Voluntary Adoption of the International Integrated Reporting Framework: Capital Market Consequences

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Abstract

The purpose of integrated reports is to improve the quality of information available to capital providers to enable more efficient capital allocation decisions. There is scant evidence to substantiate the proposed capital market benefits of integrated reporting (IR) in voluntary settings as extant empirical results are focused on mandatory IR. This paper examines whether voluntary adoption of the International Integrated Reporting Framework and initiation of integrated reports influence the information environment, cost of equity and firm value. Using an international sample of IR firms and matched non-IR firms, the results provide no evidence of an association between voluntary IR adoption and capital market consequences. These results are robust to controlling for self-selection, to the use of both level and change specifications, to a difference-in-differences design, to alternative model specifications and sample specifications, and to a number of sensitivity analyses.

JEL Classification: M40, M41

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1. Introduction

Firms face an increasingly challenging reporting environment due to globalisation, regulatory change and rising information demands from stakeholders (EY 2014). This challenge has resulted in the length of annual reports growing over time, financial reports becoming increasingly complex, and reporters producing disconnected and static communications (EY 2014; Eccles and Krzus 2010; IIRC 2013a; Rowbottom and Locke 2016; Bradbury et al. 2018). As a response to these problems, the International Integrated Reporting Council (IIRC) released the International Integrated Reporting Framework (IIRC Framework) in December 2013 to guide the preparation of an integrated report. The IIRC (2013a) defines an integrated report as a concise and forward-looking communication that integrates financial and non-financial information, and details how an organisation's strategy, governance, prospects and performance lead to value creation. Integrated reports are intended to improve the quality of information available to capital providers to enable more efficient capital allocation decisions (IIRC 2013a).

Proponents of integrated reporting (IR) suggest that publishing an integrated report facilitates capital providers to have a better understanding of a firm's strategy and have greater confidence in a firm's business model (IIRC 2013a; Black Sun 2014). These claims of capital market benefits have been supported by the findings of studies based on South Africa, where IR is mandatory. Studies on mandatory IR have found that IR reports more aligned with the IIRC Framework improve the information environment and firm value. These studies have deemed reports more aligned with the IIRC Framework as higher quality reports, and have found associations between higher quality integrated reports and increased Tobin's Q (Barth et al. 2017; Lee and Yeo 2016), lower analyst forecast error and lower forecast dispersion (Bernardi and Stark 2018; Zhou et al. 2017). While studies on mandatory IR provide important insights on the consequences of better quality IR reports, these results may not apply to voluntary settings. The generalisability of these findings may further be limited, given the possibility that the South African findings may reflect country-specific characteristics or regulatory effects.

Studies on voluntary IR do not provide consistent evidence in support of the claimed capital market benefits of IR. Case studies on voluntary IR have found that IR has not led to innovations or transformative changes in disclosure practices and managers often consider it an extension or repackaging of sustainability reporting (Lodhia 2015; Stubbs and Higgins 2014; Chaidali and Jones 2017). Integrated reports have been criticised for lacking disclosure of quantitative capital-specific information and forward-looking information about risks and

opportunities (IIRC 2013b; Pistoni et al. 2018; Kılıç and Kuzey 2018). Further, while investors are the primary target audience of integrated reports, such reports are not necessarily considered a relevant information source for investment decision-making (Hsiao and Kelly 2018; Abhayawansa et al. 2018).

As there is international interest in the IIRC Framework and IR is anticipated as a future reporting norm (IIRC 2017; KPMG 2017), empirical evidence is needed to substantiate the proposed benefits of IR. Prior archival studies concentrate on the economic consequences of IR in the mandatory setting of South Africa. However, IR is a voluntary practice elsewhere. Therefore, the purpose of this paper is to provide empirical evidence on the capital market consequences of voluntary IR. We examine whether voluntary adoption of the IIRC Framework and initiation of integrated reports influence the information environment, cost of equity and firm value. We examine an international sample of all IR adopting firms (including only firms that claim adherence to the IIRC Framework) matched with non-IR firms. Multiple linear regressions (MLR), treatment effect models (TEM) and difference-in-differences (DID) estimates are tested to address potential endogeneity problems related to self-selection bias and omitted variables. For MLR and TEM estimates, in addition to using leading dependent variables to mitigate time lag effects and reverse causality, both level and changes specifications are examined. As any effects of IR could emerge in later stages of adoption, two-year leads are tested for all models.

