

Does Voluntary Integrated Reporting Affect Financial Reporting Quality?

Abstract:

We examine whether voluntary adopters of Integrated Reporting experience a change in financial reporting quality after adoption, compared to a period before adoption and compared to a control sample of non-adopters. Using a sample of European voluntary adopters, we find evidence that adopting companies manage their total earnings more, driven by increased real earnings management. Additional analyses employing various control samples further support this finding. Firms with higher reliance on equity financing are especially susceptible to a deterioration in earnings quality through real earnings management after adopting integrated reporting.

Keywords: integrated reporting, voluntary disclosure, non-financial reporting, financial reporting quality, earnings management

JEL Classification: D82; E61; M48.

Does Voluntary Integrated Reporting affect Financial Reporting Quality?

Highlights:

- Firms that voluntarily adopt integrated reporting in Europe register less accruals earnings management but more real earnings management, leading to a net increase in total manipulation.
- Results are robust to the use of different samples, such as the group of firms operating in the industry with the highest percentage of adopters to non-adopters as well as a sample that compares adopters to a control group of companies with similar levels of ex-ante earnings manipulation, and an analysis of adopters in isolation.
- Capital market characteristics and firm incentives influence this relation: adopters in markets with high reliance on equity financing and adopters inclined to use equity financing register increased levels of total earnings manipulations, relative to their peers who do not.

1. Introduction

With rapid developments in the sustainability accounting arena, including the newly proposed standards issued by the fledgling International Sustainability Standards Board (ISSB), there is a new reporting landscape emerging worldwide. As of 6 April 2022, the United Kingdom mandated that companies must align disclosures with the guidelines of the Task Force on Climate-related Financial Disclosure (TCDF). Correspondingly, the US Securities and Exchange Commission (SEC) has recently proposed similar rules around climate-related disclosures. Yet these developments have generated opposition, even from within the SEC, with critics arguing that the rules remove shareholder primacy and jeopardize the quality of financial disclosures (Pierce, 2022). It is a challenge for accounting researchers to examine the interplay of sustainability disclosures and financial information in capital markets. In this paper, we investigate how financial reporting quality has changed for voluntary adopters of Integrated Reporting (IR).

In the last few decades, annual reports have increased in length, with an average six times increase in the number of words from 1995 to 2017 (Cohen et al., 2020). Voluntary disclosures, such as pro forma earnings or information about sustainability and corporate social responsibility, have significantly increased, to the point where almost no public companies provide only the information mandated by IFRS or GAAP in their annual reports. However, information overload brings its own problems, as investors may miss significant information in annual reports. Cohen et al. (2020) show that investors are inattentive to changes to text in annual reports from one year to the next that predict upcoming earnings, profitability, news announcements, and even future bankruptcies. The key to better communication could be concise disclosures that explain clearly the interdependencies between strategy, governance, operations, and financial and nonfinancial performance. IR is an initiative developed by the International Integrated Reporting Council (IIRC) that aims to accomplish this goal, and it is the focus of this investigation.

Our focus on IR is motivated by its role in shaping future reporting standards. The IIRC now forms part of the Value Reporting Foundation (VRF) and is due to be consolidated into the ISSB by June 2022. The ISSB will provide a streamlined framework, expected to be adopted globally, possibly on a mandatory basis, to ensure transparency of the impacts of business practices (VRF, 2022). Its initial proposals rely heavily on the Sustainability Accounting Standards Board's (SASB) industry-specific sustainability standards and the TCFD's climate-change-related standards. IR will be leveraged to achieve integration between financial and sustainability reporting in the new ISSB framework. How close the final ISSB framework is to that of IR remains to be seen. Yet the VRF is confident it will have a significant role to play (VRF, 2022).

Early evidence on the consequences of IR adoption show that firms that provide integrated reports attract more long-term oriented investors (Serafeim, 2015) and that a better quality report is associated with improved liquidity and future operating cash flows (Barth et al., 2017). This early evidence could be interpreted as IR reducing information asymmetries in capital markets, perhaps because it reduces information overload, which can cause inattentiveness among investors. However, as the IR framework requires businesses to disclose their use and dependence on six capitals (financial,

manufactured, intellectual, human, social and relationship, and natural), the practice of IR may affect firms' real decisions regarding the allocation of resources among these six capitals or might simply affect market participants' assessment of the firm's future cash flows. These internal decisions should be reflected in firms' financial reporting. But it is not clear whether IR adoption *improves* the quality of the financial information or *supplements* it with nonfinancial data. This paper aims to illuminate this issue by studying whether voluntary adopters of IR exhibit a change in the quality of their financial reporting.

Assuming that prior evidence is consistent with a reduction in agency conflicts following the adoption of IR, studying changes to financial reporting quality by IR adopters can lead to the following contributions. First, it can illuminate a potential substitution between comprehensive disclosure and financial reporting quality. We show that the development of the new set of disclosure standards needs to consider implications for financial reporting quality, something which policymakers, such as ISSB, should be attentive to. Second, we contribute to understanding of how IR adoption affects firms exposed to different market conditions. Adherence to the IR framework is mandatory only in South Africa, though many companies around the world have already adopted the framework voluntarily. We focus on European firms, as they comprise the bulk of adopters and use International Financial Reporting Standards (IFRS). By exploring a setting where firms from different European countries reach a similar decision to adopt IR, we can distinguish how market conditions—such as access to equity—influence firms' financial reporting incentives under IR.

The study proceeds as follows. Section 2 presents the background and develops the research question. Section 3 presents the sample and the metrics employed for our analysis. Section 4 explains our empirical approach and results. Section 5 presents a set of robustness tests, and section 6 concludes.

2. Background and hypothesis development

2.1. IR and earnings quality

Our focus on earnings quality is rooted in its importance for investor decision-making. Earnings quality can reduce information asymmetry in capital markets by lowering adverse selection, thus improving

liquidity and lowering cost of capital (Bhattacharya et al., 2013). Financial reporting quality is positively associated with corporate investment efficiency (Biddle, 2009; Biddle and Hilary, 2006; Goodman et al., 2014) and reductions of under- and over-investment (Biddle et al., 2009). Further, Goodman et al., (2014) find that the accuracy of managers' externally reported earnings forecasts indicates the quality of their capital investments. While there is a lack of causal evidence between reporting quality and investment efficiency (Leuz and Wysocki, 2016), the mere association means that the quality of a firm's external reporting can be used to infer managerial investment ability. Therefore it makes sense that investors are less likely to commit funds to firms with poorer earnings quality, and, to the extent that investors can infer the quality of earnings, they would be expected to withdraw from firms with poor transparency. Firms that commit to increased quality can thus enjoy superior access to capital markets.

Nonfinancial information is also relevant for decision-making (Bonsall and Miller, 2017), but narrative information might be overlooked when presented in a separate report (Hirshleifer and Teoh, 2003). IR aims to overcome this issue by combining financial and nonfinancial disclosures into one single report and to improve the quality of information to enable a more efficient allocation of capital (IIRC, 2021). By requiring firms to report on value creation in the long, medium and short term, an integrated report could inform investors about current and upcoming firm strategies that will eventually bring value, to a greater extent than what investors can obtain only from financial statements.

The very act of disclosing the firm's resource allocation among its multiple capitals might induce changes to this allocation. Integrated thinking aims to transform the firm internally, in a way that optimizes internal decision-making and long-term firm value. Work by Stubbs and Higgins (2014) finds that early adopters use IR as an incremental change to reporting, with two different strategies in adoption. Some organizations used IR to generate internal change, while others believed IR allowed them to better communicate their strategy and plans to investors. This reveals that companies could employ IR in different ways and leads to a follow-up question regarding the interplay between financial and nonfinancial information: does the new reporting style *improve* the quality of the financial

information in annual reports, or does it *supplement* financial information with nonfinancial data that helps investors?

