) or real earnings management measures (Agg. REM). I do not make a prediction on the interplay of the two measures of accounting quality in relation to IFRS. However, I would expect that the interaction effect ( $\beta_3$ ) would be significantly negative indicating that firms with more discretionary reporting practices

[18] The expected frequency of observations is calculated as the average of the two adjacent intervals. The variance is measured as follows: $\theta = Np_i(1 - p_i)+(1/4)N(p_i + p_{i+1})(1 - p_{i-1} - p_{i+1})$ where $p$ is the probability of an observation falling in interval $i$.

[19] The overall effect of IFRS adoption on decreasing benchmark beating activities is captured in $\beta_1 + \beta_3$.

would, on average, have a smaller decrease in benchmark beating behaviors following mandatory IFRS adoption relative to firms with less manager interference.

I control for classic accounting quality-related firm characteristics that might influence the probability of a firm managing earnings including $Size$, $Leverage$, and $Sales\ Growth$[20]. I control for the established negative relationship between operating cash flow levels ($OCF$) and accruals. Changes in debt issuances ($Debt\ Issue$) and equity issuances ($Equity\ Issue$) are included to control for changes in debt structure. Asset turnover ($Turnover$) is included to assess the health of the firm. To measure insider ownership, I include the percentage of closely held shares ($Closely\ Held$). I control for quality of auditor ($Big4$), the number of exchanges on which the firm is listed ($Exchange\ Count$), and whether it is listed on a U.S. stock exchange ($U.S.\ Cross-listed$). Finally, I attempt to control for systematic differences across countries and industries by including country and industry fixed effects, respectively.

**3.2.2 Accrual Earnings Management**

Because there is no standardized measure of accrual accounting quality, I model discretionary accruals using a combination of two residual regression models and one linear expectation model that range in terms of sophistication and data requirements. The first discretionary accrual model is the linear performance-adjusted modified Jones model (Mod. Jones) by Kothari et al. (2005).

$$TOTACC_{it} = \alpha_1 \frac{1}{TA_{i,t-1}} + \alpha_2 \frac{\Delta(Rev_{it} - REC_{it})}{TA_{i,t-1}} + \alpha_3 \frac{PPE_{i,t}}{TA_{i,t-1}} + \alpha_4 ROA_{it} + \epsilon_{it} \quad (2)$$

where

$$TOTACC_{it} = \frac{\Delta CA_{it} - \Delta CL_{it} - \Delta CASH_{it} + \Delta STDEBT_{it} - DEP_{it}}{TA_{i,t-1}}$$

$TOTACC$ measures total accruals. The accounts use to measure total accruals include: $CA$ as current assets (WC02201), $CL$ as current liabilities (WC03101), $CASH$ as total cash reserve (WC02003), $STDEBT$ as short-term debt (WC03051), and $DEP$ as depreciation expense (WC01151). $REV$ and $REC$ represent revenues (WC01001) and accounts receivable (WC02051), respectively. The level of property, plant, and

[20] All control variable definitions are found in Appendix A.

equipment (WC02301) is captured in $PPE$. $ROA$, measured as net income divided by total assets, is the return on assets. All variables except $ROA$ are scaled by lagged total assets ($TA$) to control for heteroskedasticity. The residuals capture discretionary accruals. Regressions 2 and 3 are run over each industry-year group with at least 15 observations and control for country-level variation by including lagged inflation and GDP growth following Chaney et al. (2011)[21].

The second accounting quality measure is another classic discretionary accrual residual regression model, the modified Dechow & Dichev (2002) model (Mod. D&D):

$$TOTACC_{it} = \alpha_0 + \alpha_1 \frac{OCF_{i,t-1}}{TA_{i,t-1}} + \alpha_2 \frac{OCF_{i,t}}{TA_{i,t-1}} + \alpha_3 \frac{OCF_{i,t+1}}{TA_{i,t-1}} + \alpha_4 \frac{\Delta(Rev_{it} - REC_{it})}{TA_{i,t-1}} + \alpha_5 \frac{PPE_{i,t}}{TA_{i,t-1}} + \epsilon_{it} \qquad (3)$$

The measure of total accruals ($TOTACC$), revenues ($REV$), accounts receivable ($REC$), property, plant, and equipment ($PPE$), and total assets ($TA$) are as defined in the prior model. $OCF$ represents operating cash flows calculated indirectly as $Net\ Income - TOTACC$. All variables are scaled by lagged total assets. The residuals proxy for discretionary accruals.

In order to incorporate facets of each model, as well as attempt to mitigate measurement errors, I constructed an aggregate accrual earnings management measure (Agg. AEM), calculated as the firm-year mean of the standardized values of the prior two models (Biddle et al. 2009).

The third measure is an expectation model created by DeFond & Park (2001). The linear benchmark discretionary accrual model (Benchmark DA) uses the firm's accrual reporting behavior in the prior period as the benchmark to determine the expected current level of non-discretionary accruals. This model eliminates country and industry difference concerns and sample size requirements by construction. The model defines discretionary accruals as the difference between total accruals ($TOTACC$, as defined above) and non-discretionary accruals ($NDACC$) calculated as:

$$NDACC_{it} = \frac{\left[REV_{it} x \frac{CACC_{i,t-1}}{REV_{i,t-1}}\right] - \left[PPE_{it} x \frac{DEP_{i,t-1}}{PPE_{i,t-1}}\right]}{TA_{i,t-1}} \qquad (4)$$

[21] Annual levels of inflation (annual %) and GDP growth (annual %) are collected from the World Bank's World Development Indicators databank at https://data.worldbank.org/indicator.

where the current portion of total accruals, $CACC$, is calculated as:

$$CACC_{it} = \Delta[CA_{it} - CASH_{it} - TS_{it}] - \Delta[CL_{it} - STDEBT_{it} - DIV_{it}]$$

$REV, PPE, DEP, CA, CASH, CL, STDEBT$, and $TA$ are as defined above. $TS$ is the treasury stock portion of current assets and $DIV$ is the amount of proposed dividends[22].

**3.2.3 Real Earnings Management**

The first measure of real earnings management, developed by Zang (2012), captures the change in bottom-line earnings through non-accrual-based decisions such as selling PP&E, altering production levels, and cutting discretionary spending. REM1 is a residual model that captures the sum of abnormal discretionary expenses and abnormal production costs. The abnormal discretionary expenses and abnormal production costs are the residuals of the following two equations:

$$\frac{DISC\ EXP_{it}}{TA_{i,t-1}} = \alpha_0 + \alpha_1 \frac{Sales_{i,t-1}}{TA_{i,t-1}} + \epsilon_{it} \quad (5)$$

$$\frac{PROD_{it}}{TA_{i,t-1}} = \alpha_0 + \alpha_1 \frac{Sales_{it}}{TA_{i,t-1}} + \alpha_2 \frac{\Delta Sales_{it}}{TA_{i,t-1}} + \alpha_3 \frac{Sales_{i,t-1}}{TA_{i,t-1}} + \epsilon_{it} \quad (6)$$

$DISC\ EXP$ is measured as the sum of R&D expenses (WC01201) and SG&A expenses (WC01101). $PROD$ is measured as the sum of cost of goods sold (WC01051) and changes in inventory (WC02101). All variables are scaled by lagged total assets. The residuals of the regressions capture abnormal discretionary expenses and abnormal production costs, respectively. Regressions 5-7 are run over each industry-year group with at least 15 observations controlling for country differences with lagged inflation and GDP growth. Abnormal discretionary expenses are multiplied by negative one so that higher values equate to higher levels of expense cuts to inflate earnings.

The second real earnings management residual model (REM2) is the sum of abnormal discretionary expenses and abnormal operating cash flows (multiplied by -1). Abnormal discretionary expenses are the

[22] Due to low database coverage of $TS$ and $DIV$, all missing variables are replaced with zero following prior literature (Houqe et al., 2012).

residuals of Equation 5. Operating cash flows ($OCF$) are calculated as in DeFond & Park (2001). Abnormal operating cash flows, which are the residuals of the following regression, are indicators of additional real earnings management activities that will affect final earnings[23].

$$\frac{OCF_{it}}{TA_{i,t-1}} = \alpha_0 + \alpha_1 \frac{Sales_{it}}{TA_{i,t-1}} + \alpha_2 \frac{\Delta Sales_{it}}{TA_{i,t-1}} + \epsilon_{it} \quad (7)$$

To control for potential measurement error and capture different aspects of real earnings management, I aggregate the two REM variables (Agg. REM) by standardizing and taking the mean of the two REM measures.

### 3.3 Descriptive Statistics and Correlations

I use a sample of 46,939 firm-year observations from 46 countries from 1997 to 2013. All monetary variables are standardized to the United States Dollar (USD) and continuous variables are winsorized at the annual 2% and 98%[24]. Table 4 presents descriptive statistics of the sample split into the pre- and post-IFRS adoption periods. Mean and median statistical comparisons are provided in the last two columns. All variable definitions and item numbers are found in Appendix A.

**[INSERT TABLE 4 ABOUT HERE]**

In terms of accounting quality proxies, signed accrual levels have somewhat mixed results with the median Mod. Jones, Mod. D&D, and Agg. AEM values all being significantly higher in the post-IFRS adoption period. The Benchmark DA model, however, shows a median decrease in signed accrual levels from 0.004 to -0.001, significant at the 1% level. The real earnings management proxies are more unanimous. REM1, REM2, and Agg. REM all have significantly lower mean and median levels in the post-IFRS adoption period. The absolute AEM and REM measures are more consistent than their signed

[23] One caveat of using OCF in REM2 is that the sign of the abnormal OCF is hard to predict. As Zang (2012) notes in her study, "price discount, channel stuffing, and overproduction all decrease cash flows from operations, while cutting discretionary expenditures increases them" (pg. 682).

[24] Winsorizing all continuous variables is especially important in this setting due to the calculations of accruals being especially sensitive to outliers (Barth et al., 2008); however, the results remain when using a more conservative winsorizing of 1 and 99%.

counterparts. For the four absolute discretionary accrual proxies, all means and medians decrease in the post-IFRS period, and are mostly significant at the 1% level.

Overall, these results provide preliminary evidence that IFRS adoption limits discretionary activities by managers. This may be because of the high quality IFRS regulation or, alternatively, because of the increased scrutiny of firms during the global financial crisis, which is present in the post-IFRS period for the majority of countries. I mitigate this latter concern by using rolling IFRS adoption dates and controlling for year fixed effects in a later empirical analysis.

**[INSERT TABLE 5 ABOUT HERE]**

The Spearman rank (below the diagonal) and Pearson (above the diagonal) correlation matrix is displayed in Table 5. The measures of AEM are all positively correlated and significant at the 1% level as indicated by a star (*). The Benchmark DA measure is significantly correlated with the aggregated residual models (Agg. AEM) at 0.3064. Real earnings management proxies are highly correlated at 0.7055. These findings add validity to the measurement of the selected accounting quality proxies.

