

# Integrated Reporting and Earnings Management

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## Abstract

This study examines whether the introduction of integrated reporting affects earnings management. According to the International Integrated Reporting Framework, published by the International Integrated Reporting Council in 2013, integrated reporting is intended not only to improve the quality of information available to external parties, but also to improve internal decision making. Introducing integrated reporting is expected to correct companies' short-term orientation and promote long-term value creation. Using data from Japan, where a large number of companies are voluntarily practicing integrated reporting, we find that firms are more likely to report conservative earnings after the introduction of integrated reporting, in terms of both accrual-based earnings management and real earnings management. We also find that the effect of integrated reporting on earnings management appears approximately two years or more after the introduction of integrated reporting. This evidence is consistent with practitioners' point that integrated reporting is a continuous improvement process, and so takes several years to improve internal decision making. Finally, our findings provide evidence for standard setters and regulators who are interested in the merits of integrated reporting that integrated reporting promotes decision making with a long-term focus, resulting in more conservative earnings management.

**Keywords:** integrated reporting; sustainability; corporate social responsibility; earnings management; long-term value creation

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## **1. Introduction**

The purpose of this study is to empirically examine the impact of integrated reporting on earnings management. In recent years, more and more companies in Japan have begun practicing integrated reporting (KPMG, 2017; KPMG Japan, 2019; Corporate Value Reporting Lab, 2019), and investor interest in integrated reporting is growing (ACCA, 2013; GPIF 2018, 2019). However, it is not clear how integrated reporting affects firm behavior (de Villiers et al., 2017). In this study, we use data from Japan to examine accrual-based earnings management and real earnings management and provide evidence on whether firm earnings management behavior changes as a result of introducing integrated reporting.

Integrated reporting is a form of corporate reporting that has rapidly spread in recent years, mainly due to voluntary corporate efforts. The International Integrated Reporting Council (IIRC) defines integrated reporting as

“a process founded on integrated thinking that results in a periodic integrated report by an organization about value creation over time and related communications regarding aspects of value creation.<sup>1</sup> An integrated report is a concise communication about how an organization’s strategy, governance, performance and prospects, in the context of its external environment, lead to the creation of value in the short, medium and long term.”<sup>2</sup>

The IIRC issued a discussion paper (IIRC, 2011) in September 2011 and published the International Integrated Reporting Framework or IIRF (IIRC 2013a) in December 2013. Prior to the IIRC’s publication of these documents, there were no international guidelines that companies could refer to when preparing integrated reports. Since the publication of these documents, the number of integrated reports issued by Japanese firms

has increased considerably. According to the Corporate Value Reporting Lab (2019), there were only 32 Japanese companies that issued self-asserted integrated reports in 2011, but as of the end of December 2018, this has risen to 414 companies.<sup>3</sup> In addition, financial capital providers, who are the target users of integrated reports, have a strong interest in integrated reporting. For example, the Japanese Government Pension Investment Fund (GPIF) has asked investment management agencies to select superior integrated reports, and then published its selection results. (GPIF, 2018, 2019). The IIRC (2013b) provides an overview of the evaluations done by 13 participating investor organizations on the integrated reports of 19 companies that participated in the integrated reporting Pilot Programme of IIRC. IIRC (2013b) summarizes that

“the reports were considered useful in the following areas: communicating a more holistic view of performance than otherwise found in traditional financial reports; providing insight into such areas as strategy, risk, governance and future targets; providing a contextual foundation for interpreting and analyzing disclosed data.”

In addition, the survey performed by the Association of Chartered Certified Accountants in 2013 reveals that “more than 90% of investors surveyed said it would be valuable for companies to combine financial and non-financial information into an integrated reporting model” (ACCA, 2013). Despite the fact that many companies are working on and many investors are interested in integrated reporting, there is an unanswered question regarding how the introduction of integrated reporting affects firm and investor behavior.

This study empirically examines the relationship between the introduction of integrated reporting and earnings management. More specifically, using data from Japan, we investigate accrual-based earnings management and real earnings management to examine whether firm earnings management behavior changes after the introduction of

integrated reporting. In the IIRF, the IIRC (2013a) states that integrated reporting aims to “support integrated thinking, decision-making and actions that focus on the creation of value over the short, medium and long term.” In other words, integrated reporting is intended to embed integrated thinking into business practices, resulting in improved company decision-making and actions.<sup>4</sup> Financial capital providers, who are some of the main users of integrated reports, should have a strong interest in the impact of introducing integrated reports on firms’ reported earnings, which is important information used for making investment decisions. Therefore, it is meaningful to shed light on the impact of integrated reporting on earnings management.

We use data from Japanese companies in our analysis for the following two reasons. First, although Japan is among the countries worldwide that have the largest number of companies practicing voluntary integrated reporting, its effectiveness has not been fully examined. As noted, the number of integrated report issuers in Japan has increased significantly in recent years (Corporate Value Reporting Lab, 2019), and the market capitalization of such integrated report issuers has reached 58% of the market capitalization of the entire TSE First Section (KPMG Japan, 2019). In addition, KPMG (2017) surveyed the top 100 sales companies in 49 countries to identify the number of companies that issue integrated reports. According to KPMG (2017), as of 2017, at 90, South Africa has the largest number of companies, followed by 42 in Japan, 36 in Spain, 26 in the Netherlands, and 22 in Brazil. As of 2017, South Africa is the sole country that mandates companies listed on the Johannesburg Stock Exchange to issue integrated reports. Thus, Japan is considered the country with the largest number of companies voluntarily working on integrated reporting. However, the quality of integrated reports issued by Japanese companies may be lower than that in other countries (Eccles et al.

2019),<sup>5</sup> and it is not clear whether integrated reporting in Japan works effectively to achieve its objective.

Second, the Japanese government has encouraged companies to practice integrated reporting. Several documents have been published as part of the “Japan Revitalization Strategy -JAPAN is BACK-”, which is the growth strategy of "Abenomics," a series of economic policies by the second Shinzō Abe Cabinet; these include the “Ito Review,”<sup>6</sup> “Japan’s Stewardship Code,”<sup>7</sup> and “Japan's Corporate Governance Code.”<sup>8</sup> Following these documents, in May 2017, the METI published “Guidance for Collaborative Value Creation”<sup>9</sup> as a guideline for promoting the dialogue between companies and investors in the Japan Revitalization Strategy (METI 2017). The objective of this guideline is “to contribute to deepening mutual understanding between companies and investors through information disclosure and dialogues and to encourage companies and investors to cooperatively create value.” This objective is consistent with that of the integrated reporting presented in the IIRF. In addition, METI has held the “Forum for Integrated Corporate Disclosure and ESG Dialogue” several times since December 2017 as a platform for dialogue between companies and investors based on the “Guidance for Collaborative Value Creation.” These facts clearly demonstrate that the Japanese government is proactive in promoting integrated reporting. Therefore, examining the impact of integrated reporting by Japanese companies is considered meaningful in terms of contributing to policy making by the government of Japan, as well as other policy makers.

For these reasons, this study empirically examines whether the introduction of integrated reporting changes the earnings management behavior of Japanese companies. We hypothesize and find that firms are more likely to report conservative earnings after

the introduction of integrated reporting, in terms of both accrual-based earnings management and real earnings management. Moreover, we show that the effect of integrated reporting on earnings management appears approximately two years or more after its introduction. In sum, our findings suggest that integrated reporting promotes decision making with a long-term focus, resulting in more conservative earnings management.

The remainder of the paper proceeds as follows. Section 2 reviews the literature and develops our hypotheses. Section 3 describes the empirical models, sample, and descriptive statistics. The results of our empirical analysis are reported in Section 4, followed by our conclusions in Section 5.

## **2. Literature Review and Hypothesis Development**

The world's first integrated reports were published by Danish biotech companies (Novozymes, 2002), Brazilian cosmetic manufacturers (Natura, 2003), and Danish pharmaceutical companies (Novo Nordisk, 2004) (Eccles and Krzus 2010). However, issuing integrated reports has become widely practiced since the publication of the Discussion Paper by IIRC (IIRC, 2011) and the IIRF (IIRC, 2013a). Consequently, the use of archival data for empirical research on integrated reporting has just begun. In this section, we first discuss the outline of the IIRF, and then review prior literature on the economic impact of integrated reporting.

In the IIRF, the IIRC listed the following four aims of integrated reporting:

- *Improve the quality of information available to providers of financial capital to enable a more efficient and productive allocation of capital.*

- *Promote a more cohesive and efficient approach to corporate reporting that draws on different reporting strands and communicates the full range of factors that materially affect the ability of an organization to create value over time.*
- *Enhance accountability and stewardship for the broad base of capitals (financial, manufactured, intellectual, human, social and relationship, and natural) and promote understanding of their interdependencies.*
- *Support integrated thinking, decision-making and actions that focus on the creation of value over the short, medium and long term.*

Thus, integrated reporting is not only intended to improve the information available to a company's external parties, but also aims to improve internal decision making. Eccles and Serafeim (2015) term such a function of integrated reporting as a "transformation function" and distinguish it from an "information function," which is more generally emphasized in conventional financial reporting. Therefore, examining the impact of the introduction of integrated reporting on internal decision making and behavior within a company would be helpful to those involved in formulating the IIRF, as well as other standard setters. Several previous studies have conducted analyses focusing on these characteristics of integrated reporting.<sup>10</sup>

Barth et al. (2017) focus on the two objectives of integrated reporting: improved information for outsiders and better insider decision making, and examine whether the introduction of integrated reporting contributes to achieving these two objectives.<sup>11</sup> Specifically, Barth et al. (2017) use data from South Africa to investigate the relationship between integrated report quality and three components of firm value: liquidity, cost of

equity capital, and expected future cash flows. Barth et al. (2017) find that (1) the higher the integrated report quality, the higher the liquidity; (2) there is no evidence of an association between integrated report quality and the cost of equity; and (3) there is a positive relationship between integrated report quality and expected future cash flows. Moreover, Barth et al. (2017) examine the association between integrated report quality and realized future operating cash flows, analyst price forecast accuracy, and investment efficiency to distinguish whether the positive relationship between integrated report quality and expected future cash flows reflects improved information or better decision making. They find that higher quality integrated reporting is related to higher future operating cash flows and investment efficiency, but not related to analyst price forecast accuracy. Therefore, Barth et al.'s (2017) findings generally suggest that integrated reporting is effective in achieving the two objectives of improved external information and better internal decision making.