To answer this empirical question, we analyze whether earnings quality changes after IR adoption. Aligned with prior research, we interpret financial reporting quality as the absence of earnings management, i.e., earnings that are void of attempts to mislead some stakeholders through “reporting methods and estimates that do not accurately reflect their firm’s underlying economics” (Healy and Wahlen, 1999, p. 366). Both the absence of accruals management and of real transactions manipulation determine earnings quality (Doukakis, 2014).

Various channels might lead to an improvement in earnings quality after adoption. The IIRC emphasizes the cycle of integrated reporting and integrated *thinking* to align capital allocation and sustainable corporate practices,¹ likely requiring strategy and finance teams to better understand and disclose nonfinancial information. Given the association between financial reporting quality and the quality of capital investments (e.g. Biddle and Hilary, 2006; Biddle, 2009; Goodman, et al., 2014), engaging in integrated thinking might lead to greater investment capabilities and less earnings management. Further, if IR helps firms communicate their plans and prospects, they may be less susceptible to short-term pressures detrimental to long-term value, which would be reflected in managerial myopia and low reporting quality (Zhao et al., 2012). Finally, integrated thinking may also induce more socially responsibility within the firm. Kim et al. (2012) find that firms that exhibit corporate social responsibility (CSR) are less likely to manage earnings, and Gao and Zhang (2015) find that smooth earnings from companies with high CSR scores are associated with higher firm value than smooth earnings of less socially responsible firms that are more to manage earnings. If the reason behind their findings is indeed that earnings of socially responsible firms are of higher quality and IR can induce this type of responsibility in adopters, then one would expect IR adoption to lead to lower earnings management. Following this line of thinking, documenting an improvement in earnings quality

¹ The IIRC defines integrated thinking as follows: “The active consideration by an organization of the relationships between its various operating and functional units and the capitals that the organization uses or affects. Integrated thinking leads to integrated decision-making and actions that consider the creation, preservation or erosion of value over the short, medium and long term” (IIRC, 2021b p. 53).

could indicate that IR generates synergies between standard financial reporting and the new type of communication.

Conversely, IR adoption may hurt earnings quality. Disclosure is costly (Verrecchia, 2001). To achieve an equilibrium, firms will design voluntary disclosures in a way that optimizes information to investors, and this may imply some trade-off between types of disclosures. Since earnings reporting is mandated, if firms expect greater benefits from communicating the type of information in an integrated report, this might mean that (at least in the short term) some costs are absorbed by the rest of the disclosures. Research has identified other settings that lead to similar trade-offs. For instance, following the Sarbanes-Oxley Act of 2002, firms absorbed the costs of mandated lower accruals management through increased real earnings manipulation (Cohen et al., 2008). Similarly, extended reporting focused on additional “capitals” and directed to a multitude of stakeholders may undermine the focus on financial capital and investors (Pierce, 2022).

Finally, IR may have no effect on earnings quality. Voluntary adopters may apply a cosmetic change where the integration of financial and sustainability information is merely a change in presentation, that is, so-called window dressing. We state our central hypothesis in its null form as follows.

H1₀: Earnings management is unaffected by the adoption of Integrated Reporting.

2.2. Country differences

The level and type of earnings management differ among firms in different countries. For example, Burgstahler et al. (2006) report that strong legal systems are associated with lower levels of earnings management. However, Francis et al. (2016) show that the strength of legal environment influences the choice of an earnings management *technique*, with stronger legal systems being associated with less accrual earnings management and more real earnings management. We expect that the level and type of earnings management varies with these factors and can largely be captured by including country-

fixed effects in our estimations. However, we also explore whether certain country-specific factors, namely the importance of equity in a country, impact the effect of IR implementation.

IR is a voluntary reporting system and, unlike the mandatory IFRS adoption in 2005, does not require companies to change the way they measure items on the financial statements. Therefore the strength of enforcement cannot intuitively explain differences in how IR is applied or affect the level of earnings management for firms in a given country. However, La Porta et al. (1996) argue that differences in financial systems around the world in part stem from differences in legal rules and enforcement to protect investors from expropriation by insiders. Likewise, Burgstahler et al. (2006) show that legal institutions and market forces reinforce each other and that, where the financial system is relatively more equity-market oriented, public firms manage earnings less. At the same time, Francis and Wang (2008) show that stronger investor protection regimes per se do not influence earnings quality, unless one also considers the quality of auditor enforcement. Insiders' incentives to reduce information asymmetries through *voluntary* reporting systems may then mirror effects of adoption of other reporting systems aimed at reducing information asymmetries. Therefore either the effect of the adoption of IR on firm incentives for earnings management or the incentives for adopting IR may differ, depending on the importance of equity funding in its listing country. We thus state our next hypothesis in the null.

H2₀: The association between earnings management and the adoption of Integrated Reporting is unaffected by the reliance on equity financing.

3. Data and measures

3.1. Sample creation

One of the challenges in studying voluntary IR adoption is obtaining a reliable database of adopters. To tackle this issue, we begin with the entire pool of European firms included in the IR reporters list disclosed

on the IIRC page as of April 2021 for Europe.² IIRC refers to these companies as “organizations whose reports refer to the IIRC or the International <IR> Framework, or are influenced by the Framework through participation in <IR> Networks.” The advantage of this approach is that we expect that most, if not all, IR adopters will be among the firms listed here.

Because the IIRC states that it did not assess the quality of the reports in compiling this list, we manually verify which of these companies make specific references to the IIRC framework in their annual reports. Specifically, we search for firms that use one of the following words or terms: “integrated reporting,” “IIRC,” and “integrated reports.” We also identify the first fiscal year when such a reference occurs, which we label as the IR adoption date. We can capture the change from non-adopter to adopter, which is visible in the phrasing in annual reports. IIRC helps us ascertain the adoption year by providing a link to the first annual report that adheres to the framework, although at times this links to a page with several of the firm’s annual reports. We then fill in this data manually. A manual check reveals that all but eight of these firms make references to IR concepts in their reports. Six of these do not explicitly mention IR or IIRC, though we agree with the IIRC’s assessment that they are adopters because they seem to adhere to the spirit of the framework by making reference to “long term value creation” in their reports. For instance, in 2015, Direct Line Group described their business model as “focused on creating long-term value,” compared to 2014, when they described it as “creating value for our customers.” We identified 2015 as the IR adoption year for this firm. Five other companies (Intercontinental Hotel Group, J. Sainsbury PLC, SAGE, Unilever and Vodafone) made similar changes in wording. Vodafone and Unilever are promoted as best IR practice examples by the IIRC on its website, despite making no mention of IR or to the IIRC in their reports. For Vodafone, the IIRC indicates this is a result of Vodafone’s use of the IR guiding principles of “connectivity of information,” “conciseness,” and “reliability and completeness” in its report from 2011 (IIRC, 2022). Similarly, some firms behave as early adopters, since they make references to concepts central to the IR framework a few years just before the release of the official IR framework. Only two firms were dropped from the sample due to not finding any reference to the framework.

² The list is available as of May 2022 at:
http://examples.integratedreporting.org/search_reporter?x=28&y=26&organisation_region=1

The sample generation steps are described in table 1, panel A. The initial pool of companies contains 162 IR adopters, of which 88 are listed firms. We remove financial firms, private companies, and firms with incomplete financial information. Our focus is on European adopters only and specifically the group of European Union countries that adopted IFRS in 2005 (25 member states plus three countries in the European Economic Area). This condition allows us to isolate the effect of a new reporting practice on financial reporting quality, assuming IFRS compliance removes significant reporting and measurement differences among firms from different European countries (Carmona and Trombetta, 2008). As such, our sample spans between 2005 (the year of IFRS adoption among these countries) and 2019. (We have intentionally excluded fiscal year 2020 from our analysis due to the potential confounding effects of COVID-19 on reporting practices.)