In terms of the correlation of IFRS and accounting quality measures, signed accruals are positively correlated, but in most cases not significant. However, all signed real earnings management measures are negatively and mostly significantly correlated with IFRS, although weakly (e.g., a range of -0.0144 to -0.0782). These correlations provide very early evidence that mandatory IFRS adoption is associated with higher levels of discretionary accruals, but lower levels of real earnings management.

# 4. Results

## 4.1 Earnings Distributions

**[INSERT FIGURE 1 ABOUT HERE]**

The total distribution of scaled earnings is plotted in Figure 1. The earnings distribution shows a large discontinuity at the zero earnings threshold with a standardized difference below zero of -10.14 and above zero of 6.59, both significant at the 1% level. When the total sample distribution is split into the pre- and post-IFRS adoption periods per country, the discontinuity is significant in both samples. However, there

is a noticeable decrease in the size of the standardized difference test statistics as well as a decrease in the small profit-to-loss ratio (pre-IFRS: 2.26; post-IFRS: 2.08)[25].

To control for issues related to differences in sample composition between the pre- and post-IFRS adoption periods, I replicate the previous test using a constant sample with equal observations from each mandatory adopting firm in both samples. This methodology ensures that countries, industries, and static firm characteristics remain stationary, better isolating the role of IFRS adoption. Figure 2 provides a clearer comparison of firm benchmark beating behavior before and after mandated IFRS adoption.

**[INSERT FIGURE 2 ABOUT HERE]**

Consistent with the total sample distributions, the discontinuity, though still present, appears to have decreased following IFRS adoption (standardized difference test statistics pre-IFRS: -6.81/4.18 and post-IFRS: -6.05/3.32). Furthermore, the ratio of small profit to small loss firms substantially decreased from 2.30 before IFRS adoption to 1.98 after IFRS adoption.

Taking together, an explanation for the findings could be the following: (1) IFRS does not provide the material increase in accounting quality that was theorized from its inception, (2) earnings distributions are overly simple and unable to control for potential omitted variable biases and time trends necessary to identify the complex IFRS effect, or (3) earnings distributions potentially capture a substitution of real for accrual earning management (or vice versa) resulting in no noticeable change across periods. While concern (1) is the main focus of the paper, concerns (2) and (3) are addressed in Sections 4.3 and 4.4, respectively.

### 4.2 Cross-sectional Analysis

Given that a major contribution of this study is investigating a worldwide view of IFRS adoption, it is imperative to explore whether the findings are consistent within the sample. In the first cross-sectional

[25] To ensure that no specific country is driving the results, I replotted the baseline distribution analysis removing one country at a time and ran the logit regression analysis for each country with at least 100 firm-year observations. In this untabulated analysis, the marginal decrease in the earnings discontinuity remains consistent across the different sample compositions.

analysis, I separate developed EU countries from non-EU countries and replot the scaled earnings distributions for both the pre- and post-IFRS adoption periods using a constant sample of firms[26].

Given that the earliest adoption date in the sample is 2005, which includes mainly EU countries, this analysis can also be viewed partly as an analysis of 2005 adoption, which coincides with a number of changes to the accounting environment (Christensen et al., 2013), versus later adoption dates. Additionally, adoption procedures and requirements are heterogeneous outside of the EU sample, thus this analysis indirectly investigates changes in accounting quality following IFRS adoption across differing types of IFRS adoption strategies.

**[INSERT FIGURE 3 ABOUT HERE]**

Overall, the results of Figure 3 are consistent with the original findings of Figure 2. The discontinuity in the earnings distributions decreases following mandatory IFRS adoption for both EU and non-EU countries, however, the decrease is larger for the non-EU countries as the ratio of small profit-to-loss firms decreases from 2.87 to 1.98 for non-EU countries and from 2.10 to 2.01 for EU countries. The significance of the standardized difference test statistics decrease significantly and are only partly significant in the post adoption period for non-EU countries. These results provide evidence that IFRS adoption had a stronger positive effect on accounting quality in countries outside of the EU. This suggests that reporting quality is initially lower for non-EU countries that generally have lower reporting requirements, user demand, and regulator attention and, thus, IFRS adoption has a larger effect for non-EU countries relative to EU countries (Bae et al., 2008). Alternatively, firms in non-EU countries may rely on IFRS adoption as a quality signal to be competitive in international markets (Judge et al., 2010).

Next, I disaggregate the constant sample among characteristics classically assumed to affect accounting quality. This analysis helps to both validate the main findings of the paper was well as test whether these documented determinants hold in more global and diverse samples.

**[INSERT FIGURE 4 ABOUT HERE]**

[26] All analyses in Section 4.2 are run on both the full sample and constant sample of firm-years with similar results.

Panel A separates the sample of countries by enforcement strength[27]. High quality accounting standards are ineffective without sufficient enforcement (Holthausen, 2009). Unsurprisingly, prior to the introduction of IFRS, the discontinuity in the earnings distribution is substantially larger for firms in low enforcement countries. Christensen et al. (2013) find that capital market benefits following IFRS adoption in the EU are limited to countries with simultaneous, positive changes to accounting enforcement, introducing ambiguity as to which event drives the findings. I find a more notable decrease in the size of the discontinuity following IFRS adoption for the high enforcement countries relative to the low enforcement countries as evident by a decrease in small profit-to-loss ratio from 1.92 to 1.57 versus a decrease from 2.56 to 2.27, respectively. This provides evidence that IFRS adoption increases accounting quality even if a country has strong enforcement.

Panel B disaggregates the constant sample across the legal origin of each country, i.e., common law versus code law countries[28], to investigate users' demand for high quality accounting. Common law countries generally acquire capital from the equity markets, which demand high quality financial reporting. In contrast, code law countries generally rely on private funding options that communicate through internal channels (Ball et al., 2000). I find that common law countries have higher accounting quality relative to code law countries prior to IFRS adoption as evident by the lower profit-to-loss ratio (2.53 versus 1.76). Interestingly, mandatory IFRS adoption causes the discontinuity in earnings distributions to completely disappear for common law countries[29]. In contrast, code law countries have only a minimal positive change in accounting quality following IFRS adoption.

### 4.3 Earnings Management Proxy Correlations

[27] Enforcement is measured as a median split of an aggregate of enforcement measures for corruption, governance, political, regulatory quality, rule of law, and voice and accountability from the World Book databank: http://databank.worldbank.org/data/reports.aspx?source=worldwide-governance-indicators.
[28] Legal origin is collected from the CIA's World Factbook: https://www.cia.gov/library/publications/the-world-factbook/fields/2100.html.
[29] Common law countries include Australia, Canada, Ghana, Hong Kong, Ireland, Israel, Malaysia, New Zealand, Nigeria, Singapore, South Africa, Sri Lanka, and United Kingdom.

In an attempt to validate my chosen methodology and explore the relation between different styles of earnings management in this setting, I correlate firms in the intervals around the profit threshold with classic accounting quality proxies from prior literature. This is a contribution because prior research investigating changes in accounting quality following IFRS adoption have mainly utilized discretionary accruals models, whereas I investigate both signed discretionary accrual and real earnings management measures.

**[INSERT TABLE 6 ABOUT HERE]**

Similar to the results of Dechow et al. (2003)[30], Table 6 shows that there are limited differences between both accrual and real earnings management efforts when comparing firms in the small profit and loss intervals. In Panel A, there is no significant evidence that small profit firms report differently than small loss firms in the pre-IFRS period. As a result, there is no significant difference post-IFRS adoption. Only REM1 has the expected result of significantly higher levels for small profit firms relative to small loss firms in the pre adoption period (0.054 vs. -0.027, respectively, t-stat=1.98), however, this limited result dissipates following IFRS adoption. Panel B and C, which compare small profit firms to all other firms and small loss firms to all other firms, respectively, yield similarly inconclusive results[31].

Overall, there is insufficient evidence that discretionary accrual or real earnings management activities are definitively causing the discontinuities observed in Figures 1 and 2. These inconsistencies may be due to the discontinuities capturing activities other than earnings manipulation or because the proxies for measuring accounting quality are too weak to capture small levels of earnings manipulation, which is a common critique of their design, especially for an international sample (Bernard & Skinner, 1996; Dechow et al. 2003; Wysocki, 2004; Burgstahler & Chuk, 2015).

[30] Dechow et al. (2003) finds that there are high levels of discretionary accruals for *both* small profit and small loss firms, with no significant difference.

[31] In an untabulated analysis, I investigate changes in discontinuities pre- and post-IFRS adoption using absolute levels of AEM and REM. In terms of small profit firms and small loss firms during the pre-adoption period, there are no significant differences across the vast majority of both AEM and REM measures. However, in the post-IFRS adoption period, the levels of accruals for small profit firms became significantly lower compared to small loss firms all four AEM measures. Additionally, the REM differences, although not significant, are also lower for small profit firms in the post adoption phase.

### 4.4 Empirical Benchmark Beating Evidence

Table 7 employs a logit analysis to better isolate whether IFRS adoption affects benchmark beating tendencies while attempting to control for firm, industry, and country differences.

**[INSERT TABLE 7 ABOUT HERE]**

For the total and constant samples (Columns 1 and 4), the IFRS variable is -0.143 and -0.094, respectively, and significant at the 5% level for the total sample, providing mild evidence that global mandatory IFRS adoption lowers the probability of firms benchmark beating. The introduction of the level of signed discretionary accrual in Columns 2 and 5 shows that there is an inverse relationship between positive discretionary accruals and probability of benchmark beating, similar to the univariate results in Table 6, although not statistically significant. The interaction of IFRS and AEM in the constant sample yields a coefficient of -1.036 (t-stat: -2.55) indicating that firms with higher levels of AEM have a smaller decrease in the likelihood of a firm engaging in threshold-beating post-IFRS adoption relative to firms with lower levels of discretionary accruals[32]. In contrast, the Agg. REM variable in the pre-IFRS period, as reported in Columns 3 and 6, shows a mild, positive relation between REM and the propensity of firms to engage in benchmark beating accounting practices. This is in line with research that finds top executives actually prefer to use REM to achieve reporting targets as opposed to AEM (Graham et al., 2005; Zang, 2012). The control variables, when significant, are mainly in line with expectations. In short, although IFRS does seem to somewhat deter benchmark beating behavior, there is not a clear relationship between discretionary AEM and REM to attribute to this effect.

## 5. Robustness Analyses

Concerns have been raised regarding the use of earnings distributions to adequately measure accounting quality by capturing benchmark beating behavior. Critics Durtschi & Easton (2005, 2009) and Brown & Caylor (2005), among others, caution that the variables used as the numerator and denominator

[32] While the total sample has the same sign for $\beta_3$ with respect to the AEM measure, it is not significant.

in the scaled earnings measure must be deliberately chosen to assure that the underlying distribution is not distorted by sample composition or systematic differences in profit and loss firms.

Beaver et al. (2007) argue that there are asymmetric differences in taxes and special item reporting for profit and loss firms, which artificially inflates the discontinuity in distributions. Their argument is that profit firms have higher tax rates thus attempt to drive their earnings values closer to the zero threshold, whereas there is a propensity for loss firms to report large, negative special items (e.g., big bath accounting) that drive their observations further away from zero and positive earnings intervals. I investigate this concept in Figure 5.