Maniora (2017) examines the impact of integrated reporting on improvement in internal decision making from the perspective of (1) internalization: the degree of integration of business models with non-financial elements such as environmental, social, and governance (ESG), and (2) externalization: economic performance and ESG performance. Maniora (2017) reports that integrated reporting companies are superior both in internalization and externalization compared to non-ESG reporting companies but inferior in both internalization and externalization to ESG reporting companies. Thus, Maniora's (2017) findings suggest that, compared to other corporate reporting, integrated reporting may not be a superior mechanism for improving internal decision making.

Integrated reporting also differs from traditional financial reporting in that it encourages managers to make decisions focused on long-term value creation. Since the

2008 Global Financial Crisis, short-term investors, who intend to maximize short-term return on investment, have been criticized for promoting managers' short-termism, and disturbing companies' long-term value creation (Kay, 2012; Barton and Wiseman, 2014). As one way to resolve this situation, integrated reporting is expected to correct the short-term orientation and promote long-term value creation, which interests a wide range of stakeholders, including employees, customers, suppliers, and business partners. (IIRC, 2013a; Eccles, 2017; Klasa, 2018). Serafeim (2015) examines the impact of integrated reporting on long-term value creation by analyzing the relationship between integrated reporting and investor composition.<sup>12</sup> Using data from US listed companies, he examines whether the degree of integrated reporting is associated with ownership by long-term investors, who are interested in long-term value creation. Serafeim (2015) finds that companies that actively engage in integrated reporting have a more long-term oriented investor base. In addition, he finds that the relationship between integrated reporting and a long-term oriented investor base is more pronounced for non-family companies and companies with high growth opportunities. According to Serafeim's (2015) findings, integrated reporting efforts can attract long-term oriented investors and can play a role in promoting managers' long-term decision making. Therefore, when examining the impact of integrated reporting on corporate behavior, we should consider the expected role of integrated reporting: correcting companies' short-term orientation and promoting long-term value creation.

We discuss the association between integrated reporting and earnings management in line with the purpose and expected role of integrated reporting mentioned above. As discussed so far, companies are expected to improve their internal decision making by introducing integrated reporting to correct their short-term orientation and promote long-

term value creation (IIRC, 2013a; Eccles, 2017; Klasa, 2018). Serafeim (2015) suggests that the introduction of integrated reporting attracts long-term oriented investors, while some previous studies (Bushee, 1998; Koh, 2007) imply that the existence of long-term oriented investors can reduce aggressive earnings management, where earnings are inflated to avoid earnings decreases and losses (Burgstahler and Dichev, 1997), or meet/beat analysts' forecasts (Matsumoto, 2002; Burgstahler and Eames, 2006). Bushee (2001) hypothesizes and finds that the amount of firm value in expected near-term earnings is positively related to the level of shareholding by transient investors with short investment horizons. In addition, Bushee (2001) examines whether transient institutions have a myopic view when pricing firms, that is, overweighting near-term earnings and underweighting long-term earnings. Bushee (2001) observes that high levels of transient shareholding are related to overweighting near-term earnings and underweighting long-term earnings. These findings suggest that short-term oriented investors have a strong preference for short-term results and that managers could have difficulty making decisions that focus on creating long-term value under short-term pressure from investors. Therefore, we expect that if the introduction of integrated reporting can attract long-term oriented investors and alleviate the pressure from short-term investors, firms could be more likely to report conservative earnings after the introduction of integrated reporting.

In addition, aggressive earnings management that boosts earnings in the short-term would lead to higher levels of cash outflows due to overpayment of dividends or taxes and result in value destruction for a wide range of stakeholders. In other words, aggressive earnings management could lead to destruction of the six categories of capital identified in the IIRF as financial, manufactured, intellectual, human, social and relationship, and natural capital. Among other things, real earnings management that

directly affects cash flow due to changes in business activities are directly destroying these capitals through sales manipulation, overproduction, and the reduction of discretionary costs such as R&D, advertising, and labor.<sup>13</sup> Therefore, if integrated reporting works effectively to spread integrated thinking, which emphasizes long-term value creation based on broad capital, into the enterprise, resulting in decision making and actions with a long-term focus, companies would be more likely to report conservative earnings after the introduction of integrated reporting. Thus, we have the following hypothesis.

**Hypothesis:** Firms are more likely to report conservative earnings after the introduction of integrated reporting.

In this study, we examine the relationship between integrated reporting and earnings management, in terms of both accrual-based earnings management and real earnings management. Since there is no particular reason to expect that firms practicing integrated reporting act more conservatively only in accrual-based earnings management or only in real earnings management, we expect that companies will be more likely to report conservative earnings after the introduction of integrated reporting in both accrual-based earnings management and real earnings management.

### **3. Research Design**

#### *3.1. Regression Models*

To test our hypothesis regarding the relationship between the introduction of integrated reporting and earnings management, we estimate equation (1) for accrual-based earnings management and equation (2) for real earnings management:

$$\begin{aligned}
DA1_{i,t} = & \alpha + \beta_1 POSTIR_{i,t-1} + \beta_2 TA_{i,t-1} + \beta_3 LEV_{i,t-1} + \beta_4 ROA_{i,t-1} \\
& + \beta_5 PBR_{i,t-1} + \beta_6 DSH_{i,t-1} + \beta_7 ID_{i,t-1} + \beta_8 RETURN_{i,t-1} \quad (1) \\
& + YearDummy + IndustryDummy + \varepsilon_{i,t}
\end{aligned}$$

$$\begin{aligned}
REM_{PROXY_{i,t}} = & \alpha + \beta_1 POSTIR_{i,t-1} + \beta_2 TA_{i,t-1} + \beta_3 LEV_{i,t-1} + \beta_4 ROA_{i,t-1} \\
& + \beta_5 PBR_{i,t-1} + \beta_6 DSH_{i,t-1} + \beta_7 ID_{i,t-1} + \beta_8 RETURN_{i,t-1} \quad (2) \\
& + YearDummy + IndustryDummy + \varepsilon_{i,t}
\end{aligned}$$

We use discretionary accruals,  $DA1_{i,t}$ , as a proxy variable for accrual-based earnings management. Discretionary accruals have been widely used in many previous studies as a measure of accrual-based earnings management (Jones, 1991; Dechow et al., 1995; DeFond and Subramanyam, 1998; Kasznik, 1999; Larcker and Richardson, 2004; Kothari et al., 2005; Raman and Shahrur, 2008). In this study,  $DA1_{i,t}$  is defined as the residual obtained from industry-year cross-sectional regressions using the modified Jones model (Jones, 1991; Dechow et al., 1995) presented by Kothari et al. (2005). Details on the discretionary accrual estimation model of Kothari et al. (2005) are presented in the Appendix A.  $POSTIR_{i,t-1}$  is a dummy variable that equals 1 for firm-year observations after the issuance of an integrated report. To identify the first year of integrated report issuance for each company, we use the “List of Corporations in Japan Engaged in the

Publication of Self-Declared Integrated Reports 2018,” included in Corporate Value Reporting Lab (2019). The coefficient of  $POSTIR_{i,t-1}$  captures the effect of integrated reporting on firm earnings management behavior. A negative coefficient estimate suggests that firms are more likely to report conservative earnings through accrual-based earnings management after the introduction of integrated reporting.

As proxy variables of real earnings management ( $REM_{PROXY_{i,t}}$ ), we use abnormal operating cash flows ( $ABN\_CFO_{i,t}$ ); abnormal production costs ( $ABN\_PROD_{i,t}$ ); abnormal selling, general, and administrative expenses ( $ABN\_SGA_{i,t}$ ); abnormal research, development, and advertisement expenditures ( $ABN\_RDAD_{i,t}$ ); and abnormal research and development expenditures ( $ABN\_RD_{i,t}$ ), obtained from the model proposed by Roychowdhury (2006). Details on the measures of real earnings management are presented in the Appendix A. When either  $ABN\_CFO_{i,t}$ ,  $ABN\_SGA_{i,t}$ ,  $ABN\_RDAD_{i,t}$ , or  $ABN\_RD_{i,t}$  ( $ABN\_PROD_{i,t}$ ) is the dependent variable in equation (2), a positive (negative) coefficient estimate of  $POSTIR_{i,t-1}$  suggests that firms are more likely to report conservative earnings through real earnings management after the introduction of integrated reporting.

Following previous studies, we include several control variables in equations (1) and (2) to control for firm characteristics that may influence earnings management. Since Roychowdhury (2006) suggests that firm size and growth opportunities could greatly influence firm earnings management, we control for firm size ( $TA_{i,t-1}$ ) and growth opportunities ( $PBR_{i,t-1}$ ). Debt contracts are known from previous research to affect firm earnings management (Dichev and Skinner, 2002; Beatty and Weber, 2003), so the debt ratio ( $LEV_{i,t-1}$ ) is also included. We control for accounting performance ( $ROA_{i,t-1}$ ) and

stock performance ( $RETURN_{i,t-1}$ ), as managers of poorly performing companies are more likely to manipulate earnings to avoid negative reputational effects or dismissal. In addition, we include the ratio of shares held by directors ( $DSH_{i,t-1}$ ) and the proportion of independent directors ( $ID_{i,t-1}$ ), as well as year effects and industry effects. The upper and lower 1% of each continuous variable are winsorized, that is, replaced with the upper and lower one-percentile values to consider the influence of abnormal values on the regression results. We use standard errors clustered by both firm and year when calculating the significance level of the coefficient estimates (Petersen, 2009).