The findings of prior IR studies suggest two possible outcomes for our investigation. If there are positive associations between voluntary IR and capital market consequences, integrated reports could mitigate information asymmetry by providing incremental information to capital markets over existing reporting mechanisms (Bernardi and Stark 2018; Zhou et al. 2017; Lee and Yeo 2016; Arguelles et al. 2016). Further, IR could result in more efficient internal decision-making, attributed to integrated thinking and reporting, which improves investment efficiency and firm value (Barth et al. 2017). If the results are not statistically significant, voluntary IR may not have resulted in substantial changes in reporting practices (Lodhia 2015; Stubbs and Higgins 2014; Chaidali and Jones 2017), and thereby integrated reports do not provide incremental or material information for capital providers (IIRC 2013b; Pistoni et al. 2018; Kılıç and Kuzey 2018). Another explanation is that firms are adopting IR concepts regardless of adopting the IIRC Framework; hence, disclosures by non-IR firms may resemble integrated reports without being labelled as one (Adams et al. 2016; Haji and Anifowose 2016). It is also possible that capital markets do not react to integrated reports, as market participants are ignorant of IR or do not consider integrated reports in their current

investment decision-making processes (Hsiao and Kelly 2018; Abhayawansa et al. 2018). Taken together, we find no consistent evidence that voluntary IR changes the information environment, cost of equity, or firm value. The results show no statistically significant changes in the capital market consequences when comparing pre- and post-IR initiation, and any changes are not statistically different from non-IR firms. Our results are robust to a number of sensitivity analyses.

This study responds to calls for practical research on the impact of IR (Dumay et al. 2016; Burritt 2012; de Villiers et al. 2017a; de Villiers et al. 2017b). The study contributes to the IR literature in several ways and is of interest to regulators, the IIRC, managers and investors. It is the first to investigate the capital market consequences associated with voluntary adoption of the IIRC Framework. While we do not find results in support of the proposed capital market benefits of IR, the results are consistent with the broader voluntary IR literature. The focus on the initiation of integrated reports provides insights on the economic impacts of voluntary IR in its early stages of adoption.

Our findings have important policy implications and implications for future research. While IR has potential to bring about changes in reporting practices, this potential could be limited to countries where non-financial disclosures or IR concepts are not already present in existing reporting practices. For countries with firms that voluntarily adopt the IIRC Framework, firms could be trending towards providing the type of information promoted by IR and firm disclosure could reflect IR concepts without being labelled as an integrated report (Adams et al. 2016; Haji and Anifowose 2016). Further, there may be no substantial differences between voluntary adoption of the IIRC Framework and application of general IR concepts. As our results do not provide evidence of the benefits of IR as promoted by the IIRC, there needs to be further empirical evidence to substantiate the claimed benefits of IR.

The remainder of the paper is organised as follows. Section 2 develops the hypotheses. Section 3 details the sample and research design. Section 4, Section 5 and Section 6 present the model employed and empirical evidence for the information environment, cost of equity and firm value, respectively. Section 7 concludes.

2. Prior Literature and Hypotheses

2.1 IR Initiation and the Information Environment

The information environment is affected by corporate disclosures, private information acquisition and information dissemination (Lang et al. 2003). From the perspective of economics-based voluntary disclosure theory, discretionary information reduces information

asymmetry (Verrecchia 1983, 1990), and the quality of information serves as a signal investors use to appraise investment targets (Merton 1987). These assertions hold to the extent that the information disclosed affects firm value and analysts can infer useful information from the disclosures (Dhaliwal et al. 2012). While it is not possible to directly measure the information environment, greater forecast accuracy and lower forecast dispersion are common proxies of a better information environment (Lang et al. 2003).

According to the IIRC (2013a), integrated reports aim to improve the quality of information available to capital providers by providing a clearer view of organisational value creation. Current reporting systems arguably produce disconnected, static and increasingly complex communications, and integrated reports are meant to address these deficiencies (EY 2014; Eccles and Krzus 2010; IIRC 2013a). Integrated reports are concise communications that explain the interrelationships between financial and non-financial information and detail how an organisation's strategy, governance, performance and prospects lead to value creation over time (IIRC 2013a). Theoretically, integrated reports would improve the information environment if it provides value relevant information and capital providers are able to extract this information to make more accurate valuations.