**[INSERT FIGURE 5 ABOUT HERE]**

Interestingly, when investigating operating earnings (EBIT) as opposed to bottom-line earnings, there still exists a statistically significant discontinuity around the zero earnings threshold in the pre-IFRS period. However, in the post-IFRS adoption period, the discontinuity disappears and the standardized differences are mostly insignificant. The small profit-to-loss ratio decreases substantially from 1.60 to 0.92. Therefore, it appears that the discontinuity is not artificially created and that IFRS adoption improves operating income to a greater extent than bottom-line earnings. Furthermore, perhaps the managing of tax bases and the classification shifting of non-operating activities (e.g., special items) are better explanations for the continued existence of the discontinuity in earnings in the post-IFRS adoption period.

Durtschi & Easton (2005, 2009) claim that the use of market value of equity as a deflator is problematic due to systematic differences in market valuation of profit and loss firms and less data coverage for small loss firms, which exacerbates the discontinuity. To address the scaling concern, I replot the distribution of earnings in the pre- and post-IFRS adoption samples using a constant sample of firms that are deflated by lagged sales (Panel A) and lagged total assets (Panel B).

**[INSERT FIGURE 6 ABOUT HERE]**

Similar to the findings from Figure 2 the scaling of earnings by lagged sales and lagged total assets yield consistent results. The discontinuities decrease in size, however, the standardized differences, while

smaller, remain significant in the post-IFRS adoption period. Furthermore, the ratios of small profit to loss firms decrease for both robustness samples. Hence, it does not appear that the choice of scaler affects the overall conclusions of this study.

## 6. Conclusion

To help settle an existing debate in the IFRS literature, this paper reinvestigates whether the global introduction of IFRS has achieved its goal of improving financial reporting by using an alternative, more internationally comparable measure of accounting quality: earnings distributions around the zero earnings threshold. Additionally, this study investigates the interplay between accrual and real earnings management levels around the zero earnings benchmark and whether this relationship changes post-IFRS adoption.

Using a global sample of 46 mandatory IFRS adopting countries over 17 years, I find that, while the discontinuity around the zero earnings benchmark remains statistically significant following IFRS adoption, the size of the discontinuity decreases suggesting a moderate increase in accounting quality. Including IFRS adoptions from both developed and developing countries allows for rolling adoption dates, avoids transitional effects, and is a better representation of the current vision of the IASB. I find discontinuities decrease for both EU and non-EU countries suggesting that the increase in accounting quality for EU countries is driven by mandatory IFRS adoption and not concurrent changes to the reporting environment (Christensen et al., 2013). Furthermore, the decrease in the distribution discontinuities following IFRS adoption is more evident for high enforcement countries and completely disappears for common law countries, which helps to rectify the findings that, in a meta setting, reporting environment does not have an impact on the effectiveness of IFRS adoption (Ahmed et al., 2013b).

In a second step, I attempt to isolate the role that signed accrual and real earnings management play in the discontinuity of earnings distributions pre- and post-IFRS adoption. Using both univariate and logit regression analyses, I find no discernible trend of accrual or real discretionary reporting for firms in the benchmark beating intervals around the zero earnings threshold, which aligns with Dechow et al. (2003)

and Doukakis (2014). This is not surprising given the focus on subtle benchmark beating, which is difficult to capture in a heterogenous, global setting (DeFond & Park, 2001; Wysocki, 2004).

This study contributes to the existing IFRS and earnings distribution literatures in a number of ways. For one, measuring accounting quality with earnings distributions is not an arbitrary choice. This methodology avoids the applicability and validity critiques of discretionary accruals in an international setting, as well as serves as a reference point for conclusions drawn in prior works. Additionally, this study adds to the recent trend of using earnings distributions to measure the effectiveness of accounting policy changes, whereby keeping the sample constant reduces endogeneity concerns and better isolates the effect. While I use earnings distributions as a tool to evaluate the introduction of IFRS, this measure could be used in future research to investigate specific changes to IFRS regulation as it evolves over time.

The results and limitations of this paper expose many potential avenues for future research. For one, the use of earnings distributions provides an isolated setting to identify what exact reporting practices are being curbed via IFRS adoption since this paper was not able to identify those practices using classic discretionary accrual and real earnings management measures. Further, that finding that the discontinuity disappears post-IFRS adoption when plotting EBIT, but still remains when plotting bottom-line earnings provides a narrowed focus for future investigation into what exact areas of reporting are vulnerable to manager manipulation under IFRS.

Additionally, it might be interesting to investigate different reporting thresholds such as earnings growth or analyst and manager forecast estimates post-IFRS adoption, given that different thresholds have alternative reporting incentives that could be affected differently by the mandatory introduction of IFRS. Finally, because this study includes over 40 countries with varying IFRS adoption dates and styles, this paper should be replicated when those countries with more recent adoption dates have longer post adoption periods and additional countries adopt and further converge with IFRS. In a similar vein, investigating adoption styles and processes across the world in greater detail, following the call of Zeff & Nobes (2010) and Zeff (2015), would be an interesting and welcomed extension of this work.

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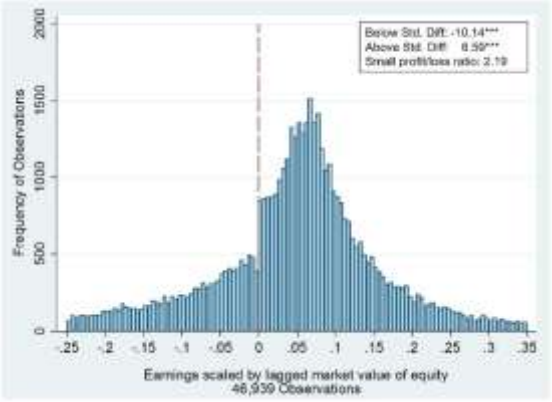
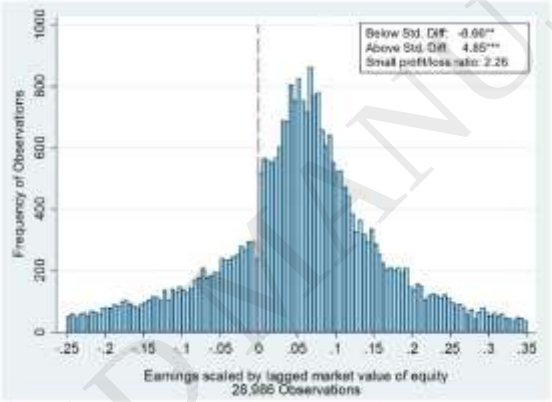
Figure 1

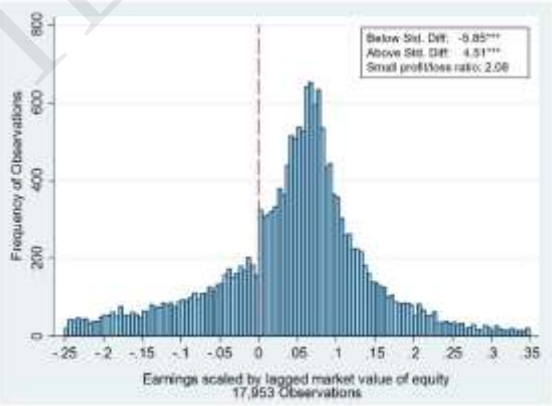
Panel A: Total Sample (1997-2013)




Panel B: Pre-IFRS Adoption Period



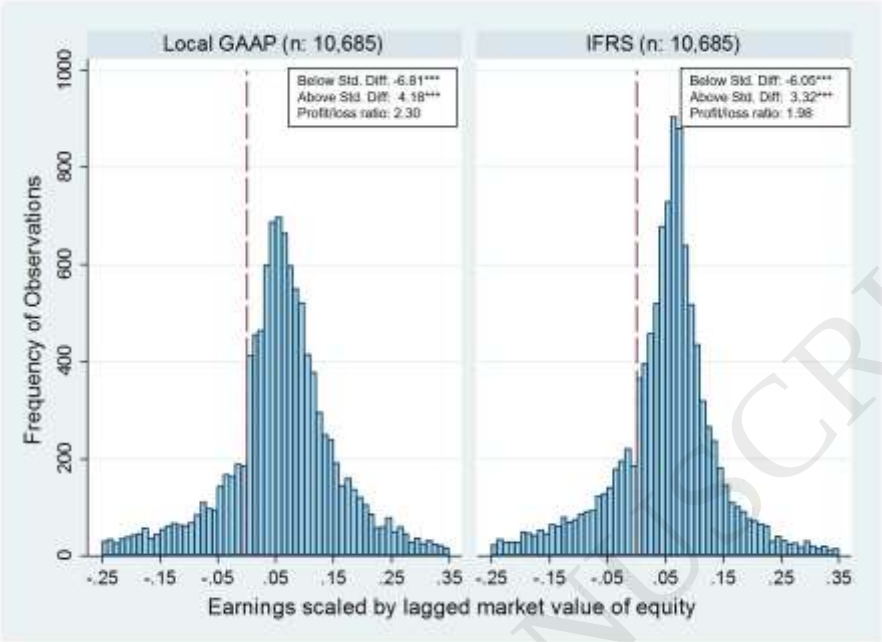

Panel C: Post-IFRS Adoption Period




**Distributions of Scaled Earnings using the Total Sample**

Figure 1 displays the distributions of earnings scaled by lagged market value of equity. The bin size is 0.005 calculated from the Freedman Diaconis measure and the distributions are truncated at -0.25 and 0.35 to give the clearest picture of the zero earnings threshold, as indicated by the red dashed line. The earnings and the beginning market value of equity are collected from Thomson Reuters Datastream. Both variables are winsorized at the yearly 2nd and 98th percentiles. Panel A displays the distribution for all firm-years over the total observation period (1997-2013). Panel B displays the distribution of scaled earnings for the pre mandatory IFRS adoption period and Panel C displays the distribution of scaled earnings for the post mandatory IFRS adoption period. ***, **, and * represent significance levels of 10, 5, and 1%, respectively.