### *3.2. Sample and Data*

We obtain financial data and stock data over the period from 2004 to 2017 from the “NEEDS-Financial QUEST” database, which is widely used in the analysis of Japanese companies. Data on shareholding ratios and boards of directors are obtained from NEEDS CGES. To identify the existence of an integrated report and the first year of integrated report issuance for each company, we use the “List of Corporations in Japan Engaged in the Publication of Self-Declared Integrated Reports 2018,” included in Corporate Value Reporting Lab (2019).

We include firm-year observations in our sample that meet the following criteria: (1) companies listed on the Japanese stock market; (2) companies belonging to industries other than banking, such as banking, securities, insurance, and other financial businesses; (3) companies compliant with Japanese GAAP; and (4) companies with all the variables used in the regression analysis available. In all, our final sample contains 45,313 observations. Table 1 shows the distribution of observations by year. Of the observations, 701 are labeled as integrated report issuers and 44,612 are labeled as non-issuers.

(Insert Table 1 here)

### 3.3. Summary Statistics

Tables 2 and 3 show the descriptive statistics and correlation matrix, respectively. The average value of  $POSTIR_{i,t-1}$  is 0.015, which means that 1.5% of the firm-year observations in the full sample have already issued an integrated report. As for the correlation matrix,  $POSTIR_{i,t-1}$  is negatively correlated with  $DA1_{i,t}$  and  $ABN\_PROD_{i,t}$ , while positively correlated with  $ABN\_CFO_{i,t}$  and three measures of abnormal discretionary expenditures ( $ABN\_SGA_{i,t}$ ,  $ABN\_RDAD_{i,t}$ , and  $ABN\_RD_{i,t}$ ). These correlations suggest that, after the introduction of integrated reporting, companies are more likely to report conservative earnings in cases of both accrual-based earnings management and real earnings management.

(Insert Tables 2 and 3 here)

## 4. Results

### 4.1. Main Results

We first present the regression results for the association between the introduction of integrated reporting and accrual-based earnings management. Table 4 shows the regression results of equation (1). The first column on the left shows the estimation results of equation (1) for the full sample when  $DA1_{i,t}$  is the dependent variable. The coefficient estimate of interest is the  $POSTIR_{i,t-1}$  estimator, which is negative and statistically significant at the 1% level. The second and third columns from the left present the

regression results of equation (1) for the subsamples of positive  $DA1_{i,t}$  and negative  $DA1_{i,t}$ , respectively. The coefficient estimates of  $POSTIR_{i,t-1}$  are marginally negative ( $p < 0.1$ ) for the subsample of positive  $DA1_{i,t}$ , and are significantly negative at the 1% level for the subsample of negative  $DA1_{i,t}$ . These results suggest that companies are more likely to engage in conservative earnings management after the introduction of integrated reporting, and thus, the hypothesis is supported. However, we could not clarify why the relationship between the introduction of integrated reporting and accrual-based earnings management is more prominently observed for firms in the subsample of negative  $DA1_{i,t}$ .

If there are any omitted trends and/or unobservable differences in characteristics between integrated report issuers and non-issuers, and these differences affect both the introduction of integrated reporting and earnings management, the results reported above may be affected by an endogeneity problem. To address the endogeneity problem related to the decision to issue an integrated report, we add a dummy variable,  $IRFIRM_i$ , to equation (1) that equals 1 during the whole sample period for companies that issue integrated reports at any point in time. Inclusion of  $IRFIRM_i$  captures time-invariant differences between integrated report issuers and non-issuers. The right three columns of Table 4 show the regression results of equation (1) with  $IRFIRM_i$  for the full sample, subsample of positive  $DA1_{i,t}$ , and subsample of negative  $DA1_{i,t}$ , respectively. The coefficient estimates of  $POSTIR_{i,t-1}$ , are qualitatively similar to the estimation results of the base model in equation (1). Therefore, the regression results so far are robust, indicating that they are not affected considerably by endogeneity, and suggest that

companies are more likely to report conservative earnings in terms of accrual-based earnings management after the introduction of integrated reporting.

(Insert Table 4 here)

Next, we examine the relationship between the introduction of integrated reporting and real earnings management. Table 5 presents the regression results of equation (2). The first column on the left shows the estimation results of equation (2) when  $ABN\_CFO_{i,t}$  is the dependent variable. The coefficient of the variable of interest,  $POSTIR_{i,t-1}$ , is significantly positive at the 1% level. This result indicates that abnormal operating cash flows become larger after the introduction of integrated reporting and supports our hypothesis. The second column from the left presents the regression results of equation (2) when  $ABN\_PROD_{i,t}$  is the dependent variable. The coefficient of  $POSTIR_{i,t-1}$ , is significantly negative at the 1% level. This result shows that abnormal production costs become smaller after the introduction of integrated reporting. These findings are consistent with the hypothesis that firms are more likely to report conservative earnings after the introduction of integrated reporting. The third, fourth, and fifth columns from the left present the regression results of equation (2) when the dependent variables are  $ABN\_SGA_{i,t}$ ,  $ABN\_RDAD_{i,t}$ , and  $ABN\_RD_{i,t}$ , respectively. Although the coefficient estimates of  $POSTIR_{i,t-1}$  are positive for all specifications, the coefficient estimate is only significant when the dependent variable is  $ABN\_RD_{i,t}$  ( $p < 0.01$ ). Therefore, there are no consistent results indicating that companies increase discretionary expenditures after the introduction of integrated reporting.

The right five columns of Table 5 present the regression results of the extended model of equation (2) with  $IRFIRM_i$  when  $ABN\_CFO_{i,t}$ ,  $ABN\_PROD_{i,t}$ ,  $ABN\_SGA_{i,t}$ ,  $ABN\_RDAD_{i,t}$ , and  $ABN\_RD_{i,t}$  are the dependent variables, respectively. Similar to the regression of equation (1), including  $IRFIRM_i$  captures time-invariant differences in characteristics between integrated report issuers and non-issuers. Looking at the coefficient estimates of  $POSTIR_{i,t-1}$ , the regression results of equation (2) with  $IRFIRM_i$  are qualitatively similar to the those of equation (2) excluding  $IRFIRM_i$ . That is, the coefficient of  $POSTIR_{i,t-1}$  is significantly positive (negative) at the 1% (5%) level when  $ABN\_CFO_{i,t}$  ( $ABN\_PROD_{i,t}$ ) is the dependent variable. However, among the three discretionary expenditure proxy variables,  $POSTIR_{i,t-1}$  has a marginally significant positive value only when  $ABN\_RD_{i,t}$  is the dependent variable. To summarize the results regarding the relationship between the introduction of integrated reporting and real earnings management, companies are more likely to report conservative earnings through an increase in abnormal operating cash flows and a decrease in abnormal production costs after the introduction of integrated reporting. On the other hand, we do not observe any evidence consistent with integrated reporting issuers increasing discretionary expenses after the introduction of integrated reporting.

(Insert Table 5 here)

#### 4.2. Additional Results: Is integrated reporting a continuous improvement process?

Some practitioners point out that integrated reporting is a continuous improvement process, and the improvement in internal decision making as a result of integrated

reporting could take several years (Black Sun and IIRC, 2014, 2015; PwC, 2015; Deloitte, 2018). Therefore, to answer the question “Is integrated reporting a continuous improvement process?”, we examine whether the relationship between the introduction of integrated reporting and earnings management differs depending on the number of years since its introduction. Specifically, in place of  $POSTIR_{i,t-1}$  in equations (1) and (2), we add the indicator variables,  $IRPERIOD\_0Y_{i,t}$ ,  $IRPERIOD\_1Y_{i,t}$ ,  $IRPERIOD\_2Y_{i,t}$ ,  $IRPERIOD\_3Y_{i,t}$ ,  $IRPERIOD\_4Y_{i,t}$ ,  $IRPERIOD\_5Y_{i,t}$ , and  $IRPERIOD\_6YA_{i,t}$ , which equal 1 for firms with 0-year, 1-year, 2-years, 3-years, 4-years, 5-years, and 6-years or more of experience with integrated reporting, respectively. For example, in the case of company  $j$ , which first issued an integrated report in 2015, each of  $IRPERIOD\_0Y_{j,2015}$ ,  $IRPERIOD\_1Y_{j,2016}$ , and  $IRPERIOD\_2Y_{j,2017}$  equals 1 by definition. If we create individual dummy variables for more than six years of experience with integrated reporting, the number of firm-year observations that equal 1 for each dummy variable would be insufficient. Thus, we aggregate firm-year observations that are six years or more since the first issuance of an integrated report in a single dummy variable,  $IRPERIOD\_6YA_{i,t}$ . Estimating equations (3) and (4) using these dummy variables instead of  $POSTIR_{i,t-1}$  allows us to examine whether the association between the introduction of integrated reporting and earnings management varies as the time since the introduction grows longer.

$$\begin{aligned}
DA1_{i,t} = & \alpha + \beta_1 IRPERIOD\_0Y_{i,t} + \beta_2 IRPERIOD\_1Y_{i,t} + \beta_3 IRPERIOD\_2Y_{i,t} \\
& + \beta_4 IRPERIOD\_3Y_{i,t} + \beta_5 IRPERIOD\_4Y_{i,t} + \beta_6 IRPERIOD\_5Y_{i,t} \\
& + \beta_7 IRPERIOD\_6YA_{i,t} + \beta_8 TA_{i,t-1} + \beta_9 LEV_{i,t-1} + \beta_{10} ROA_{i,t-1} \\
& + \beta_{11} PBR_{i,t-1} + \beta_{12} DSH_{i,t-1} + \beta_{13} ID_{i,t-1} + \beta_{14} RETURN_{i,t-1} \\
& + YearDummy + IndustryDummy + \varepsilon_{i,t}
\end{aligned} \tag{3}$$

$$\begin{aligned}
REM_{PROXY_{i,t}} = & \alpha + \beta_1 IRPERIOD\_0Y_{i,t} + \beta_2 IRPERIOD\_1Y_{i,t} + \beta_3 IRPERIOD\_2Y_{i,t} \\
& + \beta_4 IRPERIOD\_3Y_{i,t} + \beta_5 IRPERIOD\_4Y_{i,t} + \beta_6 IRPERIOD\_5Y_{i,t} \\
& + \beta_7 IRPERIOD\_6YA_{i,t} + \beta_8 TA_{i,t-1} + \beta_9 LEV_{i,t-1} + \beta_{10} ROA_{i,t-1} \\
& + \beta_{11} PBR_{i,t-1} + \beta_{12} DSH_{i,t-1} + \beta_{13} ID_{i,t-1} + \beta_{14} RETURN_{i,t-1} \\
& + YearDummy + IndustryDummy + \varepsilon_{i,t}
\end{aligned} \tag{4}$$