We require that firms have accounting information necessary to compute the financial reporting quality proxies. This leaves us with 75 adopters (1,045 observations) and 6,067 non-adopters (48,901 observations) operating in the same industries and headquartered in the same countries as the adopters, which together create the main sample for the analysis. We convert all data reported by firms in non-euro currency into euros.³

3.2. *Earnings management metrics*

Discretionary accruals

We employ the modified Jones (1991) model, proposed by Dechow et al. (1995), to measure the unexpected portion of accruals. We use the entire universe of Compustat Global consisting of 8,320 firms and 86,490 observations for the period of 2005–2019 with available data to compute the earnings management proxies to avoid bias in our earnings management measures, and we require at least 10 observations in each two-digit SIC and year group. We estimate the following model.

$$Accruals_{i,t}/Assets_{i,t-1} = \alpha + \beta_0 \times (1/Assets_{i,t-1}) + \beta_1 \times (\Delta Sales_{i,t} - \Delta Rec_{i,t})/Assets_{i,t-1} + \beta_2 \times (PPE_{i,t}/Assets_{i,t-1}) + \varepsilon_{i,t}. \quad (1)$$

³ We use the currency exchange information available from IBES and fill in the missing data manually with end-of-year data collected from the European Central Bank. (https://www.ecb.europa.eu/stats/policy_and_exchange_rates/euro_reference_exchange_rates/html/index.en.htm, last accessed in April 2021).

All variables are defined in the appendix. We estimate Equation (1) for each two-digit SIC code, by year. The indices i and t denote firm and year, respectively. The values of the estimated residuals from Equation (1) are our discretionary accrual proxy, AM .

Real earnings management

To calculate real earnings management (REM), similar to prior studies with a focus on European firms (Ernstberger et al., 2017; Ipino and Parbonetti, 2017), we employ the proxies proposed by Roychowdhury (2006).⁴ These measures operationalize three sources of real manipulations: reducing discretionary expenses for the current period, offering high discounts that boost sales, and overproducing to decrease cost of goods sold. For each industry, country, and year, we estimate the following models.

$$Expense_{i,t}/Assets_{i,t-1} = \alpha + \beta_0 \times (1/Assets_{i,t-1}) + \beta_1 \times (Sales_{i,t}/Assets_{i,t-1}) + \varepsilon_{i,t}. \quad (2)$$

$$CFO_{i,t}/Assets_{i,t-1} = \alpha + \beta_0 \times (1/Assets_{i,t-1}) + \beta_1 \times (Sales_{i,t}/Assets_{i,t-1}) + \beta_2 \times (\Delta Sales_{i,t}/Assets_{i,t-1}) + \varepsilon_{i,t}. \quad (3)$$

$$Prod_{i,t}/Assets_{i,t-1} = \alpha + \beta_0 \times (1/Assets_{i,t-1}) + \beta_1 \times (Sales_{i,t}/Assets_{i,t-1}) + \beta_2 \times (\Delta Sales_{i,t}/Assets_{i,t-1}) + \beta_3 \times (\Delta Sales_{i,t-1}/Assets_{i,t-1}) + \varepsilon_{i,t}. \quad (4)$$

The residuals of these models represent our three individual real earnings management measures: $AbnExpense$, $AbnCASH$, and $AbnProd$. We next compute two composite real earnings management measures that facilitate interpretation (Cohen and Zarowin, 2010; Ipino and Parbonetti, 2017; Zang, 2012): $RTM1 = AbnProd - AbnExp$ and $RTM2 = -AbnExp - AbnCASH$ (such that higher values of $RTM1$ and $RTM2$ indicate higher levels of manipulation of their respective components).

Some studies report a substitution effect between accruals-based and real manipulations. For example, Ewert and Wagenhofer (2005) demonstrate that tighter accounting standards lead firms to

⁴ This measure should not be used when comparing reporting entities subject to different reporting standards. For example, it is likely that a larger proportion of R&D is expensed under US GAAP than under IFRS. Since our sample includes only reporting entities subject to IFRS, we are not concerned about this type of bias.

replace accrual earnings management with real earnings manipulation. Cohen et al. (2008) empirically document this effect following the passage of the Sarbanes-Oxley Act in the United States. This effect is not necessarily confined to mandatory regulatory settings, as the substitution effect also has been documented after companies voluntarily adopt compensation recovery policies (clawback provisions) (Chan et al., 2015). Thus it is important to analyze the net effect of IR adoption on both types of earnings management. We calculate the total level of earnings management as the sum between accruals-based and real manipulations: $TotalEM1 = AM + RTM1$ and $TotalEM2 = AM + RTM2$.

3.3. *Equity Importance*

Accounting standards and disclosure initiatives are likely to be implemented differently and generate different economic consequences internationally. For the country-specific measure of reliance on equity funding, we construct *EquityImportance* as the average rank of two variables obtained from LaPorta et al., 2006: namely natural log of the 1999–2003 average number of domestic firms per capita and the 1999–2003 average ratio of market capitalization to GDP.

We also examine the firm-specific importance of equity funding and explore differences in the association between IR and earnings quality related to the annual equity issues, *EquityIssue*, measured as the percentage change in common stock during the last fiscal year.

3.4. *Descriptive statistics*

Figure 1 presents the yearly distribution of IR adoption in our sample. Six companies adhered to reporting practices aligned with IR before the IIRC was inaugurated in 2010. Our sample starts in 2005 with the uniform adoption of IFRS in Europe. In 2010, integrated reporting became mandatory in South Africa under a report-or-explain system, and the number of European adopters started to increase as well. Most of the companies in the sample adopted IR between 2013 and 2016.⁵

⁵ Surprisingly, the first two firms that mention concepts aligned to integrated reporting, such as long-termism in value creation, do so in 2004 and 2005. Given that our sample starts in 2005, for these two companies, we only have information about their performance after adoption.

[Insert Figure 1 here]

Table 1, panels B and C, present the industry and country distribution of firms in our sample. Transportation, communications, electric, gas and sanitary services (TCEGS) have the highest percentage of adopters among industry peers, with 3.3%, followed by construction (2.09%) and mining (1.79%). Spain is the country with the highest ratio of adopters to non-adopters (7.02%), followed by Luxembourg (4.26%) and the Netherlands (3.91%).

Panel D of the same table presents the descriptive statistics of the main variables used in our empirical analyses. IR adopters register on average significantly higher levels of real earnings manipulations (*RTMI*) and total earnings management (*TotalEMI*). *EquityImportance* is higher for these firms on average relative to their peers, meaning that there is a higher proportion of IR adopters in countries with more emphasis on equity financing. They are bigger companies, with lower operating cash flows, less equity and debt issued, and less growth than non-adopters. Their operating cycle is shorter, and they are more likely to be audited by a Big Four auditor. Jointly, these characteristics suggest they are more mature companies than the average non-adopter. Given these differences, we control in all regression models for these firm characteristics. We also conduct further analyses to evaluate and potentially correct for the impact of intrinsic differences between the two groups of firms on our results.

[Insert Table 1 here]

As a first step in our examination, we plot all earnings management measures in years surrounding adoption for the sample of adopters. Figure 2 shows three panels, with each comparing the average earnings management values over the period before adoption (pre-IR, i.e., the years -1, -2 and -1, -3 through -1 respectively in each panel) to the average values after adoption (post IR, i.e., years 1, 1 and 2, 1 through 3 respectively in each panel). The pattern reflects that on average accruals-based earnings management measures decrease after adoption, while the real earnings management measures increase. The net effect shown by total earnings management depends on the proxy used for real earnings manipulations. This initial evidence points toward a substitution effect between the two types

of earnings manipulation. We investigate this possibility in the following section, which presents the methodology for testing our hypotheses.