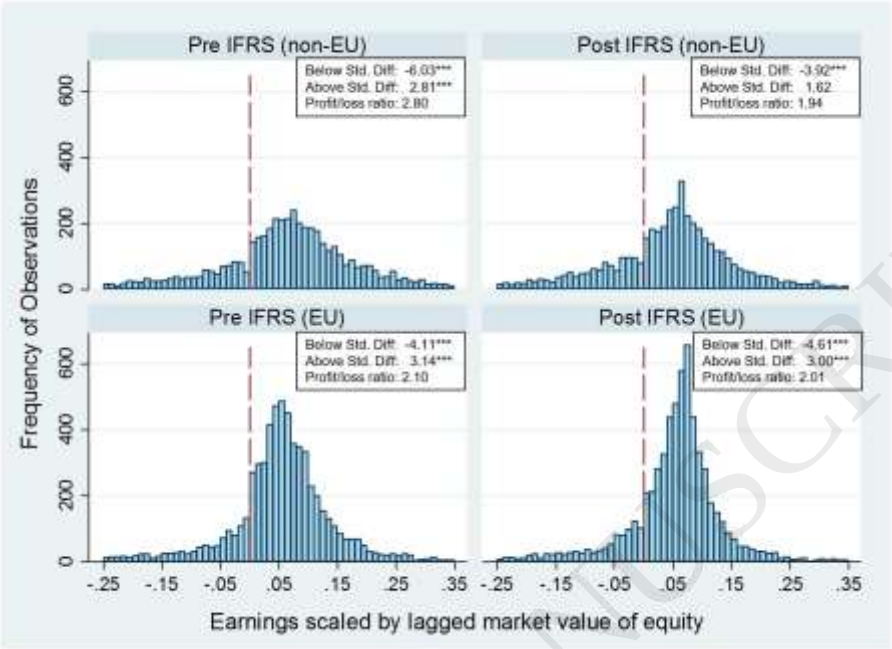
Figure 2




**Distributions of Scaled Earnings using the Constant Sample**

Figure 2 displays the distributions of earnings scaled by lagged market value of equity. The bin size is 0.01 calculated from the Freedman Diaconis measure and the distributions are truncated at -0.25 and 0.35 to give the clearest picture of the zero earnings threshold, as indicated by the red dashed line. The earnings and the beginning market value of equity are collected from Thomson Reuters Datastream. Both variables are winsorized at the yearly 2nd and 98th percentiles. The sample is limited to a subset of constant firms with equal numbers of observations in both the pre- and post-IFRS adoption periods. ***, **, and * represent significance levels of 10, 5, and 1%, respectively.

Figure 3

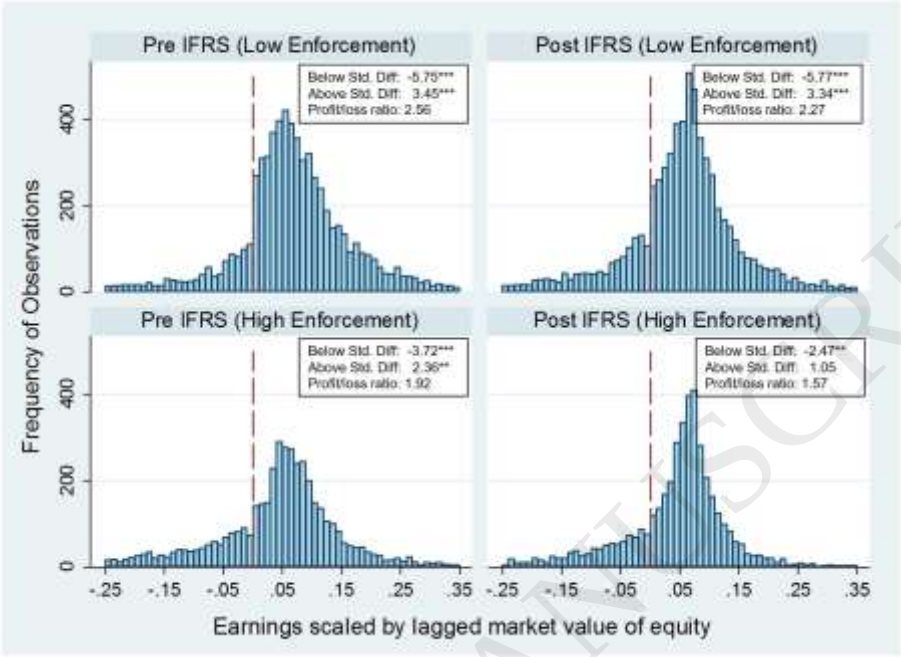



**Distributions of Scaled Earnings for EU vs. non-EU Countries**

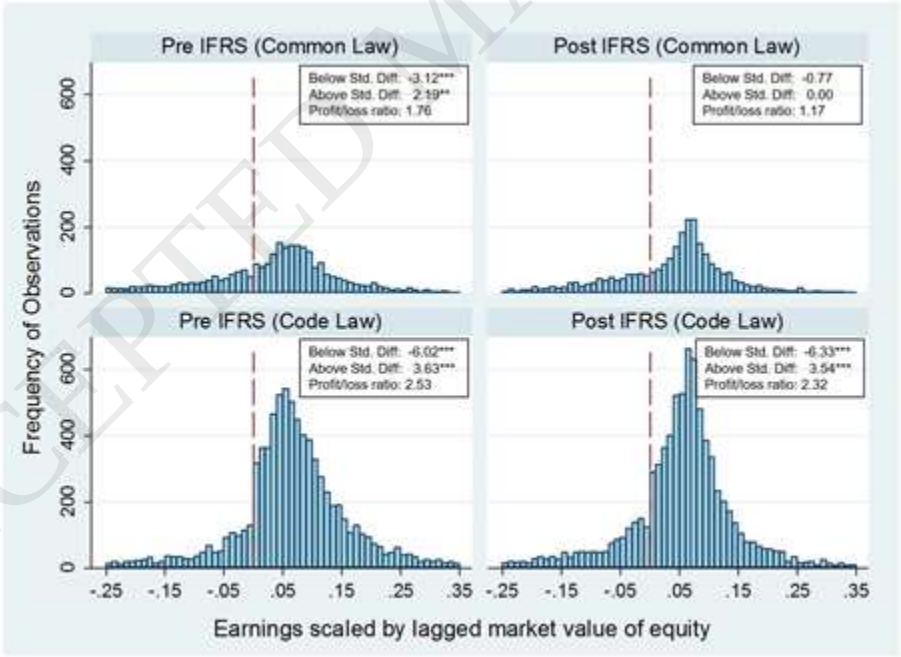
Figure 3 displays the distributions of earnings scaled by lagged market value of equity in the pre- and post-IFRS adoption periods for EU (n=4,530 per period) vs. non-EU countries (n=6,155 per period). The bin size is 0.01 calculated from the Freedman Diaconis measure and the distributions are truncated at -0.25 and 0.35 to give the clearest picture of the zero earnings threshold, as indicated by the red dashed line. The earnings and the beginning market value of equity are collected from Thomson Reuters Datastream. Both variables are winsorized at the yearly 2nd and 98th percentiles. The sample is limited to a subset of constant firms with equal numbers of observations in both the pre-and post-IFRS adoption periods. ***, **, and * represent significance levels of 10, 5, and 1%, respectively.

Figure 4

Panel A: Enforcement Strength



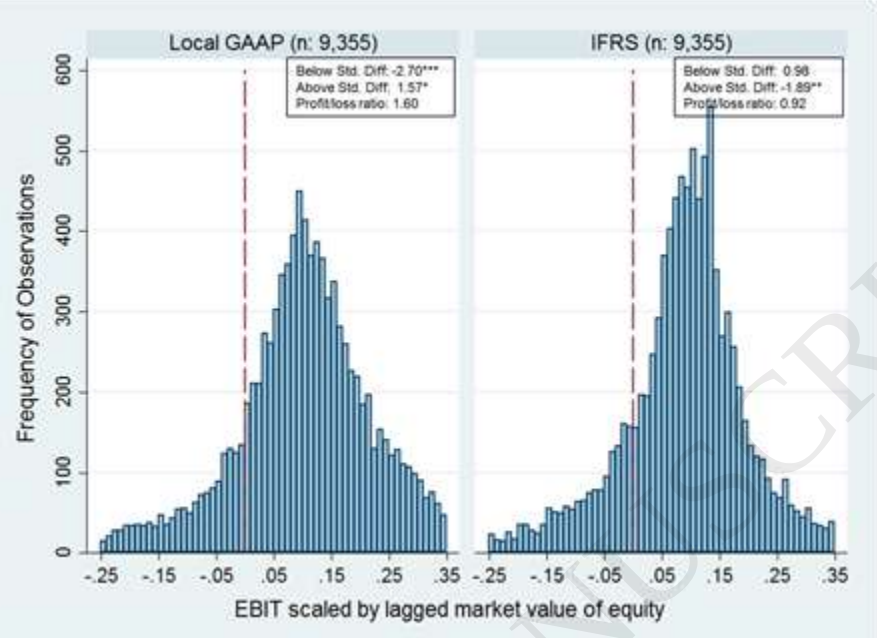

Panel B: Legal Origin




**Distributions of Scaled Earnings across Institutional Characteristics**

Figure 4 displays the distributions of earnings scaled by lagged market value of equity in the pre- and post-IFRS adoption periods for differing levels of accounting enforcement (n=4,245 (6,440) for high (low) enforcement) and legal origin (n=2,622 (7,779) for common (code) law). Enforcement is measured as a median split of an aggregate of enforcement measures for corruption, governance, political, regulatory quality, rule of law, and voice and accountability from the World Book databank. Legal origin is collected from the CIA's World Factbook. The bin size is 0.01 calculated from the Freedman Diaconis measure and the distributions are truncated at -0.25 and 0.35 to give the clearest picture of the zero earnings threshold, as indicated by the red dashed line. The earnings and the beginning market value of equity are collected from Thomson Reuters Datastream. Both variables are winsorized at the yearly 2nd and 98th percentiles. The sample is limited to a subset of constant firms with equal numbers of observations in both the pre- and post-IFRS adoption periods. ***, **, and * represent significance levels of 10, 5, and 1%, respectively.