The first column on the left side of Table 6 shows the regression results of equation (3) when the dependent variable is  $DA1_{i,t}$ . The coefficient estimates of  $IRPERIOD\_2Y_{i,t}$ ,  $IRPERIOD\_3Y_{i,t}$ ,  $IRPERIOD\_4Y_{i,t}$ , and  $IRPERIOD\_6YA_{i,t}$  are negative and statistically significant at the 1% or 5% level. The second and third columns from the left present the regression results of equation (3) for the subsamples of positive and negative  $DA1_{i,t}$ , respectively. For the subsample of positive  $DA1_{i,t}$ , the coefficient estimates of  $IRPERIOD\_3Y_{i,t}$ , and  $IRPERIOD\_6YA_{i,t}$  are negative and statistically significant at the 1% or 5% level. On the other hand, for the subsample of negative  $DA1_{i,t}$ , the coefficients of  $IRPERIOD\_2Y_{i,t}$ ,  $IRPERIOD\_3Y_{i,t}$ ,  $IRPERIOD\_4Y_{i,t}$ , and  $IRPERIOD\_6YA_{i,t}$  have significantly negative values at the 1% or 5% levels. These results suggest that companies need two years or more after the introduction of integrated reporting to become

more conservative in accrual-based earnings management, which is consistent with the suggestion that integrated reporting is a continuous improvement process that takes several years to work effectively within an enterprise. The right three columns of Table 6 show the estimation results of equation (3) with  $IRFIRM_i$  for the full sample, and the subsamples of positive and negative  $DA1_{i,t}$ , respectively. The results presented do not differ qualitatively from the ones obtained from the estimation of equation (3) without  $IRFIRM_i$ .

(Insert Table 6 here)

Table 7 shows the estimation results of equation (4), which uses proxy variables for real earnings management as the dependent variable. In the left five columns of Table 7, the regression results of the base model of equation (4) are presented, and in the five columns on the right side, the estimation results of the extended model of equation (4) with  $IRFIRM_i$  are presented. Due to space limitations, the coefficient estimates of the control variables are omitted. When  $ABN\_CFO_{i,t}$  is the dependent variable, the coefficient estimates of  $IRPERIOD\_2Y_{i,t}$ ,  $IRPERIOD\_3Y_{i,t}$ ,  $IRPERIOD\_4Y_{i,t}$ , and  $IRPERIOD\_6YA_{i,t}$  are positive and statistically significant at the 1% or 5% level in both the base model and the extended model in equation (4) (see the first columns on both the left and right sides). In other words, these results suggest that abnormal operating cash flows are more likely to increase for companies that have experienced two or more years since the introduction of integrated reporting. When  $ABN\_PROD_{i,t}$  is the dependent variable, the coefficient estimates of  $IRPERIOD\_2Y_{i,t}$ ,  $IRPERIOD\_3Y_{i,t}$ , and

$IRPERIOD\_4Y_{i,t}$  are negative and statistically significant at the 1% or 5% levels in both the base model and the extended model in equation (4) (see the second columns on both the left and right sides). These results suggest that abnormal production costs decrease for companies that have experienced two to four years since the first issuance of integrated reports.

On the other hand, we could not find statistically significant and consistent results for the proxy variables of abnormal discretionary expenditures in equation (4) for either the base model or the extended model. Thus, regardless of the number of years since the first issuance of integrated reports, no consistent trend is observed that indicates firms increase discretionary expenditures after the introduction of integrated reporting.

In total, the findings presented above suggest that it takes two years or more after the introduction of integrated reporting for companies practicing integrated reporting to report more conservative earnings through increases in abnormal operating cash flows and decreases in abnormal production costs.

(Insert Table 7 here)

#### *4.3. Robustness Checks: Alternative Measure of Earnings Management*

In this study, we use residuals obtained from industry-year cross-sectional regressions of the modified Jones model proposed by Kothari et al. (2005),  $DA1_{i,t}$ , as discretionary accruals, which measure accrual-based earnings management. However, discretionary accruals could include measurement errors, and these measurement errors may affect the results of the study. Therefore, to check the robustness of these results, as an alternative measure of accrual-based earnings management, we re-estimate the regression models

using residuals obtained from the modified Jones model proposed by Raman and Shahrur (2008),  $DA2_{i,t}$ , which is adjusted for firm performance and growth. Details of the modified Jones model proposed by Raman and Shahrur (2008) are presented in the Appendix A.

Table 8 shows the estimation results of equation (1) when  $DA2_{i,t}$  is the dependent variable. The regression results suggest that firms are more likely to report conservative earnings through accrual-based earnings management after the introduction of integrated reporting, which is consistent with our previous results.

(Insert Table 8 here)

The left (right) three columns of Table 9 show the regression results of equation (3) (equation (3) with  $IRFIRM_i$ ) when  $DA2_{i,t}$  is the dependent variable. These results suggest that companies need two years or more after the introduction of integrated reporting to become more conservative in accrual-based earnings management, which is consistent with our earlier findings.

In sum, our robustness tests suggest that the main and additional results of this study are robust to the use of an alternative measure of earnings management.

(Insert Table 9 here)

## **5. Conclusion**

The purpose of this study is to empirically examine the impact of integrated reporting on earnings management. According to the IIRF published by the IIRC in 2013, integrated

reporting is intended not only to improve the quality of information available to external parties, but also to improve internal decision making. Companies are expected to correct short-termism and promote long-term value creation by introducing integrated reporting. Although the introduction of integrated reporting by Japanese companies has been rapidly growing in recent years, it has been pointed out that the quality of integrated reports issued by Japanese companies could be lower than that of other countries (Eccles et al., 2019). Thus, it is an empirical issue whether Japanese companies' integrated reporting efforts are effective for achieving the distinguishing objective of integrated reporting, better internal decision making. With this research background, we use data from Japan to examine whether companies' earnings management behavior changes as a result of the introduction of integrated reporting.

The findings of this study are summarized as follows. First, we find that firms are more likely to report conservative earnings after the introduction of integrated reporting, both in accrual-based earnings management and real earnings management. We also find that the effect of integrated reporting on earnings management appears approximately two years or more after the introduction of integrated reporting. Together, our findings are consistent with the suggestion that integrated reporting gradually instills integrated thinking inside a firm, promotes decision making with a long-term focus, and results in more conservative earnings management.

This study contributes to the emerging literature and practice in several ways. First, we provide additional empirical evidence on integrated reporting by examining the impact of integrated reporting on a particular corporate behavior, earnings management. One of the objectives of integrated reporting is improvement in internal decision making (IIRC 2013a), and previous research finds evidence suggesting that integrated reporting

could improve internal decision making (Barth et al., 2017; Maniora, 2017). This study complements previous research by providing evidence that suggests, from the perspective of earnings management, integrated reporting could lead to an improvement in internal decision making.

Second, we provide evidence for standard setters and regulators who are interested in the merits of integrated reporting. In recent years, the Japanese government has actively promoted the introduction of integrated reporting to Japanese companies through publication of the “Guidance for Collaborative Value Creation” in 2017 and the “Forum for Integrated Corporate Disclosure and ESG Dialogue.” These series of measures have been implemented to improve sustainable value creation by Japanese companies. Our findings suggest that the introduction of integrated reporting promotes long-term decision making, and supports evidence-based policy making that promotes integrated reporting.

Third, we provide evidence for managers who are considering introducing integrated reporting or are currently working on integrated reporting. We find that it takes about two years or more for companies to report more conservative earnings after the introduction of integrated reporting. This finding is consistent with the practitioners’ point that integrated reporting is a continuous improvement process, and so it takes several years to improve internal decision making (Black Sun and IIRC, 2014, 2015; PwC, 2015; Deloitte, 2018).

However, there are some limitations in this study. The first point is that this study examines the impact of voluntary integrated reporting by companies. As of May 2019, integrated reporting is voluntary in Japan, and companies themselves can choose whether to introduce integrated reporting. Therefore, there is an endogeneity problem in the study’s analysis related to the decision to “introduce integrated reporting.” We address

this endogeneity problem by controlling for characteristics common to integrated report issuers. However, the study's results may need to be interpreted with caution, as we could not completely eliminate the possibility that an endogeneity problem affects the results.

Second, we do not examine the impact of integrated reporting on firm information environments. The IIRF cites improving the information available to outsiders and improving internal decision making as the primary objectives of integrated reporting. While we examine the impact of integrated reporting on the internal decision making of enterprises from the viewpoint of earnings management, we do not examine whether the introduction of integrated reporting can reduce information asymmetry. Therefore, more research is needed to shed light on the overall economic consequences of integrated reporting.

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<sup>1</sup> The IIRC defines integrated thinking as “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 of value over the short, medium and long term.” (IIRC, 2013a)

<sup>2</sup> See the IIRC web page (<http://integratedreporting.org/>, accessed July 8, 2019)

<sup>3</sup> The Corporate Value Reporting Lab (2019) defines an integrated report issuer as a company issuing a report that is self-labeled as an integrated report in an editorial policy and that comprehensively relates financial and non-financial information and indicates the consideration for integrated reporting.