[Insert Figure 2 here]

4. Results and Discussion

To test *H1*, we estimate the following model.

$$\text{Earnings Management} = \beta_0 + \beta_1 \text{PostIR} + \Sigma \beta_2 \text{Controls} + \text{Fixed Effects} + \varepsilon. \quad (5)$$

PostIR takes the value 1 for IR adopters after they adopt the new reporting practice and 0 otherwise. The vector of controls includes variables that might affect firms' earnings management activities (Doukakis, 2014; Ipinio and Parbonetti, 2017). Larger firms tend to have lower accruals than smaller ones, and hence we control for *Size*. We also control for *OpCashFlow* because of the inverse relation between cash flows and accruals (Francis and Wang, 2008). Firms' incentives to manipulate reporting quality may depend on their reliance on external financing from either equity or debt, which we control for using *EquityIssue* and *DebtIssue*. We control for *Growth* because of evidence of higher incentives to misstate financial statements in high-growth companies (Summers and Sweeney, 1998). We account for the debt contract motivation to manipulate earnings by controlling for *Leverage* (DeFond and Jiambalvo, 1994). We also control for the length of the operating cycle (*Cycle*), since it can influence accruals, and for whether the auditor is a Big Four firm (*Big4*) because they are more likely to limit earnings manipulation (Francis and Wang, 2008). We also control for the financial health of the company (*ZScore*) because firms' use of accruals and real earnings management might depend on their financial condition (Zang, 2012). Additionally, in each of the models, we include a control for the other type of earnings manipulation (*REMI* in the *AM* model and vice-versa) to control for an eventual trade-off between earnings manipulation tools used by companies (Doukakis, 2014). The appendix presents the computation for each of these control variables.

We include industry, year, and country fixed effects in our main specification to absorb confounding effects around the time when firms adopt IR. Industry fixed effects control for time-invariant factors specific to the industry in which the firm operates that affect its earnings management choices, and country fixed effects account for country characteristics that influence firms' corporate governance (Doidge et al., 2007).

Results are presented in table 2. We find evidence of a substitution effect between discretionary accruals and real earnings manipulations, in that IR adopters record significantly lower levels of accruals management but significantly higher levels of real earnings management in the period after adoption, relative to the average of the rest of the observations. Importantly, the net effect of IR adoption is higher levels of total earnings management.⁶

Including all non-adopting firms operating in the same industries and countries in the analysis has the advantage that it allows a comparison of all companies exposed to similar market conditions; also, the low rate of adopters, relative to non-adopters, if anything, biases our analysis against finding any significant difference between the two groups. Nevertheless, our results may also be influenced by ex ante differences between adopters and non-adopters. One way to control for this is by accounting for incentives to manipulate earnings in the years *before* adoption, assuming that earnings management in itself reflects (and, to certain extent, accounts for) a specific set of conditions that incentivizes a firm to engage in such practices. For each year, we rank firms by their three-year average levels of earnings management, measured as each of the five measures reported throughout our analysis. For each IR adopter and for each financial reporting quality measure, we select the non-adopter with the closest levels of earnings management as a match. We estimate equation (5) on the resulting sample. The results presented in panel B of table 2, as reflected by the coefficient of *PostIR*, are consistent with an increase for *REMI* and *REM2* for adopters, relative to a group of firms with similar levels of earnings management over the three years before adoption, although we do not find a decrease in accruals earnings management. Both measures of total earnings management show a similar pattern as in panel A of the same table.

⁶ Untabulated results are qualitatively similar if we exclude the two early adopters for which we identify as having adoption years 2004 and 2005.

Next we repeat the analysis in a setting where the same matched firms “borrow” the adoption year from treatment firms. This allows us to define an alternate *Post_match* indicator, taking the value 0 before adoption or *pseudo*-adoption and 1 after it. We estimate equation (5) on the resulting sample. The coefficient of interest is the multiplication between *Post_match* and *IR*. Panel C of table 2 similarly shows increased levels of real-earnings management and total earnings management for IR adopters, relative to the group of firms with similar levels of earnings management over the three years before adoption. In this specification, we also replace industry- by firm-fixed effects to control for any firm-specific characteristics not accounted for in the previous specifications.

Despite the small size of the sample of adopters, the final test in this section explores the relation between IR adoption and financial reporting quality in isolation for adopters. This is helpful to confirm that the main result is not triggered by changes in earnings management practices of the control group but rather by a trend specific to IR companies. We progressively extend the sample to include the year immediately surrounding adoption (-1, 1), to the two years around adoption (-2, 2) and finally to the three years (-3, 3) around adoption. Consistent with the findings so far, the results of estimating equation (5) show evidence of increases in real earnings management (*REMI*) and total earnings management (*TotalEMI*), although the statistical power of these tests is severely limited by the small sample size.

[Insert Table 2 here]

To test the second hypothesis, we examine the role played by equity financing in the capital market where the firm operates as well as the firm’s reliance on equity financing. We measure the relevance of equity markets by calculating *EquityImportance*, the country-level mean rank of the natural logarithm of the 1999–2003 average number of domestic firms per capita and the 1999–2003 average ratio of market capitalization to GDP. Using this proxy, we estimate the following model.

$$\begin{aligned}
 \text{Earnings Management} = & \beta_0 + \beta_1 \text{PostIR} + \beta_2 \text{EquityImportance} + \beta_3 \text{PostIR} \times \text{EquityImportance} \\
 & + \sum \beta_4 \text{Controls} + \text{Fixed Effects} + \varepsilon. \quad (6)
 \end{aligned}$$

Results in table 4, panel A, confirm that the importance of equity financing in the firm’s country of domicile is associated with lower levels of earnings management, as shown by significant and negative coefficients for *EquityImportance* in the analysis of all five earnings management measures. However, interestingly, IR adoption interacted with country-level equity importance is significant and positive for both real earnings management measures (columns 2 and 3) and for one measure of total earnings management (column 5), suggesting that firms’ IR adoption is more detrimental to financial reporting quality the greater the equity importance in their country of domicile.

In panel B, we estimate equation (6) replacing the main variable of interest with *EquityIssue*, a proxy that captures firm-level reliance on equity, rather than a country-level measure for it. We calculate *EquityIssue* as the percentage change in common stock over the fiscal year. Panel B of table 4 reveals that the same detrimental effect of IR also relates to firm-level equity financing, as higher levels of firm-level equity financing are positively associated with accrual manipulation (column 1), real earnings management (column 2), and both measures of total earnings management (columns 4 and 5). Beyond the higher real earnings management after IR adoption, firms that rely more on capital markets for financing manipulate earnings even more. This could indicate that companies use the new disclosure practice as a substitute for financial reporting quality to attract investor capital.

[Insert Table 4 here]

5. Robustness checks

A weakness of voluntary disclosure settings is the lack of a sufficiently comparable control sample. Because voluntary disclosure choices reflect firm-level trade-offs of costs and benefits, it is difficult to isolate the effect of IR adoption on financial reporting quality. Financial reporting likely reflects firms’ choices beyond IR, and reporting choices and the adoption decision might be driven by the same economic forces (Christensen et al., 2021). The choice to voluntarily adopt IR is endogenous, given that other corporate governance changes may occur in tandem, exposing the analysis to potential omitted variables and selection bias. To deal with these limitations, in the previous sections, we extended our analysis in a number of ways. First, in addition to controlling for various variables that

aim to capture these features, we tested our results including firm fixed effects that absorb firm characteristics (such as governance) that could lead to omitted variable bias (see table 2, panel C). Second, we analyze adopters in isolation (see figure 2 and table 3). Third, Leuz and Wysocki (2016) argue that earnings quality measures employed in the accounting literature cannot be cleanly separated from the underlying economics of the studied firms. Our prime way of addressing this is to match adopters to firms with similar levels of ex ante earnings management, which might reflect not only their reporting quality but also other aspects of their economics.