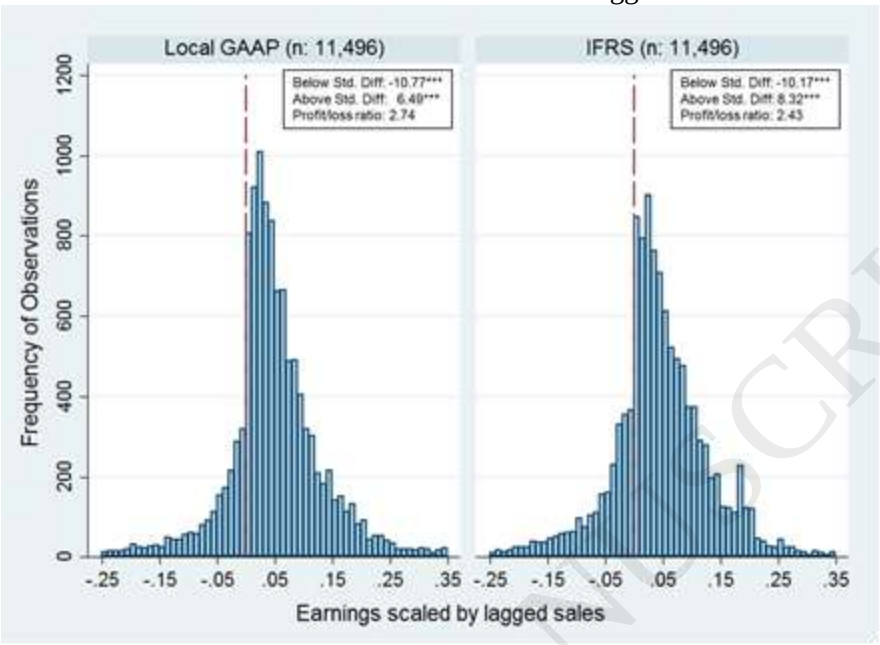
Figure 5



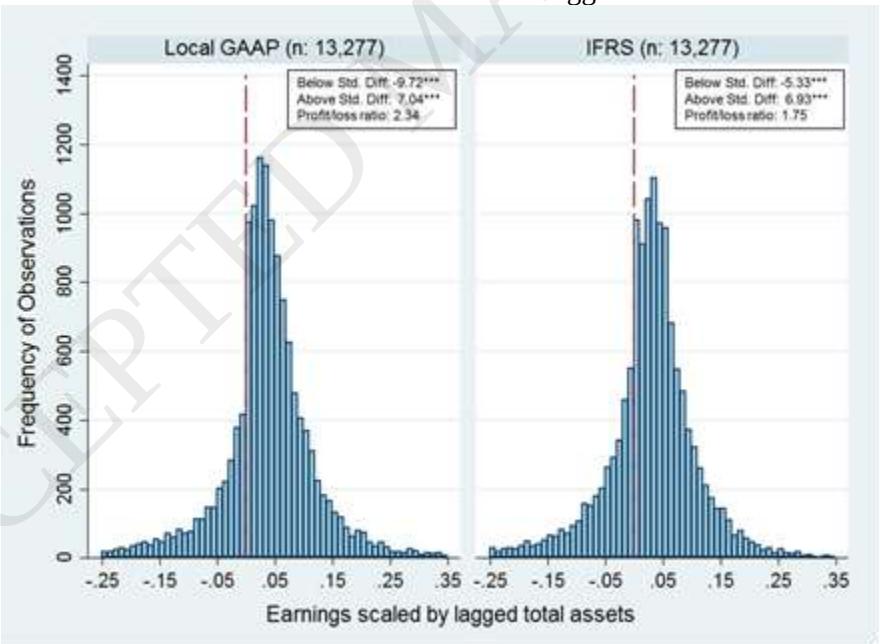

**Alternative Numerator Measure for Scaled Earnings Distributions**
Figure 5 displays the earnings distributions of the constant sample of firms using an alternative numerator measure of earnings before interest and taxes (EBIT) scaled by the lagged market value of equity. The bin size is 0.01 calculated from the Freedman Diaconis measure and the distributions are truncated at -0.25 and 0.35 to give the clearest picture of the zero earnings threshold, as indicated by the red dashed line. All variables are collected from Thomson Reuters Datastream and are winsorized at the yearly 2nd and 98th percentiles. ***, **, and * represent significance levels of 10, 5, and 1%, respectively.

Figure 6

Panel A: Alternative Denominator – Lagged Sales




Panel B: Alternative Denominator – Lagged Total Assets




**Alternative Denominator Measures for Scaled Earnings Distributions**

Figure 6 displays the earnings distributions of the constant sample of firms using alternative denominators including net income scaled by lagged sales and lagged total assets, respectively. The bin size is 0.01 calculated from the Freedman Diaconis measure and the distributions are truncated at -0.25 and 0.35 to give the clearest picture of the zero earnings threshold, as indicated by the red dashed line. All variables are collected from Thomson Reuters Datastream and are winsorized at the yearly 2nd and 98th percentiles. ***, **, and * represent significance levels of 10, 5, and 1%, respectively.

Table 1: Mandatory IFRS Adoption Identification Strategy

| Pre Adoption (t - i) | Adoption Year (t = 0) | Post Adoption (t + i) | Action Taken |
|---|---|---|---|
| Local GAAP | IFRS | IFRS | Include |
| Local GAAP | Local GAAP | IFRS | Exclude* |
| Local GAAP | Local GAAP | Local GAAP | Exclude |
| IFRS | IFRS | IFRS | Exclude |
| Local GAAP | IFRS | Local GAAP | Exclude |
| IFRS | Local GAAP | IFRS | Exclude |
| IFRS | Local GAAP | Local GAAP | Exclude |
| Local GAAP/IFRS | - | - | Exclude |
| - | Local GAAP/IFRS | Local GAAP/IFRS | Exclude |
| - | - | Local GAAP/IFRS | Exclude |

*Included for convergence countries only

Note: Table 1 displays the identification strategy for the mandatory IFRS adoption variable (binary). Since this paper focuses on a global IFRS adoption perspective, the identification of IFRS adoption at the firm level includes distinguishing between different country-specific adoption dates and multiple adoption types (e.g., convergence, required for some firms, required for all firms, etc.). For the cleanest measure, I only include firms with a definite switch to IFRS at the country-level mandated adoption date. For convergence countries, I include firms that adopt IFRS after the convergence date due to potential misclassification in databases (Zeff, 2007). All other adoption variations are excluded. Adoption dates and types are collected via cross-referencing the IASB jurisdiction profiles, Deloitte's "Use of IFRS by Jurisdiction" webpage, and PricewaterhouseCooper's "IFRS Adoption by Country" survey.

Table 2: Sample Cleaning Procedure

| | Omitted Observations | Total Sample Size |
|---|---|---|
| Observations from IFRS countries covered in Datastream | | 383,936 |
| U.S. GAAP following firms | (3,591) | 380,345 |
| Financial institutions | (54,140) | 326,205 |
| Countries that permit IFRS | (19,351) | 306,854 |
| Non-adopting firms | (164,616) | 142,238 |
| Early/Late adopting firms | (66,536) | 75,702 |
| Local GAAP reverting firms | (9,518) | 66,184 |
| Adoption year observations | (5,780) | 60,404 |
| Observations where earnings equal zero | (9) | 60,395 |
| Observations without lagged market value available | (5,201) | 55,194 |
| Final sample after truncating distribution endpoints | (8,255) | 46,939 |

Note: Table 2 outlines the data cleaning procedure that results in the final sample used for the distribution analyses. The sample begins with all available firms in IFRS adopting countries from Thomson Reuters Datastream that have net income, market value of equity, sales, and total assets available each year. Firm-level adoption details are identified via the "Accounting Standards Followed" variable. Firms following "U.S. standards (GAAP)" and "U.S. GAAP reclassified from local standards" are excluded. Financial institutions with Datastream industry codes between 4300-4600 are excluded. Country-level adoption dates and types are collected via cross-referencing the IASB jurisdiction profiles, Deloitte's "Use of IFRS by Jurisdiction" webpage, and PricewaterhouseCooper's "IFRS Adoption by Country" survey. The truncated endpoints for the earnings distributions are -0.25 and 0.35, following prior literature.

Table 3: Firm-year Observations by Country

| Country | No. Obs. | % Obs. | Development Level | Adoption Year | Adoption Type |
|---|---|---|---|---|---|
| Argentina | 381 | 0.81 | Developing | 2012 | Required (some) |
| Australia | 1,010 | 2.15 | Developed | 2005 | Required |
| Austria | 102 | 0.22 | Developed | 2005 | Required (EU) |
| Belgium | 584 | 1.24 | Developed | 2005 | Required (EU) |
| Brazil | 3,558 | 7.58 | Developing | 2010 | Required |
| Canada | 6,065 | 12.92 | Developed | 2011 | Required (some) |
| Chile | 890 | 1.90 | Developing | 2009 | Required |
| China | 95 | 0.20 | Developing | 2007 | Convergence |
| Czech Republic | 72 | 0.15 | Developed | 2005 | Required (EU) |
| Denmark | 721 | 1.54 | Developed | 2005 | Required (EU) |
| Egypt | 19 | 0.04 | Developing | 2007 | Required |
| Finland | 1,190 | 2.54 | Developed | 2005 | Required (EU) |
| France | 3,920 | 8.35 | Developed | 2005 | Required (EU) |
| Germany | 1,384 | 2.95 | Developed | 2005 | Required (EU) |
| Ghana | 12 | 0.03 | Developing | 2007 | Required |
| Greece | 2,307 | 4.91 | Developed | 2005 | Required (EU) |
| Hong Kong | 25 | 0.05 | Developed | 2005 | Required |
| Hungary | 46 | 0.10 | Developed | 2005 | Required (EU) |
| Ireland | 238 | 0.51 | Developed | 2005 | Required (EU) |
| Israel | 1,537 | 3.27 | Developed | 2008 | Required (some) |
| Italy | 2,316 | 4.93 | Developed | 2005 | Required (EU) |
| Luxembourg | 74 | 0.16 | Developed | 2005 | Required (EU) |
| Macedonia | 8 | 0.02 | Developing | 2009 | Required |
| Malaysia | 47 | 0.10 | Developing | 2012 | Convergence |
| Mexico | 1,137 | 2.42 | Developing | 2012 | Required (some) |
| Morocco | 25 | 0.05 | Developing | 2008 | Required (some) |
| Netherlands | 994 | 2.12 | Developed | 2005 | Required (EU) |
| New Zealand | 58 | 0.12 | Developed | 2005 | Required |
| Nigeria | 87 | 0.19 | Developing | 2012 | Required |
| Norway | 1,028 | 2.19 | Developed | 2005 | Required (EU) |
| Peru | 14 | 0.03 | Developing | 2012 | Required |
| Philippines | 180 | 0.38 | Developing | 2005 | Convergence |
| Poland | 809 | 1.72 | Developing | 2005 | Required (EU) |
| Portugal | 406 | 0.86 | Developed | 2005 | Required (EU) |
| Russian Federation | 66 | 0.14 | Developing | 2012 | Required (some) |
| Singapore | 76 | 0.16 | Developing | 2008 | Convergence |
| Slovakia | 6 | 0.01 | Developed | 2005 | Required (EU) |
| Slovenia | 45 | 0.10 | Developed | 2005 | Required (EU) |
| South Africa | 527 | 1.12 | Developing | 2005 | Required |
| South Korea | 10,348 | 22.05 | Developing | 2011 | Required |
| Spain | 314 | 0.67 | Developed | 2005 | Required (EU) |
| Sri Lanka | 36 | 0.08 | Developing | 2012 | Convergence |
| Sweden | 996 | 2.12 | Developed | 2005 | Required (EU) |
| Turkey | 35 | 0.07 | Developing | 2009 | Required |
| Ukraine | 68 | 0.14 | Developing | 2012 | Required |
| United Kingdom | 3,083 | 6.57 | Developed | 2005 | Required (EU) |
| Total | 46,939 | 100.00 | | | |

Note: Table 3 lists the 46 countries with truncated scaled earnings data available that are used in the main analyses. The table gives the number of firm-year observations with net income and market value data available. The country development level is established from cross-referencing the United Nations' UNCTAD survey and the World Trade Organization classification. Adoption dates and types are collected via cross-referencing the IASB jurisdiction profiles, Deloitte's "Use of IFRS by Jurisdiction" webpage, and PricewaterhouseCooper's "IFRS Adoption by Country" survey.