<sup>4</sup> Eccles and Serafeim (2015) term such a function of integrated reporting as a "transformation function" and distinguish it from an "information function," which is the function generally emphasized in financial reporting.

<sup>5</sup> Eccles et al. (2019) select five integrated reports from each of 10 countries—Japan, Brazil, France, Germany, Italy, the Netherlands, South Africa, South Korea, the United Kingdom, and the United States—to analyze how well each company's integrated report complies with the IIRF. Eccles et al. (2019) classified these countries according to disclosure quality: “High (Germany, the Netherlands, and South Africa), Medium (France, Italy, South Korea, and the United Kingdom), and Low (Brazil, Japan, and the United States).”

<sup>6</sup> The official name of the Ito Review is the “Ito Review of Competitiveness and Incentives for Sustainable Growth—Building Favorable Relationships between Companies and Investors—,” released by the Ministry of Economy, Trade and Industry (METI) in August 2014. The key message of the Ito Review includes “the need for a shift to capital efficiency-focused management, optimization of the investment chain, and promotion of two-way dialogue between companies and investors” (METI 2014).

<sup>7</sup> Japan's Stewardship Code is known as “Principles for Responsible Institutional Investors,” issued by the Financial Services Agency of Japan (FSA) in February 2014. This Code is expected

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to “be helpful for institutional investors who behave as responsible institutional investors in fulfilling their stewardship responsibilities with due regard both to their clients and beneficiaries and to investee companies (FSA, 2014).”

<sup>8</sup> Japan's Corporate Governance Code was released by the Tokyo Stock Exchange (TSE) in June 2015. This Code defines its role as to establish “fundamental principles for effective corporate governance at listed companies in Japan. It is expected that the Code’s appropriate implementation will contribute to the development and success of companies, investors and the Japanese economy as a whole through individual companies’ self-motivated actions so as to achieve sustainable growth and increase corporate value over the mid- to long-term (TSE, 2015).”

<sup>9</sup> The official name of the Guidance for Collaborative Value Creation is “Guidance for Integrated Corporate Disclosure and Company-Investor Dialogues for Collaborative Value Creation: ESG Integration, Non-financial Information Disclosure and Intangible Assets into Investment” (METI, 2017).

<sup>10</sup> Previous studies empirically examine the impact of integrated reporting on firm information environments in terms of analysts' forecasts (Zhou et al., 2017; Bernardi and Stark, 2018), cost of equity (Barth et al., 2017; Zhou et al., 2017), and firm value (Baboukardos and Rimmel, 2016; Lee and Yeo, 2016; Mervelskemper and Streit, 2017). Mervelskemper and Streit (2017) analyze companies participating in the IIRC Integrated Reporting Pilot Programme. The remainder of the studies use data from South African listed companies, which have been required to issue integrated reports for periods after 2010.

<sup>11</sup> Barth et al. (2017) use the term “capital market channel” for the former and “real effect channel” for the latter.

<sup>12</sup> Serafeim (2015) relies on Bushee (1998) to classify institutional investors into transient, dedicated, and quasi-index, and defines the extent to which the investor base is dominated by long-term ownership as the difference between the ratio of shareholding by dedicated investors and transient investors.

<sup>13</sup> Regarding this argument, the IIRF states that “Because value is created over different time horizons and for different stakeholders through different capitals, it is unlikely to be created through the maximization of one capital while disregarding the others. For example, the maximization of financial capital (e.g., profit) at the expense of human capital (e.g., through inappropriate human resource policies and practices) is unlikely to maximize value for the organization in the longer term” (IIRC, 2013a, par. 2.9).

## Appendix A: Measurement of Earnings Management Proxies

### *Accrual-based Earnings Management Measures*

#### *Discretionary Accrual Measure proposed by Kothari, Leone, and Wasley (2005)*

We use the residuals obtained from the cross-sectional regression model presented by Kothari et al. (2005) as estimates of firm's discretionary accruals,  $DA1_{i,t}$ . We estimate the following model cross-sectionally by each industry-year:

$$\begin{aligned} & TACCRUALS_{i,t} / ASSETS_{i,t-1} \\ &= \beta_0 + \beta_1(1 / ASSETS_{i,t-1}) + \beta_2((\Delta SALES_{i,t} - \Delta AR_{i,t}) / ASSETS_{i,t-1}) \\ &+ \beta_3(PPE_{i,t} / ASSETS_{i,t-1}) + \beta_4 ROA_{i,t} + \varepsilon_{i,t} \end{aligned} \quad (A-1)$$

where  $TACCRUALS_{i,t}$  denotes the total accruals calculated as earnings minus cash flows from operations for company  $i$  at year  $t$ .  $ASSETS_{i,t-1}$  is the total assets for company  $i$  at year  $t-1$ .  $\Delta SALES_{i,t}$  is the change in sales in year  $t$  from year  $t-1$ .  $\Delta AR_{i,t}$  is the change in accounts receivables in year  $t$  from year  $t-1$ .  $PPE_{i,t}$  denotes property, plant, and equipment for company  $i$  at year  $t$ .  $ROA_{i,t}$  is net income divided by the total assets for company  $i$  at year  $t$ . We eliminate observations where there are fewer than ten observations in each industry-year group.

#### *Discretionary Accrual Measure proposed by Raman and Shahrur (2008)*

We use the residuals obtained from the cross-sectional regression model presented by Raman and Shahrur (2008) as estimates of firm's discretionary accruals,  $DA2_{i,t}$ . We estimate the following model cross-sectionally by each industry-year:

$$\begin{aligned}
& TACCRUALS_{i,t} / ASSETS_{i,t-1} \\
& = \beta_0 + \beta_1(1 / ASSETS_{i,t-1}) + \beta_2((\Delta SALES_{i,t} - \Delta AR_{i,t}) / ASSETS_{i,t-1}) \\
& + \beta_3(PPE_{i,t} / ASSETS_{i,t-1}) + \beta_4 ROA_{i,t} + \beta_5 BM_{i,t} + \varepsilon_{i,t} \quad (A - 2)
\end{aligned}$$

where  $BM_{i,t}$  is the ratio of book value to market value of equity for company  $i$  at year  $t$ . Other variables are as defined above. We eliminate observations where there are fewer than ten observations in each industry-year group.

### *Real Earnings Management Measures*

#### *Abnormal Cash Flows from Operations*

Sales manipulation is expected to lead to lower cash flows from operations (Roychowdhury, 2006). We use the residuals obtained from Roychowdhury's (2006) model as estimates of firm's abnormal cash flows from operations,  $ABN\_CFO_{i,t}$ . We estimate the following model cross-sectionally by each industry-year:

$$\begin{aligned}
& CFO_{i,t} / ASSETS_{i,t-1} \\
& = \beta_0 + \beta_1(1 / ASSETS_{i,t-1}) + \beta_2(SALES_{i,t} / ASSETS_{i,t-1}) \\
& + \beta_3(\Delta SALES_{i,t} / ASSETS_{i,t-1}) + \varepsilon_{i,t} \quad (A - 3)
\end{aligned}$$

where  $CFO_{i,t}$  denotes cash flows from operations for company  $i$  at year  $t$ . Other variables are as defined above. We eliminate observations where there are fewer than ten observations in each industry-year group.

#### *Abnormal Production Costs*

We use the residuals obtained from Roychowdhury's (2006) model as estimates of firm's abnormal production costs,  $ABN\_PROD_{i,t}$ . We estimate the following model cross-sectionally by each industry-year:

$$\begin{aligned} & PROD_{i,t} / ASSETS_{i,t-1} \\ & = \beta_0 + \beta_1(1 / ASSETS_{i,t-1}) + \beta_2(SALES_{i,t} / ASSETS_{i,t-1}) \\ & + \beta_3(\Delta SALES_{i,t} / ASSETS_{i,t-1}) + \beta_4(\Delta SALES_{i,t-1} / ASSETS_{i,t-1}) + \varepsilon_{i,t} \quad (A - 4) \end{aligned}$$

where  $PROD_{i,t}$  represents production costs for company  $i$  at year  $t$ , defined as cost of goods sold plus change in inventory. Other variables are as defined above. We eliminate observations where there are fewer than ten observations in each industry-year group.

#### *Abnormal selling, general, and administrative expenses*

We use the residuals obtained from Roychowdhury's (2006) model as estimates of firm's abnormal selling, general, and administrative expenses,  $ABN\_SGA_{i,t}$ . We estimate the following model cross-sectionally by each industry-year:

$$\begin{aligned} & SGA_{i,t} / ASSETS_{i,t-1} \\ & = \beta_0 + \beta_1(1 / ASSETS_{i,t-1}) + \beta_2(SALES_{i,t} / ASSETS_{i,t-1}) + \varepsilon_{i,t} \quad (A - 5) \end{aligned}$$

where  $SGA_{i,t}$  denotes selling, general, and administrative expenses for company  $i$  at year  $t$ . Other variables are as defined above. We eliminate observations where there are fewer than ten observations in each industry-year group.

#### *Abnormal research, development, and advertisement expenditures*

We use the residuals obtained from Roychowdhury's (2006) model as estimates of firm's abnormal research, development, and advertisement expenditures,  $ABN\_RDAD_{i,t}$ . We estimate the following model cross-sectionally by each industry-year:

$$\begin{aligned} & RDAD_{i,t} / ASSETS_{i,t-1} \\ & = \beta_0 + \beta_1(1 / ASSETS_{i,t-1}) + \beta_2(SALES_{i,t} / ASSETS_{i,t-1}) + \varepsilon_{i,t} \quad (A - 6) \end{aligned}$$

where  $RDAD_{i,t}$  denotes research, development, and advertisement expenditures for company  $i$  at year  $t$ . Other variables are as defined above. We eliminate observations where there are fewer than ten observations in each industry-year group.