In this section, we further verify the robustness of our results. The first test deals with the unbalanced ratio of adopters to non-adopters in our sample. Although the fact that our sample contains mostly non-adopters and very few adopters should bias against obtaining any empirical results, we repeat our analysis on a sample with a more balanced distribution of adopters and nonadopters. We select the industry TCEGS (transportation, communications, electric, gas and sanitary services), where there are the most adopters, relative to non-adopters (3.30%). The findings in table 5, panel A, reveal an increase in total earnings management due mostly to an increase in real earnings management, similar to the main results.

[Insert Table 5 here]

Our final analysis attempts to deal with the question whether our results may be due to the selection of the control sample. Figure 2 and table 3 to some extent resolve this concern by showing that the trend in financial reporting quality after adoption is not apparent in the analysis solely when adopters are compared to non-adopters but also in isolation. Here we advance this investigation by performing a placebo test, where we randomly select 75 firms from the same industry-country-year combinations as the IR adopters in our sample (similar to Ippino and Parbonetti, 2017). Using the obtained pairs of adopters and non-adopters, we repeat our analysis. The results presented in panel B of table 5 are qualitatively similar to those in the single-industry analysis and once again indicate that IR-adoption is associated with an increase in total earnings management driven by real earnings management.

6. Conclusion

This study examines the relation between IR adoption and financial reporting quality, employing a sample of voluntary European adopters. Given the increase of unconventional reporting information (such as environmental, social and governance, corporate social responsibility, etc.), and recent efforts of policymakers to agree upon a mandated form of reporting for aspects beyond traditional financial reporting, we believe this examination is timely. This study contributes to the literature by exploring whether companies change their financial reporting after adopting IR.

The paper uses a series of empirical specifications to compare IR adopters to non-adopters in terms of their financial reporting quality. We perform various analyses to control for firms' ex-ante levels of financial reporting, ratio of adopters to non-adopters, and to understand the behavior of adopters in isolation. The study also evaluates the impact of equity availability for firms' choices, showing that both the relevance of equity finance in the country where the company operates and firms' individual access to equity financing influence their financial reporting quality.

This study is not without caveats. Given the voluntary nature of IR adoption for European companies, we cannot distinguish between firms' optimized choice to reduce the quality of financial reporting in exchange for more integrated information and their perverse incentives. Therefore IR adoption may serve as greenwashing, a marketing tool to increase the impression of social responsibility, possibly allowing firms to manage earnings without a discount to their values. Our study stops at documenting that, after adoption, there seems to be a decrease in earnings quality. We welcome future research on the reasons behind this change as well as in whether changes are generated by the cost of disclosures or by the intentions of the firms to, for instance, distract attention from their core activities. In this case, IR adoption might coincide with an incentive to hide poor performance and disguise it through earnings smoothing. Second, there is no quality assurance for voluntary IR implementation, as long as an annual report conforms with IFRS. In this vein, Lang and Lundholm (1993) find that disclosure quality, as measured by the score provided by financial analysts, relates negatively to value relevant earnings, measured by earnings response coefficient. Future research can investigate this possibility. Finally, our findings should be interpreted with caution due to the voluntary nature of IR adoption in Europe and the consequent small ratio of adopters to non-adopters. Our

evidence rejects the null hypothesis that IR has no effect on financial reporting quality, but the characteristics of our sample may have led to this conclusion. Finally, the measures we employ as proxies for accrual and real earnings management, while widely used by other studies also focused on Europe (Doukakis 2014, Burgstahler et al., 2006, Kim and Sohn 2013), may be disputed due to misspecifications.

Notwithstanding the above limitations, we believe policymakers should heed our evidence. The IASB has acknowledged that, regardless of a move toward more comprehensive disclosure, “The income statement will remain the ‘hardest’ and most comparable source of information for investors” (IASB, 2017). In developing new frameworks for sustainability accounting, we therefore caution against losing the focus on financial reporting quality.

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Appendix. Variable definitions

AbnCash is given by the residuals of the following model estimated for each industry, country, and year: $CFO_{i,t}/Assets_{i,t-1} = \alpha + \beta_0 \times (1/Assets_{i,t-1}) + \beta_1 \times (Sales_{i,t}/Assets_{i,t-1}) + \beta_2 \times (\Delta Sales_{i,t}/Assets_{i,t-1}) + \varepsilon_{i,t}$.

AbnExpense is given by the residuals of the following model estimated for each industry, country, and year: $Expense_{i,t}/Assets_{i,t-1} = \alpha + \beta_0 \times (1/Assets_{i,t-1}) + \beta_1 \times (Sales_{i,t}/Assets_{i,t-1}) + \varepsilon_{i,t}$.

AbnProd is given by the residuals of the following model estimated for each industry, country, and year: $Prod_{i,t}/Assets_{i,t-1} = \alpha + \beta_0 \times (1/Assets_{i,t-1}) + \beta_1 \times (Sales_{i,t}/Assets_{i,t-1}) + \beta_2 \times (\Delta Sales_{i,t}/Assets_{i,t-1}) + \beta_3 \times (\Delta Sales_{i,t-1}/Assets_{i,t-1}) + \varepsilon_{i,t}$.

AM is our discretionary accrual proxy measured as the residuals obtained from estimating the following equation for each two-digit SIC code, by year: $Accruals_{i,t}/Assets_{i,t-1} = \alpha + \beta_0 \times (1/Assets_{i,t-1}) + \beta_1 \times (\Delta Sales_{i,t} - \Delta Rec_{i,t})/Assets_{i,t-1} + \beta_2 \times (PPE_{i,t}/Assets_{i,t-1}) + \varepsilon_{i,t}$.

Assets are total assets.

Big4 is an indicator variable taking the value one if the auditor of the firm is one of the Big Four auditors.

CFO is cash flow from operations.

Cycle is the length of the operating cycle in number of days, computed as $(Rec/Sales - Inventories/Cost\ of\ Goods\ Sold) \times 360$

DebtIssue is the percentage change in total liabilities during the last fiscal year.

EquityImportance represents the country-level measure for the relevance played by equity financing, and measured as the mean rank of the natural logarithm of the 1999-2003 average number of domestic firms per capita, and as the 1999-2003 average ratio of market capitalization to GDP.

EquityIssue is the percentage change in common stock during the last fiscal year.

Growth is sales growth, measured as $\Delta Sales/Sales_{t-1}$.

Leverage is firm leverage, measured as $(Current\ liabilities + Long-term\ liabilities)/Assets$.

OpCashFlow is measured as operating cash flows (*CFO*) scaled by total assets.

PostIR is an indicator variable taking the value one for IR adopters in the years after adoption, and zero in all other instances.

Post_match is an indicator variable taking the value one for IR adopters in the years after adoption and for their ex-ante earnings management levels matched controls in the years after pseudo-adoption, and zero otherwise.

PPE is gross property, plant and equipment.

$(\Delta)Rec$ is the (change in) accounts receivable during the last fiscal year.

REM1 is the first real earnings management proxy, calculated as $AbnProd - AbnExp$.

REM2 is the second real earnings management proxy, calculated as $-AbnExp - AbnCASH$

$(\Delta)Sales$ is the (change in) sales during the last fiscal year.

Size is measured as logarithm of total assets.

TA denotes total accruals (measured as net income before extraordinary items and discontinued operations minus operating cash flow).