Table 4: Descriptive Statistics across IFRS Adoption Periods

| | Pre-IFRS Adoption Period | | | | | | Post-IFRS Adoption Period | | | | | | Mean Differences | Median Differences |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | No. Obs. | Mean | Median | SD | P25 | P75 | No. Obs. | Mean | Median | SD | P25 | P75 | t-stat | $\chi^2$ |
| Main Test Variable | | | | | | | | | | | | | | |
| NI/MV | 28,986 | 0.054 | 0.058 | 0.108 | 0.003 | 0.113 | 17,953 | 0.044 | 0.056 | 0.101 | 0.000 | 0.097 | 10.04*** | 2.85* |
| Earnings Management Variables | | | | | | | | | | | | | | |
| Mod. Jones | 21,186 | 0.007 | -0.002 | 0.976 | -0.068 | 0.061 | 13,873 | 0.008 | 0.002 | 0.224 | -0.055 | 0.056 | -0.05 | 10.41*** |
| Mod. D&D | 17,731 | 0.006 | 0.003 | 0.121 | -0.031 | 0.041 | 9,891 | 0.009 | 0.006 | 0.098 | -0.025 | 0.039 | -2.10** | 15.73*** |
| Agg. AEM | 17,731 | 0.009 | 0.000 | 0.349 | -0.105 | 0.113 | 9,891 | 0.019 | 0.010 | 0.308 | -0.088 | 0.111 | -2.55*** | 16.13*** |
| Benchmark DA | 17,825 | 0.020 | 0.004 | 0.717 | -0.071 | 0.088 | 12783 | 0.071 | -0.001 | 6.223 | -0.071 | 0.068 | -1.08 | 21.53*** |
| REM1 | 14,921 | -0.004 | 0.014 | 0.431 | -0.143 | 0.148 | 9,221 | -0.060 | -0.014 | 0.649 | -0.193 | 0.123 | 8.01*** | 70.98*** |
| REM2 | 15,326 | -0.012 | -0.007 | 0.335 | -0.125 | 0.109 | 10,749 | -0.063 | -0.036 | 0.416 | -0.162 | 0.076 | 10.84*** | 104.77*** |
| Agg. REM | 11,724 | 0.018 | 0.022 | 0.238 | -0.067 | 0.109 | 7,107 | -0.019 | 0.002 | 0.317 | -0.098 | 0.086 | 9.11*** | 72.30*** |
| Firm Control Variables | | | | | | | | | | | | | | |
| Size | 19,893 | 12.773 | 12.559 | 1.942 | 11.367 | 14.093 | 13,360 | 13.264 | 13.106 | 2.029 | 11.789 | 14.644 | -22.23*** | 302.70*** |
| Leverage | 19,893 | 0.130 | 0.095 | 0.143 | 0.011 | 0.210 | 13,360 | 0.149 | 0.118 | 0.159 | 0.021 | 0.230 | -11.18*** | 105.30*** |
| Sales Growth | 19,893 | 0.353 | 0.106 | 6.536 | -0.054 | 0.272 | 13,360 | 0.402 | 0.060 | 14.061 | -0.055 | 0.193 | -0.42 | 281.74*** |
| Op. Cash Flows | 19,893 | 0.064 | 0.077 | 0.205 | 0.010 | 0.142 | 13,360 | 0.063 | 0.071 | 0.291 | 0.017 | 0.129 | 0.21 | 20.28*** |
| Debt Issuance | 19,893 | 0.284 | 0.099 | 3.206 | -0.124 | 0.352 | 13,360 | 0.164 | 0.049 | 0.911 | -0.112 | 0.249 | 4.21*** | 134.45*** |
| Equity Issuance | 19,893 | 0.255 | 0.037 | 6.721 | -0.055 | 0.164 | 13,360 | 0.340 | 0.020 | 22.713 | -0.049 | 0.109 | -0.49 | 32.11*** |
| Turnover | 19,893 | 1.110 | 0.949 | 0.888 | 0.591 | 1.400 | 13,360 | 1.031 | 0.886 | 0.721 | 0.562 | 1.325 | 8.59*** | 52.64*** |
| Closely held | 19,893 | 0.328 | 0.274 | 0.642 | 0.000 | 0.542 | 13,360 | 0.388 | 0.361 | 0.699 | 0.043 | 0.600 | -8.11*** | 239.20*** |
| Big 4 | 19,893 | 0.743 | 1.000 | 0.437 | 0.000 | 1.000 | 13,360 | 0.756 | 1.000 | 0.430 | 1.000 | 1.000 | -2.62*** | |
| Exchange Count | 19,893 | 1.237 | 1.000 | 0.711 | 1.000 | 1.000 | 13,360 | 1.294 | 1.000 | 0.833 | 1.000 | 1.000 | -6.73*** | 16.64*** |
| U.S. Cross-listed | 19,893 | 0.032 | 0.000 | 0.176 | 0.000 | 0.000 | 13,360 | 0.018 | 0.000 | 0.132 | 0.000 | 0.000 | 7.99*** | |
| Robustness Variables | | | | | | | | | | | | | | |
| EBIT/MV | 24,769 | 0.097 | 0.103 | 0.121 | 0.026 | 0.177 | 16,492 | 0.090 | 0.099 | 0.111 | 0.030 | 0.158 | 5.94*** | 13.28*** |
| NI/SALE | 24,991 | 0.054 | 0.042 | 0.084 | 0.011 | 0.089 | 15,881 | 0.048 | 0.040 | 0.081 | 0.007 | 0.084 | 7.06*** | 15.99*** |
| NI/TA | 27,924 | 0.038 | 0.035 | 0.077 | 0.005 | 0.075 | 17,395 | 0.035 | 0.034 | 0.073 | 0.002 | 0.069 | 3.44*** | 11.93*** |
| Mod. Jones (abs) | 21,186 | 0.117 | 0.065 | 0.969 | 0.029 | 0.129 | 13,873 | 0.098 | 0.056 | 0.202 | 0.024 | 0.111 | 2.27** | 83.69*** |
| Mod. D&D (abs) | 17,731 | 0.060 | 0.036 | 0.105 | 0.016 | 0.072 | 9,891 | 0.052 | 0.032 | 0.084 | 0.015 | 0.063 | 6.16*** | 40.01*** |
| Agg. AEM (abs) | 17,731 | -0.040 | -0.115 | 0.318 | -0.177 | -0.002 | 9,891 | -0.061 | -0.126 | 0.278 | -0.185 | -0.027 | 5.60*** | 35.39*** |
| Benchmark DA (abs) | 17,825 | 0.155 | 0.080 | 0.700 | 0.034 | 0.163 | 12,783 | 0.199 | 0.069 | 6.220 | 0.029 | 0.143 | -0.95 | 80.89*** |
| REM1 (abs) | 14,921 | 0.238 | 0.146 | 0.359 | 0.065 | 0.284 | 9,221 | 0.271 | 0.153 | 0.593 | 0.067 | 0.311 | -5.46*** | 7.81*** |
| REM2 (abs) | 15,326 | 0.185 | 0.117 | 0.280 | 0.053 | 0.219 | 10,749 | 0.200 | 0.119 | 0.371 | 0.054 | 0.231 | -3.62*** | 0.34 |
| Agg. REM (abs) | 11,724 | -0.044 | -0.096 | 0.201 | -0.143 | -0.015 | 7,107 | -0.033 | -0.095 | 0.293 | -0.144 | -0.006 | -3.13*** | 0.33 |

Note: Table 4 presents the descriptive statistics in both the pre- and post-IFRS adoption periods. All variable definitions are described in Appendix A. All non-ratio variables are winsorized annually at the 2nd and 98th percentiles. The mean comparison (t-stat) and median comparison ($\chi^2$) are included in the last two columns. The difference in means is calculated using robust standard errors. ***, **, and * represent significance levels of 10, 5, and 1%, respectively.