#### *Abnormal research and development expenditures*

We use the residuals obtained from Roychowdhury's (2006) model as estimates of firm's abnormal research and development expenditures,  $ABN\_RD_{i,t}$ . We estimate the following model cross-sectionally by each industry-year:

$$\begin{aligned} & RD_{i,t} / ASSETS_{i,t-1} \\ & = \beta_0 + \beta_1(1 / ASSETS_{i,t-1}) + \beta_2(SALES_{i,t} / ASSETS_{i,t-1}) + \varepsilon_{i,t} \quad (A - 7) \end{aligned}$$

where  $RD_{i,t}$  denotes research and development expenditures for company  $i$  at year  $t$ . Other variables are as defined above. We eliminate observations where there are fewer than ten observations in each industry-year group.

## Appendix B: Variable Definitions

Variables	Definition
<b>Dependent Variables</b>	
<i>DA1</i>	Residual obtained from industry-year cross-sectional regressions using the modified Jones model presented by Kothari et al. (2005).
<i>DA2</i>	Residual obtained from industry-year cross-sectional regressions using the modified Jones model presented by Raman and Shahrur (2008).
<i>ABN_CFO</i>	Level of abnormal cash flows from operations obtained from the model proposed by Roychowdhury (2006).
<i>ABN_PROD</i>	Level of abnormal production costs obtained from the model proposed by Roychowdhury (2006).
<i>ABN_SGA</i>	Level of abnormal selling, general, and administrative costs obtained from the model proposed by Roychowdhury (2006).
<i>ABN_RDAD</i>	Level of abnormal research, development, and advertisement expenditure obtained from the model proposed by Roychowdhury (2006).
<i>ABN_RD</i>	Level of abnormal research and development expenditures obtained from the model proposed by Roychowdhury (2006).
<b>Variable of Interest</b>	
<i>POSTIR</i>	Indicator variable that equals 1 for firm-year observations after the issuance of an integrated report, 0 otherwise. To identify the first year of integrated report issuance for each company, we use the “List of Corporations in Japan Engaged in the Publication of Self-Declared Integrated Reports 2018,” included in Corporate Value Reporting Lab (2019).
<b>Control Variables</b>	
<i>TA</i>	Natural logarithm of total assets.
<i>LEV</i>	Total liabilities divided by total assets.
<i>ROA</i>	Net income divided by total assets.
<i>PBR</i>	Market value of equity divided by book value of equity.
<i>DSH</i>	Ratio of shares held by directors.
<i>ID</i>	Proportion of independent directors
<i>RETURN</i>	1-year stock return by the end of fiscal year $t-1$ .
<i>IRFIRM</i>	Indicator variable that equals 1 during the whole sample period for companies that issue integrated reports at any point in time.

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**Table 1** Distribution of observations

Fiscal year	N	<i>POSTIR</i> = 0	<i>POSTIR</i> = 1
2004	3,148	3,148	0
2005	3,196	3,195	1
2006	3,286	3,285	1
2007	3,359	3,356	3
2008	3,312	3,306	6
2009	3,372	3,364	8
2010	3,300	3,287	13
2011	3,226	3,209	17
2012	3,162	3,138	24
2013	3,156	3,110	46
2014	3,171	3,093	78
2015	3,185	3,074	111
2016	3,198	3,026	172
2017	3,242	3,021	221
	45,313	44,612	701

**Table 2** Descriptive statistics

	Mean	S.D.	Min	25%	Median	75%	Max
<i>DAI</i>	0.000	0.056	-0.195	-0.027	0.000	0.026	0.215
<i>ABN_CFO</i>	-0.001	0.069	-0.282	-0.032	0.000	0.033	0.235
<i>ABN_PROD</i>	0.003	0.178	-0.749	-0.056	0.019	0.094	0.484
<i>ABN_SGA</i>	-0.004	0.164	-0.381	-0.086	-0.023	0.040	0.726
<i>ABN_RDAD</i>	-0.001	0.032	-0.060	-0.018	-0.006	0.004	0.182
<i>ABN_RD</i>	0.000	0.015	-0.036	-0.007	-0.001	0.001	0.073
<i>POSTIR</i>	0.015	0.123	0	0	0	0	1
<i>TA</i>	10.393	1.642	5.969	9.273	10.243	11.362	14.922
<i>LEV</i>	0.499	0.209	0.087	0.334	0.503	0.660	1.099
<i>ROA</i>	0.024	0.066	-0.329	0.008	0.025	0.049	0.266
<i>PBR</i>	1.486	1.712	0.255	0.632	0.973	1.629	13.115
<i>DSH</i>	0.086	0.130	0.000	0.003	0.021	0.118	0.595
<i>ID</i>	0.126	0.149	0	0	0.091	0.222	0.600
<i>RETURN</i>	0.023	0.166	-0.471	-0.062	0.025	0.112	0.506

**Table 3** Correlations

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
(1) <i>DAI</i>		-0.794	0.226	-0.076	-0.062	-0.059	-0.028	-0.030	0.040	-0.071	-0.094	0.021	-0.029	0.016
(2) <i>ABN_CFO</i>	-0.788		-0.309	0.049	0.055	0.041	0.029	0.053	-0.131	0.304	0.148	0.010	0.007	0.055
(3) <i>ABN_PROD</i>	0.230	-0.312		-0.805	-0.349	-0.150	-0.031	-0.036	0.147	-0.161	-0.137	-0.026	-0.001	-0.018
(4) <i>ABN_SGA</i>	-0.083	0.047	-0.864		0.400	0.176	0.021	0.044	-0.078	-0.002	0.074	0.015	0.003	-0.004
(5) <i>ABN_RDAD</i>	-0.050	0.043	-0.335	0.372		0.622	0.057	0.214	-0.032	0.028	0.034	-0.109	0.016	0.002
(6) <i>ABN_RD</i>	-0.038	0.012	-0.114	0.125	0.552		0.073	0.168	0.016	0.044	0.079	-0.102	0.049	0.009
(7) <i>POSTIR</i>	-0.020	0.023	-0.015	0.006	0.028	0.059		0.171	0.014	0.034	0.047	-0.136	0.124	0.017
(8) <i>TA</i>	-0.022	0.066	0.011	-0.023	0.071	0.078	0.206		0.134	0.059	-0.012	-0.507	0.054	0.049
(9) <i>LEV</i>	0.035	-0.106	0.112	-0.054	-0.085	-0.082	0.013	0.150		-0.308	0.111	-0.090	-0.043	-0.006
(10) <i>ROA</i>	-0.048	0.321	-0.139	-0.001	0.060	0.004	0.022	0.119	-0.207		0.349	0.077	0.068	0.238
(11) <i>PBR</i>	-0.043	0.047	-0.135	0.129	0.126	0.066	-0.002	-0.154	0.104	0.088		-0.005	0.153	0.216
(12) <i>DSH</i>	-0.004	0.023	-0.104	0.100	0.061	-0.007	-0.073	-0.398	-0.045	0.076	0.155		-0.185	-0.010
(13) <i>ID</i>	-0.028	-0.001	-0.014	0.018	0.068	0.073	0.125	0.039	-0.044	0.008	0.145	-0.090		-0.005
(14) <i>RETURN</i>	0.027	0.059	-0.013	-0.001	0.005	-0.006	0.013	0.042	-0.002	0.255	0.190	-0.029	-0.010	

Pearson (Spearman) correlations are reported below (above) the diagonal. Variables are defined in Appendix B.

**Table 4** Introduction of integrated reporting and accrual-based earnings management

	BASE			Controlling for IR Firm Characteristics		
	<i>DAI</i>	<i>DAI</i> $\geq 0$	<i>DAI</i> $< 0$	<i>DAI</i>	<i>DAI</i> $\geq 0$	<i>DAI</i> $< 0$
<i>POSTIR</i>	-0.007 [-4.10]***	-0.002 [-1.79]*	-0.006 [-4.67]***	-0.006 [-4.11]***	-0.003 [-2.44]**	-0.005 [-4.00]***
<i>IRFIRM</i>				-0.002 [-1.38]	0.001 [0.80]	-0.002 [-1.27]
<i>TA</i>	-0.001 [-2.77]***	-0.005 [-20.15]***	0.004 [14.70]***	-0.001 [-2.10]**	-0.005 [-17.03]***	0.004 [13.36]***
<i>LEV</i>	0.013 [2.89]***	0.008 [3.29]***	0.002 [0.97]	0.013 [2.90]***	0.008 [3.28]***	0.002 [0.98]
<i>ROA</i>	-0.044 [-5.35]***	-0.045 [-5.41]***	0.032 [4.38]***	-0.044 [-5.34]***	-0.045 [-5.41]***	0.032 [4.36]***
<i>PBR</i>	-0.002 [-4.71]***	0.004 [11.28]***	-0.004 [-10.20]***	-0.002 [-4.69]***	0.004 [11.16]***	-0.004 [-10.18]***
<i>DSH</i>	-0.003 [-0.42]	0.011 [3.18]***	-0.012 [-2.57]**	-0.002 [-0.40]	0.011 [3.14]***	-0.012 [-2.54]**
<i>ID</i>	-0.011 [-3.69]***	0.002 [0.82]	-0.011 [-3.53]***	-0.011 [-3.60]***	0.002 [0.77]	-0.011 [-3.42]***
<i>RETURN</i>	0.025 [6.90]***	-0.002 [-0.55]	0.017 [2.92]***	0.025 [6.92]***	-0.002 [-0.55]	0.017 [2.93]***
<i>constant</i>	0.003 [0.64]	0.071 [24.59]***	-0.070 [-19.69]***	0.002 [0.34]	0.072 [21.99]***	-0.072 [-18.86]***
<i>Year effects</i>	Yes	Yes	Yes	Yes	Yes	Yes
<i>Industry effects</i>	Yes	Yes	Yes	Yes	Yes	Yes
Adj-R <sup>2</sup>	0.011	0.164	0.177	0.011	0.164	0.177
N	45,313	22,737	22,576	45,313	22,737	22,576

This table shows the regression results for the relation between the introduction of integrated reporting and accrual-based earnings management. Variables are defined in Appendix B. All t-statistics in parentheses are calculated based on standard errors adjusted for heteroscedasticity, and clustered by firm and year. \*, \*\*, and \*\*\* indicate that the estimated coefficients are statistically significant at the 10, 5, and 1 % levels, respectively.