TotalEM1 is total earnings management measured as $DA_MJ + REM1$.

TotalEM2 is total earnings management measured as $DA_MJ + REM2$.

ZScore is Altman's Z-score index adapted by Leary and Roberts (2013), computed as $3.3 \times (Net\ Income / Assets) + 1.4 \times (Retained\ Earnings / Assets) + 1.2 \times (Working\ Capital / Assets)$.

Figure 1. New IR adopters by adoption year

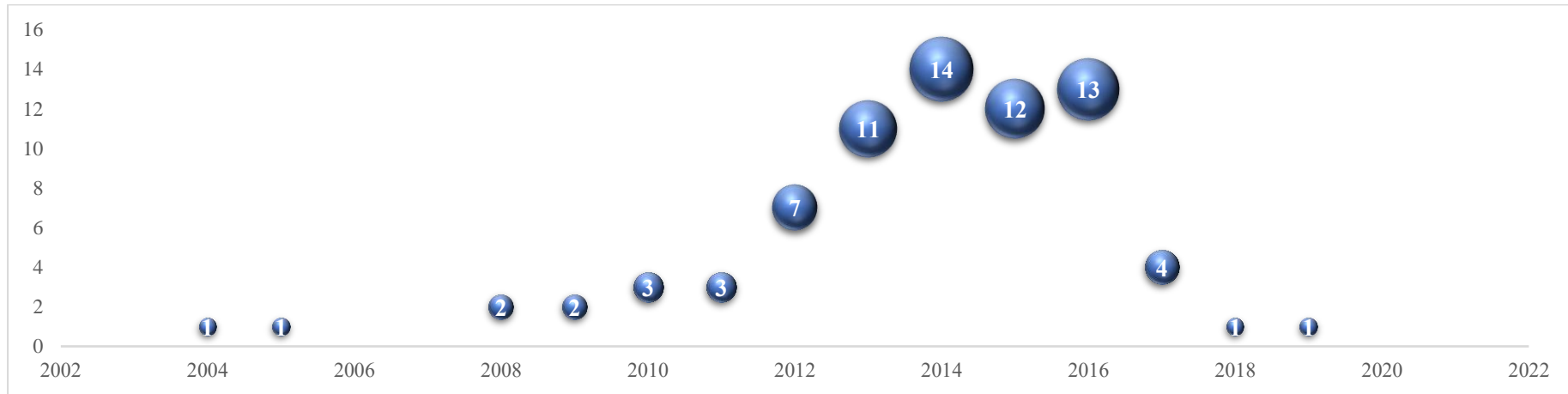


Figure 2. FRQ measures for IR adopters over different horizons surrounding adoption years

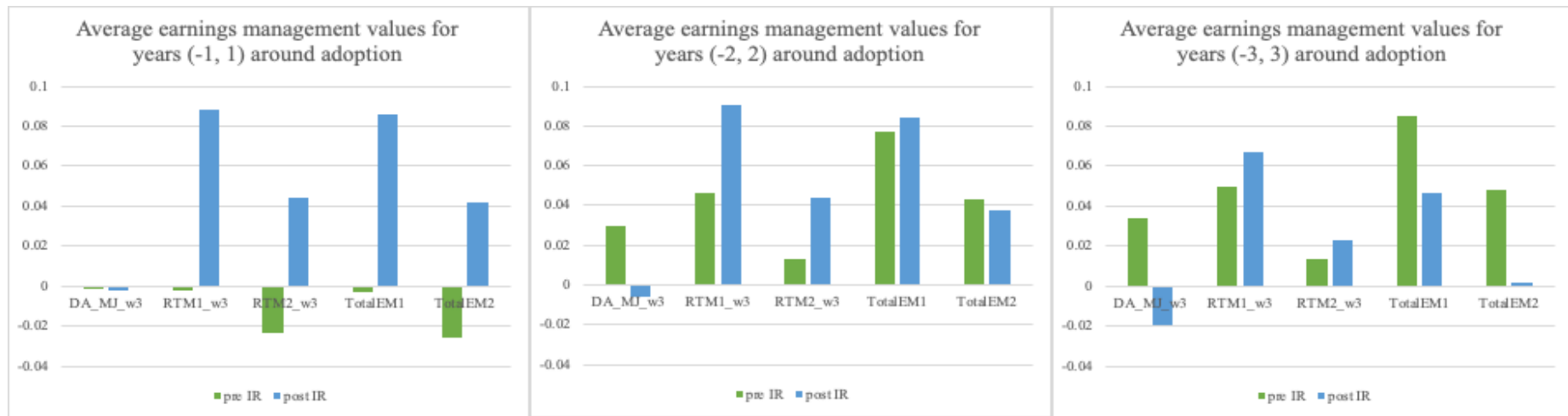


Table 1.
Panel A. Sample creation steps

	IR		Non-IR	
	Firms	Observations	Firms	Observations
Companies in European countries of interest	88	1,776	9,358	107,605
Excluding financial firms	78	1,203	7,239	74,090
Excluding observations with incomplete data for analysis	75	1,045	6,067	48,901

Panel B. Industry distribution of adopters

<i>Industry</i>	IR		Non-IR		Percentage of adopters in industry
	Firms	Observations	Firms	Observations	
Construction	4	51	187	1,664	2.09%
Manufacturing	29	397	2669	22,748	1.07%
Mining	5	72	274	1,829	1.79%
Retail Trade	5	75	355	2,746	1.39%
Services	12	158	1791	13,230	0.67%
TCEGS	19	278	557	4,606	3.30%
Wholesale Trade	1	14	234	2,078	0.43%

Panel C. Country distribution of adopters

<i>Country</i>	IR		Non-IR		Percentage of adopters in country
	Firms	Observations	Firms	Observations	
Austria	1	15	76	762	1.30%
Belgium	1	15	115	1,111	0.86%
Germany	4	54	749	6,909	0.53%
Denmark	1	15	144	1,347	0.69%
Spain	12	161	159	1,453	7.02%
Finland	4	57	151	1,497	2.58%
France	5	75	750	7,023	0.66%
United Kingdom	25	349	1,799	13,318	1.37%
Italy	7	92	341	2,640	2.01%
Luxembourg	2	29	45	326	4.26%
Netherlands	7	99	172	1,357	3.91%
Poland	2	30	743	5,419	0.27%
Slovenia	1	12	27	295	3.57%
Sweden	3	42	796	5,444	0.38%

Panel D. Descriptive statistics relating to the variables used in the analyses

	IR (N=1045)			Non-IR (N=48901)		
	Mean	Median	Std. Dev.	Mean	Median	Std. Dev.
<i>Test variables</i>						
AM	0.004	0.011	0.306	0.002	0.006*	0.540
RTM1	0.066	0.058	0.426	-0.006**	0.053**	1.033
RTM2	0.027	0.013	0.421	-0.010	0.023	0.974
TotalEM1	0.070	0.061	0.523	-0.003**	0.050***	1.177
TotalEM2	0.030	0.026	0.552	-0.008	0.021*	1.130
EquityImportance	9.164	10.50	3.380	7.873***	8.000***	3.791
<i>Control variables</i>						
Size	8.849	8.816	1.379	4.537***	4.575***	2.561
OpCashFlow	0.100	0.087	0.062	0.029***	0.063***	0.234
EquityIssue	0.508	0.000	15.185	2.048	0.000***	136.797
DebtIssue	0.086	0.030	0.276	0.226**	0.039	2.013
Growth	0.066	0.035	0.515	2.610	0.056***	450.198
Leverage	0.279	0.249	0.157	0.231	0.175***	2.730
Cycle	152.770	122.981	112.207	641.702	140.420***	49357.165
Big4	0.938	1.000	0.242	0.535***	1.000***	0.499
ZScore	1.371	1.352	0.855	0.578	1.333*	25.660

Panel A shows the sample creation steps. Panels B and C show the industry and country distribution of adopting firms, respectively. Panel D shows the descriptive statistics of the firms used in the analysis. The coefficients of the non-IR firms reflect whether the difference between groups is significant. Significance at 1%, 5% and 10% denoted by *, **, *** respectively.