Table 5: Spearman and Pearson Correlation Table

| | | I | II | III | IV | V | VI | VII | VIII | IX | X |
|---|---|---|---|---|---|---|---|---|---|---|---|
| I | IFRS | 1 | -0.0603* | 0.001 | 0.0148* | 0.0169* | 0.0068 | -0.0148 | -0.0623* | -0.0609* | 0.0521* |
| II | NI/MV | -0.0391* | 1 | 0.0128* | 0.1891* | 0.1707* | -0.0017 | -0.0082 | -0.0418* | -0.0382* | 0.1976* |
| III | Mod. Jones | 0.0029 | 0.0710* | 1 | 0.4128* | 0.6865* | 0.0308* | 0.0751* | 0.4127* | 0.3540* | 0.0013 |
| IV | Mod. D&D | 0.0193 | 0.2976* | 0.5369* | 1 | 0.9457* | 0.0903* | 0.0111 | 0.1415* | 0.1338* | -0.0226* |
| V | Agg. AEM | 0.0136 | 0.2443* | 0.7652* | 0.9318* | 1 | 0.1384* | 0.0374* | 0.2695* | 0.2451* | -0.0173* |
| VI | Benchmark DA | -0.0501* | 0.0714* | 0.4757* | 0.1880* | 0.3064* | 1 | -0.0087 | 0.0179* | 0.1044* | -0.0048 |
| VII | REM1 | -0.0730* | -0.0453* | 0.0565* | -0.0099 | 0.0135 | -0.0169 | 1 | 0.5760* | 0.8035* | 0.009 |
| VIII | REM2 | -0.0782* | -0.0970* | 0.4234* | 0.1575* | 0.2671* | 0.2352* | 0.7055* | 1 | 0.9495* | 0.0310* |
| IX | Agg. REM | -0.0780* | -0.0831* | 0.3251* | 0.1096* | 0.1977* | 0.1692* | 0.8516* | 0.9590* | 1 | 0.0326* |
| X | Size | 0.1013* | 0.0317* | -0.0117 | -0.0670* | -0.0519* | -0.0173 | -0.0607* | -0.0358* | -0.0332* | 1 |
| XI | Leverage | 0.1033* | -0.1117* | -0.0167 | -0.0959* | -0.0765* | -0.0126 | -0.0392* | 0.0166 | 0.0059 | 0.4813* |
| XII | Sales Growth | -0.0836* | 0.1782* | 0.0511* | 0.0290* | 0.0368* | 0.1802* | -0.0226* | -0.0283* | -0.0240* | 0.0625* |
| XIII | Op. Cash Flows | -0.0247* | 0.2737* | -0.6233* | -0.2367* | -0.3905* | -0.5188* | -0.1857* | -0.5206* | -0.4365* | 0.0614* |
| XIV | Debt Issuance | -0.0728* | 0.0520* | 0.0428* | 0.0241* | 0.0296* | 0.1371* | 0.0145 | -0.0053 | 0.0015 | 0.0650* |
| XV | Equity Issuance | -0.0975* | 0.0364* | 0.0683* | 0.0467* | 0.0580* | 0.2051* | -0.0132 | 0.0277* | 0.02 | 0.0108 |
| XVI | Turnover | -0.0287* | 0.2402* | 0.0434* | 0.0588* | 0.0592* | 0.0941* | -0.0272* | 0.0023 | -0.0106 | -0.1349* |
| XVII | Closely Held | 0.0965* | 0.0500* | 0.0020 | 0.0117 | 0.0087 | 0.0112 | -0.0731* | -0.0240* | -0.0435* | 0.1442* |
| XVIII | Big 4 | 0.0234* | 0.0747* | -0.0422* | -0.0323* | -0.0384* | -0.016 | -0.1277* | -0.1045* | -0.1129* | 0.4207* |
| XIX | Exchange Count | 0.0537* | -0.0079 | -0.0156 | -0.0121 | -0.0129 | -0.0109 | -0.0929* | -0.0806* | -0.0817* | 0.3200* |
| XX | U.S. Cross-listed | -0.0236* | -0.0085 | -0.016 | -0.0229* | -0.0203 | -0.0021 | 0.0120 | -0.0383* | -0.0123 | 0.1667* |
| | | XI | XII | XIII | XIV | XV | XVI | XVII | XVIII | XIX | XX |
| I | IFRS | 0.0343* | -0.0052 | 0.0014 | -0.0088 | 0.0064 | -0.0409* | 0.0074 | -0.0411* | -0.0019 | -0.0604* |
| II | NI/MV | -0.0159* | 0.0003 | 0.0866* | -0.0016 | -0.0028 | 0.1931* | 0.0181* | 0.0969* | -0.0123* | -0.0051 |
| III | Mod. Jones | -0.009 | -0.0507* | -0.9366* | 0.1088* | 0.0002 | 0.4437* | -0.0003 | -0.0016 | 0.0042 | 0.0253* |
| IV | Mod. D&D | -0.0392* | 0.0042 | -0.1773* | 0.0192* | 0.0176* | -0.002 | 0.0002 | -0.0137 | -0.0091 | -0.0125 |
| V | Agg. AEM | -0.0337* | 0.0160* | -0.3176* | 0.0268* | 0.0141 | 0.0215* | 0.0003 | -0.0156* | -0.0092 | -0.0143 |
| VI | Benchmark DA | 0.0074 | 0.6086* | -0.0498* | 0.0124 | 0.0011 | 0.0017 | 0.0002 | -0.0113 | -0.0032 | -0.0012 |
| VII | REM1 | -0.014 | 0.0011 | -0.0644* | 0.0129 | 0.0004 | 0.0235* | -0.0055 | -0.0075 | -0.0037 | 0.0023 |
| VIII | REM2 | 0.0328* | -0.0355* | -0.4967* | -0.0246* | 0.0008 | 0.0372* | 0.0011 | -0.0427* | -0.0209* | 0.0042 |
| IX | Agg. REM | 0.0297* | -0.0336* | -0.4190* | 0.0101 | 0.0077 | 0.1002* | -0.0006 | -0.0576* | -0.0255* | 0.0024 |
| X | Size | 0.3024* | 0.0035 | 0.0534* | 0.0016 | 0.0043 | -0.0051 | 0.011 | 0.3976* | 0.2684* | 0.1711* |
| XI | Leverage | 1 | 0.009 | 0.0032 | -0.0056 | 0.0118* | -0.0705* | 0.0119* | 0.1514* | 0.0862* | 0.0704* |
| XII | Sales Growth | 0.0484* | 1 | -0.0158* | 0.3340* | 0.0024 | 0.1934* | -0.0003 | -0.0073 | -0.0022 | -0.0008 |
| XIII | Op. Cash Flows | -0.0373* | -0.0748* | 1 | -0.1213* | -0.0035 | -0.3920* | 0.0024 | 0.0306* | 0.004 | -0.0226* |
| XIV | Debt Issuance | 0.0053 | 0.5332* | -0.0863* | 1 | 0.0024 | 0.2073* | -0.0018 | -0.002 | -0.0069 | 0.0022 |
| XV | Equity Issuance | 0.0434* | 0.5227* | -0.1702* | 0.3553* | 1 | -0.0013 | -0.0022 | 0.0027 | -0.0013 | 0.0001 |
| XVI | Turnover | -0.1638* | 0.3528* | 0.0187 | 0.2453* | 0.2061* | 1 | 0.0021 | 0.0311* | -0.0473* | -0.0561* |
| XVII | Closely Held | 0.0731* | -0.0143 | 0.0501* | -0.0241* | -0.0068 | -0.0260* | 1 | 0.0097 | -0.0008 | -0.0031 |
| XVIII | Big 4 | 0.2179* | 0.0212 | 0.1338* | 0.0091 | -0.0198 | 0.0271* | 0.1499* | 1 | 0.1226* | 0.0843* |
| XIX | Exchange Count | 0.1875* | -0.0256* | 0.0580* | -0.0178 | 0.0102 | -0.0739* | 0.0340* | 0.1397* | 1 | 0.2797* |
| XX | U.S. Cross-listed | 0.1033* | -0.0014 | 0.0314* | 0.0014 | 0.0152 | -0.0922* | -0.0389* | 0.0690* | 0.2472* | 1 |

Note: Table 5 displays the correlation matrix between the dependent variables, independent variables, and firm control variables. All variables definitions are found in Appendix A. All non-ratio variables are winsorized annually at the 2nd and 98th percentiles. Below the diagonal are the Spearman ranked correlations and above the diagonal are the Pearson correlations. A star (*) indicates significant correlations at the 1% level.

Table 6: Signed Earnings Management Measures around Distribution Thresholds

Panel A: Small Profit Firms Compared to Small Loss Firms

| | Pre-IFRS Adoption | | | | | Post-IFRS Adoption | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| EM Measures | N | Small Loss | N | Small Profit | t-stat | N | Small Loss | N | Small Profit | t-stat |
| Mod. Jones | 208 | 0.038 | 482 | -0.010 | -1.83* | 115 | 0.014 | 246 | -0.010 | -1.26 |
| Mod. D&D | 172 | -0.005 | 378 | -0.007 | -0.26 | 79 | -0.001 | 171 | -0.001 | -0.02 |
| Agg. AEM | 172 | -0.003 | 378 | -0.025 | -0.87 | 79 | -0.010 | 171 | -0.017 | -0.19 |
| Benchmark DA | 168 | 0.035 | 381 | 0.000 | -1.16 | 101 | -0.038 | 220 | 0.005 | 1.00 |
| REM1 | 123 | -0.027 | 329 | 0.054 | 1.98** | 95 | -0.061 | 163 | -0.011 | 0.69 |
| REM2 | 132 | 0.007 | 329 | 0.017 | 0.29 | 100 | -0.067 | 184 | -0.048 | 0.40 |
| Agg. REM | 93 | 0.016 | 250 | 0.047 | 1.02 | 73 | -0.037 | 126 | 0.003 | 0.85 |

Panel B: Small Profit Firms Compared to All Other Firms

| | Pre-IFRS Adoption | | | | | Post-IFRS Adoption | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| EM Measures | N | Small Profit | N | All Others | t-stat | N | Small Profit | N | All Others | t-stat |
| Mod. Jones | 482 | -0.010 | 30,812 | 0.007 | 1.73* | 246 | -0.010 | 15,606 | 0.005 | 1.50 |
| Mod. D&D | 378 | -0.007 | 25,491 | -0.001 | 1.32 | 171 | -0.001 | 10,946 | 0.004 | 0.67 |
| Agg. AEM | 378 | -0.025 | 25,491 | -0.007 | 1.29 | 171 | -0.017 | 10,946 | 0.008 | 1.32 |
| Benchmark DA | 381 | 0.000 | 25,714 | 0.111 | 2.19** | 220 | 0.005 | 14,286 | 0.069 | 1.27 |
| REM1 | 329 | 0.054 | 20,066 | 0.020 | -0.95 | 163 | -0.011 | 10,902 | -0.055 | -1.42 |
| REM2 | 329 | 0.017 | 20,731 | -0.005 | -0.99 | 184 | -0.048 | 12,318 | -0.050 | -0.09 |
| Agg. REM | 250 | 0.047 | 15,623 | 0.021 | -1.25 | 126 | 0.003 | 8,194 | -0.014 | -0.98 |

Panel C: Small Loss Firms Compared to All Other Firms

| | Pre-IFRS Adoption | | | | | Post-IFRS Adoption | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| EM Measures | N | Small Loss | N | All Others | t-stat | N | Small Loss | N | All Others | t-stat |
| Mod. Jones | 208 | 0.038 | 31,086 | 0.007 | -1.22 | 115 | 0.014 | 15,737 | 0.005 | -0.56 |
| Mod. D&D | 172 | -0.005 | 25,697 | -0.001 | 0.54 | 79 | -0.001 | 11,038 | 0.004 | 0.39 |
| Agg. AEM | 172 | -0.003 | 25,697 | -0.007 | -0.19 | 79 | -0.010 | 11,038 | 0.008 | 0.54 |
| Benchmark DA | 168 | 0.035 | 25,927 | 0.110 | 1.32 | 101 | -0.038 | 14,405 | 0.069 | 1.66* |
| REM1 | 123 | -0.027 | 20,272 | 0.021 | 1.37 | 95 | -0.061 | 10,970 | -0.054 | 0.10 |
| REM2 | 132 | 0.007 | 20,928 | -0.005 | -0.48 | 100 | -0.067 | 12,402 | -0.050 | 0.40 |
| Agg. REM | 93 | 0.016 | 15,780 | 0.021 | 0.22 | 73 | -0.037 | 8,247 | -0.013 | 0.54 |

Note: Table 6 displays the comparison of signed levels of accrual and real earnings management measures across different subsections of small profit firms, small loss firms, and all other firms using the full sample of observations. All variables are defined in Appendix A and non-ratio variables are winsorized annually at the 2nd and 98 th percentiles. The small profit and small loss categories are defined as scaled earnings in the intervals [0, 0.005) and (-0.005, 0], respectively. The difference in means is calculated using robust standard errors. ***, **, and * represent significance levels of 10, 5, and 1%, respectively.