**Table 5** Introduction of integrated reporting and real earnings management

	BASE					Controlling for IR Firm Characteristics				
	<i>ABN_CFO</i>	<i>ABN_PROD</i>	<i>ABN_SGA</i>	<i>ABN_RDAD</i>	<i>ABN_RD</i>	<i>ABN_CFO</i>	<i>ABN_PROD</i>	<i>ABN_SGA</i>	<i>ABN_RDAD</i>	<i>ABN_RD</i>
<i>POSTIR</i>	0.009 [4.22]***	-0.024 [-3.25]***	0.006 [0.81]	0.002 [1.31]	0.005 [4.77]***	0.008 [3.95]***	-0.017 [-2.53]**	-0.003 [-0.51]	-0.001 [-0.68]	0.002 [1.70]*
<i>IRFIRM</i>						0.001 [0.55]	-0.011 [-1.41]	0.013 [1.69]*	0.004 [2.44]**	0.005 [5.07]***
<i>TA</i>	0.002 [2.68]***	-0.003 [-1.72]*	0.004 [2.31]**	0.003 [8.39]***	0.001 [6.05]***	0.002 [2.38]**	-0.002 [-1.05]	0.002 [1.42]	0.002 [6.63]***	0.001 [3.48]***
<i>LEV</i>	-0.023 [-6.05]***	0.115 [8.91]***	-0.076 [-6.73]***	-0.021 [-10.12]***	-0.009 [-8.25]***	-0.023 [-6.06]***	0.115 [8.91]***	-0.076 [-6.74]***	-0.021 [-10.12]***	-0.009 [-8.34]***
<i>ROA</i>	0.335 [18.51]***	-0.300 [-6.33]***	-0.084 [-2.16]**	0.007 [0.87]	-0.008 [-2.16]**	0.335 [18.50]***	-0.301 [-6.35]***	-0.083 [-2.14]**	0.007 [0.91]	-0.008 [-2.06]**
<i>PBR</i>	0.002 [3.32]***	-0.019 [-8.79]***	0.017 [9.67]***	0.003 [8.71]***	0.001 [6.90]***	0.002 [3.30]***	-0.019 [-8.72]***	0.016 [9.58]***	0.003 [8.57]***	0.001 [6.56]***
<i>DSH</i>	0.007 [0.78]	-0.145 [-4.77]***	0.151 [5.64]***	0.027 [6.37]***	0.004 [2.11]**	0.007 [0.77]	-0.144 [-4.75]***	0.150 [5.59]***	0.027 [6.28]***	0.004 [1.95]*
<i>ID</i>	0.005 [0.99]	-0.022 [-1.33]	0.022 [1.46]	0.017 [4.54]***	0.008 [4.68]***	0.005 [0.96]	-0.020 [-1.22]	0.020 [1.32]	0.016 [4.40]***	0.007 [4.36]***
<i>RETURN</i>	-0.011 [-2.01]**	0.054 [3.77]***	-0.019 [-1.42]	-0.007 [-3.74]***	-0.002 [-2.01]**	-0.011 [-2.01]**	0.054 [3.77]***	-0.019 [-1.40]	-0.007 [-3.78]***	-0.002 [-2.05]**
<i>constant</i>	-0.015 [-2.27]**	0.012 [0.53]	-0.040 [-1.75]*	-0.024 [-5.76]***	-0.008 [-3.85]***	-0.014 [-2.05]**	0.003 [0.13]	-0.029 [-1.21]	-0.020 [-4.73]***	-0.004 [-1.80]*
<i>Year effects</i>	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
<i>Industry effects</i>	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adj-R <sup>2</sup>	0.117	0.068	0.042	0.060	0.035	0.117	0.068	0.043	0.061	0.041
N	45,313	45,182	45,154	45,360	45,360	45,313	45,182	45,154	45,360	45,360

This table shows the regression results for the relation between the introduction of integrated reporting and real earnings management. Variables are defined in Appendix B. All t-statistics in parentheses are calculated based on standard errors adjusted for heteroscedasticity, and clustered by firm and year. \*, \*\*, and \*\*\* indicate that the estimated coefficients are statistically significant at the 10, 5, and 1 % levels, respectively.

**Table 6** Integrated reporting as a continuous improvement process: accrual-based earnings management

	BASE			Controlling for IR Firm Characteristics		
	<i>DAI</i>	<i>DAI</i> $\geq 0$	<i>DAI</i> $< 0$	<i>DAI</i>	<i>DAI</i> $\geq 0$	<i>DAI</i> $< 0$
<i>IRPERIOD_0Y</i>	-0.001 [-0.59]	0.000 [-0.09]	0.001 [0.55]	0.000 [-0.07]	-0.001 [-0.33]	0.002 [1.03]
<i>IRPERIOD_1Y</i>	-0.003 [-1.32]	-0.002 [-0.62]	-0.003 [-1.80]*	-0.002 [-0.88]	-0.002 [-0.87]	-0.002 [-1.16]
<i>IRPERIOD_2Y</i>	-0.009 [-3.18]***	0.002 [0.40]	-0.007 [-4.22]***	-0.008 [-3.00]***	0.001 [0.21]	-0.006 [-3.52]***
<i>IRPERIOD_3Y</i>	-0.008 [-2.08]**	-0.005 [-4.31]***	-0.006 [-3.10]***	-0.006 [-1.85]*	-0.006 [-5.15]***	-0.005 [-2.42]**
<i>IRPERIOD_4Y</i>	-0.006 [-2.29]**	-0.004 [-1.88]*	-0.006 [-3.40]***	-0.005 [-1.75]*	-0.005 [-2.02]**	-0.005 [-2.56]**
<i>IRPERIOD_5Y</i>	-0.005 [-1.34]	0.000 [-0.14]	-0.004 [-0.87]	-0.004 [-1.01]	-0.001 [-0.38]	-0.003 [-0.62]
<i>IRPERIOD_6YA</i>	-0.015 [-4.83]***	-0.009 [-2.10]**	-0.007 [-2.34]**	-0.014 [-4.71]***	-0.009 [-2.11]**	-0.006 [-2.07]**
<i>IRFIRM</i>				-0.002 [-1.36]	0.001 [0.83]	-0.002 [-1.34]
<i>TA</i>	-0.001 [-2.68]***	-0.005 [-19.74]***	0.004 [14.80]***	-0.001 [-2.08]**	-0.005 [-17.01]***	0.004 [13.39]***
<i>LEV</i>	0.013 [2.89]***	0.008 [3.29]***	0.002 [0.97]	0.013 [2.90]***	0.008 [3.28]***	0.002 [0.98]
<i>ROA</i>	-0.044 [-5.35]***	-0.045 [-5.41]***	0.032 [4.40]***	-0.044 [-5.34]***	-0.045 [-5.41]***	0.032 [4.36]***
<i>PBR</i>	-0.002 [-4.69]***	0.004 [11.31]***	-0.004 [-10.10]***	-0.002 [-4.63]***	0.004 [11.19]***	-0.004 [-10.04]***
<i>DSH</i>	-0.003 [-0.42]	0.011 [3.17]***	-0.012 [-2.58]***	-0.002 [-0.40]	0.011 [3.14]***	-0.012 [-2.55]**
<i>ID</i>	-0.011 [-3.68]***	0.002 [0.80]	-0.011 [-3.53]***	-0.011 [-3.59]***	0.002 [0.77]	-0.011 [-3.42]***
<i>RETURN</i>	0.025 [6.90]***	-0.002 [-0.55]	0.017 [2.92]***	0.025 [6.92]***	-0.002 [-0.54]	0.017 [2.93]***
<i>constant</i>	0.003 [0.61]	0.071 [24.24]***	-0.070 [-19.68]***	0.002 [0.33]	0.072 [21.97]***	-0.072 [-18.92]***
<i>Year effects</i>	Yes	Yes	Yes	Yes	Yes	Yes
<i>Industry effects</i>	Yes	Yes	Yes	Yes	Yes	Yes
Adj-R <sup>2</sup>	0.011	0.164	0.177	0.012	0.164	0.178
N	45,313	22,737	22,576	45,313	22,737	22,576

This table shows the regression results for examining whether the relation between the introduction of integrated reporting and accrual-based earnings management differs depending on the number of years since the introduction of integrated reporting. Variables are defined in Appendix B. All t-statistics in parentheses are calculated based on standard errors adjusted for heteroscedasticity, and clustered by firm and year. \*, \*\*, and \*\*\* indicate that the estimated coefficients are statistically significant at the 10, 5, and 1 % levels, respectively.