Table 2. FRQ measures and IR adoption. Sample of adopters and non-adopters

Panel A. IR adopters and non-adopters operating in the same country and industry

	(1)	(2)	(3)	(4)	(5)
	AM	REM1	REM2	TotalEM1	TotalEM2
PostIR	-0.031*	0.107***	0.104***	0.076**	0.073**
	(-1.919)	(3.141)	(3.813)	(2.075)	(2.551)
Equity issued	-0.000	0.000**	0.000**	0.000**	0.000*
	(-0.014)	(2.286)	(2.102)	(2.065)	(1.957)
Debt issued	0.013*	-0.021***	-0.023***	-0.008	-0.010
	(1.696)	(-2.742)	(-3.325)	(-0.554)	(-0.713)
Growth	-0.000	-0.000***	-0.000***	-0.000***	-0.000***
	(-1.622)	(-5.160)	(-5.192)	(-3.786)	(-3.615)
Leverage	0.020	0.028***	0.007	0.049***	0.029
	(1.096)	(3.066)	(0.416)	(2.748)	(0.839)
Cycle	0.000***	0.000***	-0.000*	0.000***	0.000
	(2.840)	(10.463)	(-1.809)	(10.512)	(0.415)
Big 4	-0.017***	0.022	0.020*	0.005	0.003
	(-3.140)	(1.511)	(1.826)	(0.333)	(0.206)
ZScore	0.002	0.003***	0.001	0.005***	0.003
	(1.211)	(2.714)	(0.355)	(2.674)	(0.881)
REM1	0.012***				
	(3.325)				
AM		0.043***	0.061***		
		(2.880)	(3.240)		
Constant	-0.032***	0.001	0.039**	-0.032	0.006
	(-4.352)	(0.079)	(2.485)	(-1.558)	(0.312)
Observations	49,946	49,946	49,946	49,946	49,946
R-squared	0.008	0.023	0.027	0.020	0.022
FE	Ind&Ctry&Yr	Ind&Ctry&Yr	Ind&Ctry&Yr	Ind&Ctry&Yr	Ind&Ctry&Yr

Panel B. IR adopters and non-adopters, matched by ex-ante EM, with ex-post period only for IR adopters.

	(1)	(2)	(3)	(4)	(5)
	AM	REM1	REM2	TotalEM1	TotalEM2
PostIR	0.015	0.092**	0.078**	0.107**	0.094**
	(0.738)	(2.030)	(1.981)	(2.163)	(2.158)
Size	0.002	0.006	0.009	0.007	0.010
	(0.372)	(0.461)	(0.914)	(0.560)	(1.036)
Operating Cash Flow	0.026	-0.328	-0.698***	-0.302	-0.672***
	(0.146)	(-1.202)	(-3.214)	(-0.959)	(-2.766)
Equity issued	-0.000	-0.000***	-0.000	-0.000***	-0.000
	(-1.352)	(-2.733)	(-1.067)	(-3.702)	(-1.248)
Debt issued	0.038***	0.002	0.001	0.039***	0.039***
	(25.234)	(1.046)	(0.695)	(14.883)	(13.934)
Growth	0.012**	-0.008	-0.010*	0.004	0.002
	(2.311)	(-1.604)	(-1.954)	(0.674)	(0.342)
Leverage	0.012	0.021	-0.038	0.033	-0.026
	(0.215)	(0.073)	(-0.154)	(0.111)	(-0.103)
Cycle	0.000	-0.000	-0.000	-0.000	-0.000
	(0.311)	(-1.362)	(-0.887)	(-1.124)	(-0.384)
Big 4	0.009	-0.040	-0.052	-0.031	-0.043
	(0.570)	(-0.647)	(-1.067)	(-0.500)	(-0.875)
ZScore	0.017*	0.033	0.021	0.050	0.038
	(1.752)	(1.296)	(1.146)	(1.612)	(1.615)
Constant	-0.054***	-0.021	0.003	-0.075	-0.051
	(-3.380)	(-0.283)	(0.065)	(-0.949)	(-0.864)
Observations	3,764	3,764	3,764	3,764	3,764
R-squared	0.163	0.063	0.051	0.088	0.071
FE	Ind&Ctry&Yr	Ind&Ctry&Yr	Ind&Ctry&Yr	Ind&Ctry&Yr	Ind&Ctry&Yr

Panel C. IR adopters and non-adopters, matched by ex-ante EM, with (pseudo-) adoption year both for adopters and non-adopters

	(1)	(2)	(3)	(4)	(5)
	AM	REM1	REM2	TotalEM1	TotalEM2
Post_match	-0.035 (-1.519)	-0.006 (-0.113)	-0.002 (-0.033)	-0.041 (-0.711)	-0.037 (-0.685)
Post_match×IR	0.028 (0.928)	0.084* (1.713)	0.086* (1.774)	0.112* (1.845)	0.114** (2.001)
Size	0.032 (1.427)	0.017 (0.483)	0.010 (0.318)	0.049 (1.165)	0.042 (1.184)
Operating Cash Flow	-0.123 (-0.648)	-0.460* (-1.732)	-0.883*** (-3.628)	-0.583*** (-3.122)	-1.006*** (-5.784)
Equity issued	-0.000*** (-5.623)	-0.000** (-2.301)	-0.000 (-1.190)	-0.000*** (-3.361)	-0.000** (-2.227)
Debt issued	0.037*** (26.457)	0.001 (0.764)	0.000 (0.213)	0.039*** (12.874)	0.038*** (11.562)
Growth	0.011*** (2.708)	-0.009* (-1.892)	-0.010* (-1.909)	0.002 (0.460)	0.002 (0.277)
Leverage	0.025 (0.193)	-0.070 (-0.213)	-0.091 (-0.327)	-0.045 (-0.123)	-0.067 (-0.213)
Cycle	0.000 (0.489)	-0.000 (-1.244)	-0.000 (-1.029)	-0.000 (-1.168)	-0.000 (-0.274)
Big 4	0.074*** (2.743)	-0.119 (-1.494)	-0.111 (-1.475)	-0.045 (-0.589)	-0.037 (-0.530)
ZScore	0.048* (1.737)	0.034 (1.299)	0.023 (1.109)	0.082*** (2.661)	0.071*** (2.693)
Constant	-0.291** (-2.125)	-0.004 (-0.017)	0.059 (0.288)	-0.295 (-1.085)	-0.232 (-1.011)
Observations	3,764	3,764	3,764	3,764	3,764
R-squared	0.235	0.266	0.174	0.268	0.187
FE	Firm&Yr	Firm&Yr	Firm&Yr	Firm&Yr	Firm&Yr

Panel A presents the results on the sample of IR adopters and firms that operate in the same European countries and industries as they. PostIR takes that value 1 for adopting firms after adoption year, and 0 in other instances. In Panel B, the control sample does not receive a pseudo-adoption year, instead PostIR takes 1 only for firms that have adopted IR. In panel C, the firms in the control sample receive a pseudo-adoption year, the same as the actual adoption year of their closest matched IR firm. *Post_match* takes 1 for all firms after the (pseudo) adoption year. Standard errors are clustered at firm level. Robust t-statistics in parentheses. Significance at 1%, 5% and 10% denoted by *, **, *** respectively.

Table 3. Financial reporting quality around IR adoption.