Table 7: Probability of Benchmark Beating Regression Results

$$Profit_{it} = \beta_0 + \beta_1 IFRS_{it} + \beta_2 EM_{it} + \beta_3 IFRS_{it} * EM_{it} + \beta_4 Size_{it} + \beta_5 Leverage_{it} + \beta_6 Sales\ Growth_{it} + \beta_7 OCF_{it} + \beta_8 Debt\ Issue_{it} + \beta_9 Equity\ Issue_{it} + \beta_{10} Turnover_{it} + \beta_{11} Closely\ Held_{it} + \beta_{12} Big4_i + \beta_{13} Exchange\ Count_i + \beta_{14} U.S.\ Cross - listed_i + fixed\ effects + \epsilon_{it}$$

| | | Profit = [0 - 0.005) | | | | | |
|---|---|---|---|---|---|---|---|
| | | Total Sample | | | Constant Sample | | |
| | +/- | (1) | (2) | (3) | (4) | (5) | (6) |
| Intercept | | -1.977*** | -1.840*** | -2.311*** | -1.456*** | -1.336*** | -1.365*** |
| | | (-8.97) | (-7.00) | (-7.08) | (-4.11) | (-3.24) | (-2.63) |
| IFRS | - | -0.143** | -0.095 | -0.129 | -0.094 | -0.110 | -0.021 |
| | | (-2.37) | (-1.30) | (1.53) | (-1.09) | (-1.08) | (-0.17) |
| Agg. AEM | + | | -0.088 | | | -0.256 | |
| | | | (-1.13) | | | (-1.08) | |
| IFRS x Agg. AEM | - | | -0.028 | | | -1.036*** | |
| | | | (-0.16) | | | (-2.55) | |
| Agg. REM | + | | | 0.371* | | | 0.577 |
| | | | | (1.76) | | | (1.31) |
| IFRS x Agg. REM | - | | | -0.195 | | | -0.401 |
| | | | | (-0.79) | | | (-0.70) |
| Size | - | -0.068*** | -0.088*** | -0.048* | -0.097*** | -0.128*** | -0.111*** |
| | | (-3.87) | (-4.21) | (-1.84) | (-3.40) | (-3.87) | (-2.57) |
| Leverage | + | -0.013 | 0.041 | -0.002 | 0.037 | 0.014 | 0.065 |
| | | (-0.13) | (0.24) | (-0.02) | (0.14) | (0.05) | (0.19) |
| Sales Growth | + | -0.004 | -0.014 | -0.008 | -0.005 | -0.001 | -0.002 |
| | | (-0.05) | (-0.58) | (-0.38) | (-0.42) | (-0.10) | (-0.15) |
| Operating Cash Flow | - | -0.027 | -0.148 | 0.079 | -0.211* | -0.494*** | -0.148 |
| | | (0.30) | (-1.35) | (0.49) | (-1.84) | (-3.38) | (-0.55) |
| Debt Issuance | + | -0.013 | -0.051 | -0.079 | -0.008 | -0.165* | -0.038 |
| | | (-0.50) | (-1.12) | (-1.37) | (-0.17) | (-1.79) | (-0.52) |
| Equity Issuance | + | -0.006 | -0.080 | -0.163* | -0.005 | 0.019 | -0.002 |
| | | (-0.43) | (-1.34) | (-1.83) | (-0.15) | (0.54) | (-0.07) |
| Turnover | - | -0.323*** | -0.348*** | -0.367*** | -0.411*** | -0.418*** | -0.547*** |
| | | (-7.03) | (-6.26) | (-5.36) | (-5.27) | (-4.55) | (-4.53) |
| Closely Held Shares | + | -0.029 | -0.014 | -0.064 | 0.011 | 0.048 | 0.049 |
| | | (-0.51) | (-0.19) | (-0.73) | (0.16) | (0.64) | (0.56) |
| Big 4 | - | -0.015 | 0.015 | -0.060 | -0.104 | -0.022 | -0.263* |
| | | (-0.22) | (0.18) | (-0.64) | (-0.92) | (-0.16) | (-1.73) |
| Exchange Count | - | -0.004 | 0.028 | 0.079 | 0.040 | 0.114* | 0.219** |
| | | (-0.09) | (0.60) | (1.23) | (0.67) | (1.83) | (2.38) |
| U.S Cross-listed | - | -0.217 | -0.057 | -0.214 | 0.268 | 0.445 | 0.260 |
| | | (-0.96) | (-0.23) | (-0.55) | (0.88) | (1.31) | (0.52) |
| No. Benchmark Beaters | | 1,460 | 1,075 | 762 | 588 | 438 | 295 |
| Fixed Effects | | C, I | C, I | C, I | C, I | C, I | C, I |
| Pseudo $R^2$ | | 0.067 | 0.129 | 0.390 | 0.077 | 0.113 | 0.133 |
| $\chi^2$ | | 70.0*** | 54.10*** | 38.19*** | 28.03*** | 21.32*** | 3.05** |
| No. Total Observations | | 44,378 | 34,067 | 22,684 | 16,952 | 13,675 | 8,128 |

Note: Table 7 displays the logit regression results regarding the probability of a firm observation appearing in the interval direction above the zero earnings threshold. All model specifications use the dependent binary variable Pro t that equals one if the scaled earnings value falls in the interval directly above zero, or [0-0.005). Columns 1-3 use the total sample of firm-year observations from 1997-2013, whereas Columns 4-6 use the constant sample as described in Figure 2. The variable definitions are found in Appendix A and non-ratio variables are winsorized annually at the 2nd and 98th percentiles. EM is a placeholder variable for either the Agg. AEM or Agg. REM measures of accrual or real earnings management, respectively. Industry classifications are derived from the Datastream industry codes. The t-statistics are in parentheses and are calculated using robust standard errors. ***, **, and * represent significance levels of 10, 5, and 1%, respectively.

Appendix A: Definitions of Key Variables

| | |
|---|---|
| **Main Test Variables** | |
| NI/MV | Net income (WC01551) scaled by lagged market value of equity (WC08002) |
| IFRS | A binary variable equal to one in periods on and after the mandatory IFRS adoption date and zero otherwise |
| **Accounting Quality Variables** | |
| Mod. Jones | Modified Jones Model (Kothari et al., 2005)<br>$\mathrm{TOTACC_{it}} = \alpha_1 \frac{1}{\mathrm{TA_{i,t-1}}} + \alpha_2 \frac{\Delta(\mathrm{Rev_{it}} - \mathrm{REC_{it}})}{\mathrm{TA_{i,t-1}}} + \alpha_3 \frac{\mathrm{PPE_{i,t}}}{\mathrm{TA_{i,t-1}}} + \alpha_4 \mathrm{ROA_{it}} + \epsilon_{\mathrm{it}}$<br>*where*<br>$TOTACC_{it} = \frac{\Delta CA_{it} - \Delta CL_{it} - \Delta CASH_{it} + \Delta STDEBT_{it} - DEP_{it}}{TA_{i,t-1}}$<br>The regression is run across each industry-year group with at least 15 observations and includes country control variables (lagged GDP growth and inflation) |
| Mod. D&D | Modified Dechow & Dichev (2002) Model<br>$\mathrm{TOTACC_{it}} = \alpha_0 + \alpha_1 \frac{\mathrm{OCF_{i,t-1}}}{\mathrm{TA_{i,t-1}}} + \alpha_2 \frac{\mathrm{OCF_{i,t}}}{\mathrm{TA_{i,t-1}}} + \alpha_3 \frac{\mathrm{OCF_{i,t+1}}}{\mathrm{TA_{i,t-1}}} + \alpha_4 \frac{\Delta(\mathrm{Rev_{it}} - \mathrm{REC_{it}})}{\mathrm{TA_{i,t-1}}} + \alpha_5 \frac{\mathrm{PPE_{i,t}}}{\mathrm{TA_{i,t-1}}} + \epsilon_{\mathrm{it}}$<br>The regression is run across each industry-year group with at least 15 observations and includes country control variables (lagged GDP growth and inflation) |
| Agg. AEM | Standardized and aggregated summary variable of Mod. Jones and Mod. D&D calculated using the method of Biddle et al. (2009) |
| Benchmark DA | Benchmark Discretionary Accrual Model (DeFond & Park, 2001)<br>$DISACC_{it} = TOTACC_{it} + NDACC_{it}$<br>*where*<br>$NDACC_{it} = \frac{\left[REV_{it} x \frac{CACC_{i,t-1}}{REV_{i,t-1}}\right] - \left[PPE_{it} x \frac{DEP_{i,t-1}}{PPE_{i,t-1}}\right]}{TA_{i,t-1}}$<br>$CACC_{it} = \Delta[CA_{it} - CASH_{it} - TS_{it}] - \Delta[CL_{it} - STDEBT_{it} - DIV_{it}]$ |

| | |
|---|---|
| REM1 | Sum of abnormal discretionary expenses (multiplied by -1) and abnormal production costs<br><br>$\frac{DISC\ EXP_{it}}{TA_{i,t-1}} = \alpha_0 + \alpha_1 \frac{Sales_{i,t-1}}{TA_{i,t-1}} + \epsilon_{it}$<br><br>$\frac{PROD_{it}}{TA_{i,t-1}} = \alpha_0 + \alpha_1 \frac{Sales_{it}}{TA_{i,t-1}} + \alpha_2 \frac{\Delta Sales_{it}}{TA_{i,t-1}} + \alpha_3 \frac{Sales_{i,t-1}}{TA_{i,t-1}} + \epsilon_{it}$<br><br>where $DISC\ EXP$ is measured as the sum of research and development expense (WC01201) and selling, general, and administrative expenses (WC01101) and $PROD$ is measured as the sum of cost of goods sold (WC01051) and inventory (WC02101). All variables are scaled by lagged total assets (WC02999)<br><br>The regression is run across each industry-year group with at least 15 observations and includes country control variables (lagged GDP growth and inflation) |
| REM2 | Sum of abnormal discretionary expenses and abnormal operating cash flows (multiplied by -1)<br><br>Note: abnormal discretionary expenses are calculated the same as in REM1 and OCF is calculated the same as the firm control variable (see below)<br><br>$\frac{\mathrm{OCF_{it}}}{\mathrm{TA_{i,t-1}}} = \alpha_0 + \alpha_1 \frac{\mathrm{Sales_{it}}}{\mathrm{TA_{i,t-1}}} + \alpha_2 \frac{\mathrm{\Delta Sales_{it}}}{\mathrm{TA_{i,t-1}}} + \epsilon_{\mathrm{it}}$<br><br>All variables are scaled by lagged total assets (WC02999)<br><br>The regression is run across each industry-year group with at least 15 observations and includes country control variables (lagged GDP growth and inflation) |
| Agg. REM | Standardized and aggregated summary variable of REM1 and REM2 calculated using the method of Biddle et al. (2009) |
| **Firm Control Variables** | |
| Size | Natural logarithm of total assets (WC02999) |
| Leverage | Long-term debt (WC03251) divided by the sum of total liabilities (WC03351) and shareholders' equity (WC03995) |
| Sales Growth | The difference between current and prior period sales (WC01001) divided by sales of the prior period |
| Op. Cash Flows | Operating cash flows are calculated indirectly as: $Net\ Income - TOTACC$, divided by total assets (WC02999) |
| Debt Issuance | The difference between current and prior period current liabilities (WC03101) divided by the current liabilities of the prior period |
| Equity Issuance | The difference between current and prior period common stock (WC03480) divided by the common stock of the prior period |
| Turnover | Sales (WC01001) divided by lagged total assets (WC02999) |

| | |
|---|---|
| Closely Held Shares | The percentage of total common shares outstanding (WC05301) that is considered "closely held" by insiders and major shareholders (WC05475) |
| Big 4 | A binary variable equal to one if the firm employs PricewaterhouseCoopers (PwC), Deloitte, Ernst & Young (E&Y), or KPMG (WC07800) |
| Exchange Count | A static count variable of the number of stock exchanges on which the firm is listed (WC05427) |
| U.S. Cross-listed | A binary variable equal to one if the firm is listed on a U.S. stock exchange as coded by NYSE, BSE, CIN, NSE, PWB, NAS, ASE, or PCS (WC05427) |
| **Robustness Variables** | |
| EBIT/MV | Earnings before interest and taxes (WC18191) scaled by lagged market value of equity (WC08002) |
| NI/SALE | Net income (WC01551) scaled by lagged sales (WC01001) |
| NI/TA | Net income (WC01551) scaled by lagged total assets (WC02999) |
| Absolutes | Several earnings management variables are also calculated in absolute terms, which are signified with an "(abs)" distinction |