**Table 7** Integrated reporting as a continuous improvement process: real earnings management

	BASE					Controlling for IR Firm Characteristics				
	<i>ABN_CFO</i>	<i>ABN_PROD</i>	<i>ABN_SGA</i>	<i>ABN_RDAD</i>	<i>ABN_RD</i>	<i>ABN_CFO</i>	<i>ABN_PROD</i>	<i>ABN_SGA</i>	<i>ABN_RDAD</i>	<i>ABN_RD</i>
<i>IRPERIOD_0Y</i>	0.003 [0.98]	-0.011 [-1.37]	0.001 [0.18]	0.001 [0.67]	0.003 [4.27]***	0.003 [0.82]	-0.004 [-0.55]	-0.008 [-1.31]	-0.002 [-2.17]**	0.000 [-0.21]
<i>IRPERIOD_1Y</i>	0.003 [1.20]	-0.010 [-0.96]	0.001 [0.06]	0.001 [0.47]	0.004 [4.85]***	0.003 [1.10]	-0.003 [-0.28]	-0.009 [-1.11]	-0.002 [-1.78]*	0.001 [0.92]
<i>IRPERIOD_2Y</i>	0.010 [3.07]***	-0.026 [-3.02]***	0.015 [1.87]*	0.003 [1.44]	0.004 [3.50]***	0.009 [2.84]***	-0.019 [-2.46]**	0.005 [0.69]	0.000 [-0.12]	0.001 [0.86]
<i>IRPERIOD_3Y</i>	0.012 [4.56]***	-0.036 [-3.79]***	0.014 [1.46]	0.002 [1.01]	0.004 [3.79]***	0.011 [4.29]***	-0.028 [-3.29]***	0.005 [0.50]	-0.001 [-0.43]	0.001 [0.90]
<i>IRPERIOD_4Y</i>	0.010 [2.85]***	-0.038 [-3.20]***	0.016 [2.05]**	0.006 [2.58]***	0.007 [5.47]***	0.009 [2.46]**	-0.031 [-2.64]***	0.007 [0.83]	0.003 [1.19]	0.004 [3.04]***
<i>IRPERIOD_5Y</i>	0.008 [1.57]	-0.024 [-2.19]**	0.007 [0.68]	0.002 [0.65]	0.005 [1.88]*	0.007 [1.42]	-0.017 [-1.45]	-0.003 [-0.26]	-0.001 [-0.31]	0.002 [0.72]
<i>IRPERIOD_6YA</i>	0.022 [4.38]***	-0.032 [-1.62]	-0.024 [-1.57]	0.000 [-0.13]	0.007 [2.67]***	0.022 [4.21]***	-0.025 [-1.24]	-0.033 [-2.14]**	-0.003 [-0.96]	0.004 [1.40]
<i>IRFIRM</i>						0.001 [0.44]	-0.011 [-1.37]	0.014 [1.75]*	0.004 [2.51]**	0.005 [5.03]***
<i>constant</i>	-0.014 [-2.21]**	0.011 [0.48]	-0.040 [-1.75]*	-0.024 [-5.73]***	-0.007 [-3.65]***	-0.014 [-2.03]**	0.003 [0.12]	-0.029 [-1.22]	-0.021 [-4.73]***	-0.004 [-1.79]*
<i>Other Controls</i>	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
<i>Year effects</i>	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
<i>Industry effects</i>	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adj-R <sup>2</sup>	0.117	0.068	0.043	0.060	0.035	0.117	0.068	0.043	0.061	0.041
N	45,313	45,182	45,154	45,360	45,360	45,313	45,182	45,154	45,360	45,360

This table shows the regression results for examining whether the relation between the introduction of integrated reporting and real earnings management differs depending on the number of years since the introduction of integrated reporting. Variables are defined in Appendix B. All t-statistics in parentheses are calculated based on standard errors adjusted for heteroscedasticity, and clustered by firm and year. \*, \*\*, and \*\*\* indicate that the estimated coefficients are statistically significant at the 10, 5, and 1 % levels, respectively.

**Table 8** Alternative measure of accrual-based earnings management: re-estimation of equation (1)

	BASE			Controlling for IR Firm Characteristics		
	<i>DA2</i>	<i>DA2</i> $\geq 0$	<i>DA2</i> $< 0$	<i>DA2</i>	<i>DA2</i> $\geq 0$	<i>DA2</i> $< 0$
<i>POSTIR</i>	-0.007 [-4.40]***	-0.002 [-1.82]*	-0.006 [-4.68]***	-0.006 [-4.49]***	-0.003 [-2.06]**	-0.005 [-3.86]***
<i>IRFIRM</i>				-0.002 [-1.55]	0.001 [0.57]	-0.003 [-1.98]**
<i>TA</i>	-0.002 [-4.18]***	-0.005 [-20.26]***	0.004 [15.83]***	-0.001 [-3.28]***	-0.005 [-16.62]***	0.004 [14.28]***
<i>LEV</i>	0.012 [3.08]***	0.007 [3.19]***	0.004 [1.68]*	0.012 [3.09]***	0.007 [3.19]***	0.004 [1.71]*
<i>ROA</i>	-0.044 [-5.29]***	-0.042 [-5.38]***	0.036 [4.30]***	-0.045 [-5.29]***	-0.042 [-5.37]***	0.036 [4.27]***
<i>PBR</i>	-0.003 [-5.43]***	0.003 [7.35]***	-0.005 [-14.41]***	-0.003 [-5.38]***	0.003 [7.32]***	-0.005 [-14.37]***
<i>DSH</i>	-0.003 [-0.41]	0.014 [3.47]***	-0.011 [-2.26]**	-0.002 [-0.39]	0.014 [3.44]***	-0.011 [-2.22]**
<i>ID</i>	-0.017 [-5.24]***	0.002 [1.04]	-0.013 [-4.14]***	-0.016 [-5.15]***	0.002 [1.02]	-0.012 [-4.00]***
<i>RETURN</i>	0.027 [7.62]***	0.001 [0.21]	0.021 [3.84]***	0.027 [7.65]***	0.001 [0.21]	0.021 [3.85]***
<i>constant</i>	0.011 [2.20]**	0.073 [24.23]***	-0.067 [-21.13]***	0.009 [1.74]*	0.073 [20.96]***	-0.069 [-20.32]***
<i>Year effects</i>	Yes	Yes	Yes	Yes	Yes	Yes
<i>Industry effects</i>	Yes	Yes	Yes	Yes	Yes	Yes
Adj-R <sup>2</sup>	0.020	0.161	0.188	0.020	0.161	0.188
N	44,160	20,932	23,228	44,160	20,932	23,228

This table shows the regression results of equation (1) using alternative measure of accrual-based earnings management. Variables are defined in Appendix B. All t-statistics in parentheses are calculated based on standard errors adjusted for heteroscedasticity, and clustered by firm and year. \*, \*\*, and \*\*\* indicate that the estimated coefficients are statistically significant at the 10, 5, and 1 % levels, respectively.

**Table 9** Alternative measure of accrual-based earnings management: re-estimation of equation (3)

	BASE			Controlling for IR Firm Characteristics		
	<i>DA2</i>	<i>DA2</i> $\geq 0$	<i>DA2</i> $< 0$	<i>DA2</i>	<i>DA2</i> $\geq 0$	<i>DA2</i> $< 0$
<i>IRPERIOD_0Y</i>	-0.001 [-0.58]	0.001 [0.17]	0.001 [0.28]	0.000 [0.03]	0.000 [-0.00]	0.003 [0.97]
<i>IRPERIOD_1Y</i>	-0.003 [-1.51]	-0.001 [-0.15]	-0.004 [-3.03]***	-0.002 [-1.02]	-0.001 [-0.30]	-0.002 [-1.67]*
<i>IRPERIOD_2Y</i>	-0.009 [-3.27]***	0.002 [0.40]	-0.006 [-3.43]***	-0.007 [-2.97]***	0.001 [0.29]	-0.004 [-2.70]***
<i>IRPERIOD_3Y</i>	-0.008 [-2.44]**	-0.008 [-5.01]***	-0.008 [-2.75]***	-0.007 [-2.17]**	-0.008 [-5.10]***	-0.006 [-2.14]**
<i>IRPERIOD_4Y</i>	-0.007 [-2.51]**	-0.005 [-1.93]*	-0.007 [-3.28]***	-0.006 [-1.92]*	-0.006 [-1.96]*	-0.005 [-2.37]**
<i>IRPERIOD_5Y</i>	-0.007 [-1.62]	-0.003 [-0.67]	-0.008 [-1.43]	-0.005 [-1.25]	-0.003 [-0.80]	-0.007 [-1.09]
<i>IRPERIOD_6YA</i>	-0.017 [-5.79]***	-0.007 [-2.83]***	-0.009 [-2.13]**	-0.016 [-5.72]***	-0.007 [-2.67]***	-0.007 [-1.74]*
<i>IRFIRM</i>				-0.002 [-1.54]	0.001 [0.56]	-0.003 [-2.02]**
<i>TA</i>	-0.002 [-4.07]***	-0.005 [-19.91]***	0.004 [16.19]***	-0.001 [-3.26]***	-0.005 [-16.59]***	0.004 [14.34]***
<i>LEV</i>	0.012 [3.08]***	0.007 [3.19]***	0.004 [1.67]*	0.012 [3.09]***	0.007 [3.18]***	0.004 [1.70]*
<i>ROA</i>	-0.044 [-5.30]***	-0.042 [-5.38]***	0.036 [4.30]***	-0.045 [-5.30]***	-0.042 [-5.38]***	0.036 [4.27]***
<i>PBR</i>	-0.003 [-5.45]***	0.003 [7.56]***	-0.005 [-14.34]***	-0.003 [-5.40]***	0.003 [7.55]***	-0.005 [-14.28]***
<i>DSH</i>	-0.002 [-0.40]	0.014 [3.47]***	-0.011 [-2.26]**	-0.002 [-0.38]	0.014 [3.44]***	-0.011 [-2.22]**
<i>ID</i>	-0.017 [-5.23]***	0.002 [1.02]	-0.013 [-4.13]***	-0.016 [-5.14]***	0.002 [1.00]	-0.012 [-4.00]***
<i>RETURN</i>	0.027 [7.61]***	0.001 [0.21]	0.021 [3.84]***	0.027 [7.63]***	0.001 [0.22]	0.021 [3.85]***
<i>constant</i>	0.011 [2.15]**	0.073 [23.90]***	-0.067 [-21.19]***	0.009 [1.73]*	0.073 [20.91]***	-0.069 [-20.40]***
<i>Year effects</i>	Yes	Yes	Yes	Yes	Yes	Yes
<i>Industry effects</i>	Yes	Yes	Yes	Yes	Yes	Yes
Adj-R <sup>2</sup>	0.020	0.161	0.188	0.020	0.161	0.188
N	44,160	20,932	23,228	44,160	20,932	23,228

This table shows the regression results of equation (3) using alternative measure of accrual-based earnings management. Variables are defined in Appendix B. All t-statistics in parentheses are calculated based on standard errors adjusted for heteroscedasticity, and clustered by firm and year. \*, \*\*, and \*\*\* indicate that the estimated coefficients are statistically significant at the 10, 5, and 1 % levels, respectively.