<i>Year (-1 to 1)</i>	<i>AM</i>	<i>REMI</i>	<i>REM2</i>	<i>TotalEMI</i>	<i>TotalEM2</i>
PostIR	0.055	0.156	0.102	0.214*	0.160
	(0.929)	(1.512)	(0.928)	(1.761)	(1.220)
Constant	-0.798	0.304	0.273	-0.523	-0.554
	(-0.863)	(0.567)	(0.523)	(-0.531)	(-0.525)
Controls	Yes	Yes	Yes	Yes	Yes
Observations	214	215	215	214	214
R-squared	0.166	0.389	0.247	0.302	0.191
FE	Ind&Ctry&Yr	Ind&Ctry&Yr	Ind&Ctry&Yr	Ind&Ctry&Yr	Ind&Ctry&Yr
<i>Years (-2 to 2)</i>					
PostIR	0.023	0.108*	0.063	0.132*	0.086
	(0.476)	(1.715)	(0.911)	(1.710)	(1.000)
Constant	-0.889	0.161	0.294	-0.738	-0.600
	(-1.082)	(0.436)	(0.853)	(-0.882)	(-0.688)
Controls	Yes	Yes	Yes	Yes	Yes
Observations	359	361	361	359	359
R-squared	0.153	0.313	0.175	0.256	0.151
FE	Ind&Ctry&Yr	Ind&Ctry&Yr	Ind&Ctry&Yr	Ind&Ctry&Yr	Ind&Ctry&Yr
<i>Year (-3 to 3)</i>					
PostIR	0.009	0.108*	0.056	0.115	0.062
	(0.180)	(1.932)	(0.972)	(1.652)	(0.831)
Constant	-0.237	0.589	0.838**	0.356	0.607
	(-0.790)	(1.557)	(2.143)	(0.859)	(1.655)
Controls	Yes	Yes	Yes	Yes	Yes
Observations	496	499	499	496	496
R-squared	0.109	0.212	0.129	0.174	0.107
FE	Ind&Ctry&Yr	Ind&Ctry&Yr	Ind&Ctry&Yr	Ind&Ctry&Yr	Ind&Ctry&Yr

Table 3 shows the results of regressing earnings management on postIR in three windows around the adoption year using the sample of IR adopters only. The vector of *Controls* included in both specifications consists of the following variables: *Size*, *OpCashFlow*, *Growth*, *Leverage*, *Cycle*, *Big4*, *ZScore*. *PostIR* takes 1 in the years after IR adoption and 0 otherwise. Standard errors are clustered at firm level. Robust t-statistics in parentheses. Significance at 10% and 5% is denoted by * and **, respectively.

Table 4. IR adoption and FRQ measures depending on firm's reliance on equity financing

Panel A. Country-level equity importance

	(1)	(2)	(3)	(4)	(5)
	AM	REM1	REM2	TotalEM1	TotalEM2
PostIR	-0.014 (-0.477)	0.008 (0.146)	-0.002 (-0.047)	-0.007 (-0.122)	-0.017 (-0.381)
EquityImportance	-0.002** (-2.387)	-0.026*** (-12.512)	-0.016*** (-10.750)	-0.027*** (-12.510)	-0.018*** (-10.721)
PostIR×EquityImportance	-0.002 (-0.432)	0.012** (2.118)	0.013** (2.512)	0.010 (1.526)	0.011** (2.190)
REM1	0.012*** (3.350)				
AM		0.043*** (2.897)	0.061*** (3.247)		
Constant	-0.016* (-1.707)	0.210*** (8.335)	0.162*** (7.896)	0.197*** (7.243)	0.148*** (6.298)
Controls included	Yes	Yes	Yes	Yes	Yes
Observations	49,946	49,946	49,946	49,946	49,946
R-squared	0.007	0.019	0.026	0.017	0.021
FE	Ind&Yr	Ind&Yr	Ind&Yr	Ind&Yr	Ind&Yr

Panel B. Firm-level equity reliance

	(1)	(2)	(3)	(4)	(5)
	AM	REM1	REM2	TotalEM1	TotalEM2
PostIR	-0.032** (-1.983)	0.107*** (3.136)	0.105*** (3.812)	0.075** (2.033)	0.072** (2.509)
EquityIssue	-0.000 (-1.503)	-0.000 (-0.491)	-0.000 (-0.457)	-0.000 (-0.627)	-0.000 (-0.585)
PostIR×EquityIssue	0.021*** (4.842)	0.007* (1.877)	0.001 (0.169)	0.029*** (4.348)	0.023*** (3.588)
REM1	0.011*** (3.160)				
AM		0.040*** (2.778)	0.058*** (3.164)		
Constant	-0.027***	-0.006	0.031**	-0.034*	0.002
Controls included	Yes (-3.982)	Yes (-0.323)	Yes (1.977)	Yes (-1.732)	Yes (0.132)
Observations	49,946	49,946	49,946	49,946	49,946
R-squared	0.006	0.022	0.025	0.020	0.022
FE	Ind&Ctry&Yr	Ind&Ctry&Yr	Ind&Ctry&Yr	Ind&Ctry&Yr	Ind&Ctry&Yr

Panel A shows the effect of the importance of equity markets financing at country level on the relation between IR and FRQ. Panel B shows the effect of the firm-level reliance on equity financing on the relation between IR and FRQ. The vector of *Controls* included in both specifications consists of the following variables: *Size*, *OpCashFlow*, *Growth*, *Leverage*, *Cycle*, *Big4*, *ZScore*. Standard errors are clustered at firm level. Robust t-statistics in parentheses. Significance at 1%, 5% and 10% denoted by *, **, *** respectively.

Table 5. Robustness tests

Panel A. Single industry (TCEGS)

	(1)	(2)	(3)	(4)	(5)
	AM	REM1	REM2	TotalEM1	TotalEM2
PostIR	0.014	0.079**	0.050	0.093**	0.067**
	(1.468)	(2.049)	(1.542)	(2.419)	(2.044)
Constant	-0.001	-0.027	-0.009	-0.028	-0.010
	(-0.109)	(-0.362)	(-0.143)	(-0.379)	(-0.164)
Controls included	Yes	Yes	Yes	Yes	Yes
Observations	4,884	4,884	4,884	4,884	4,884
R-squared	0.053	0.054	0.062	0.056	0.063
FE	Ctry&Yr	Ctry&Yr	Ctry&Yr	Ctry&Yr	Ctry&Yr

Panel B. Randomly selected controls

	(1)	(2)	(3)	(4)	(5)
	AM	REM1	REM2	TotalEM1	TotalEM2
PostIR	0.044	0.145***	0.120**	0.188***	0.167**
	(0.837)	(2.636)	(2.150)	(2.845)	(2.131)
Constant	-0.006	-0.193	-0.096	-0.198	-0.101
	(-0.057)	(-1.048)	(-0.829)	(-0.923)	(-0.621)
Controls	Yes	Yes	Yes	Yes	Yes
Observations	1,495	1,495	1,495	1,495	1,495
R-squared	0.072	0.163	0.074	0.134	0.069
FE	Ind&Ctry&Yr	Ind&Ctry&Yr	Ind&Ctry&Yr	Ind&Ctry&Yr	Ind&Ctry&Yr

Panel A shows results of testing the main hypothesis on firms operating in the industry with the highest ratio of adopters-to-non-adopters. Panel B shows results of testing the main hypothesis on a set of randomly selected matched firms. The vector of *Controls* included in both specifications consists of the following variables: *Size*, *OpCashFlow*, *Growth*, *Leverage*, *Cycle*, *Big4*, *Zscore*. Robust t-statistics in parentheses. Standard errors are clustered at firm level. Significance at 1%, 5% and 10% denoted by *, **, *** respectively.