Empirical evidence on mandatory IR supports a significant association between increased disclosure quality and analyst forecast accuracy and lower forecast dispersion. Zhou et al. (2017) found integrated reports more aligned with the IIRC Framework reduce analyst forecast error and there is marginal evidence that the level of alignment is negatively associated with analyst forecast dispersion. These findings suggest investors are willing to accept lower rates of return when there is less information risk. Further, the quality of connectivity results in less analyst forecast error, indicating the emphasis in integrated reports are useful for analysts in assessing firms' future profitability. Similarly, Bernardi and Stark (2018) suggest integrated reports provide useful information for investors to assess the links between ESG and financial performance. They found ESG scores were not associated with analyst forecast accuracy prior to the IR regime in South Africa, but are significantly associated with increased forecast accuracy once the IIRC Framework was introduced.

However, studies on voluntary IR suggest the process does not lead to radical changes in internal and external communication (Stubbs and Higgins 2014; Dumay and Dai 2017), and integrated reports have been criticised for lacking disclosure of quantitative information and forward-looking information about risks and opportunities (IIRC 2013b; Kılıç and Kuzey 2018; Pistoni et al. 2018). Further, investors are reliant on multiple information sources and do not

consider integrated reports relevant for investment decision-making (Hsiao and Kelly 2018; Abhayawansa et al. 2018). Accordingly, the first hypothesis is stated in null form:

H1a: Initiation of integrated reports prepared according to the IIRC Framework is not associated with analyst forecast error

H1b: Initiation of integrated reports prepared according to the IIRC Framework is not associated with analyst forecast dispersion

2.2 IR Initiation and Cost of Equity

The information environment and information quality of a firm can have both direct and indirect influences on cost of equity. Direct effects arise when higher quality information affects market participants' assessment of future cash flow distribution, such as through risk sharing and reduction of estimation risk (Merton 1987; Lang et al. 2003; Lambert et al. 2007). Indirect effects arise when higher quality information affects a firm's real decisions or affects market liquidity, which influences the expected value of a firm and covariance of cash flows (Verrecchia 2001; Lambert et al. 2007).

Integrated reports can potentially influence cost of equity directly and indirectly. Under the assumption that integrated reports are credible and provide value relevant information, IR could reduce uncertainty when assessing a firm's performance and future prospects. Further, non-financial disclosures could directly influence cost of equity capital through investor preference effects (Richardson and Welker 2001). Investors are willing to accept a lower rate of return for firms with which they have an affinity. Integrated reports could indirectly reduce cost of equity if it reduces information asymmetry. Investors are more willing to trade in situations with low information asymmetry as it reduces uncertainty and information costs associated with following a firm (Dhaliwal et al. 2011; Merton 1987). Market liquidity decreases bid-ask spread and transaction costs, and leads to lower required rate of returns (Dhaliwal et al. 2011).

In a mandatory setting, Barth et al. (2017) did not find a relation between integrated report quality and cost of capital, whereas Zhou et al. (2017) found that higher integrated report quality leads to a lower cost of equity capital following an improved information environment. Following from the first hypothesis, the second hypothesis is stated in null form:

H2: Initiation of integrated reports prepared according to the IIRC Framework is not associated with cost of equity

2.3 IR Initiation and Firm Value

Equity valuation using a discounted cash flow model or a residual income model have underlying assumptions that share price is the present value of expected future net dividends, discounted at the cost of equity capital. Thus, for voluntary disclosure to influence firm value, disclosures need to provide incremental information that is useful for investors in assessing future cash flows and investment risk (Cahan et al. 2016; Lee and Yeo 2016). While informative and credible information could lead to increases in firm value, incremental information that is perceived as opportunistic or biased would decrease firm value or leave it unchanged (Cahan et al. 2016).

Empirical evidence generally supports a positive association between non-financial performance and financial performance (van Beurden and Gössling 2008); however, there are conflicting evidence on whether and to what extent non-financial disclosures affect firm value. Traditionally, it is assumed that investors are only interested in maximising risk-adjusted returns from investment. Thereby, investors' are interested in social and environmental information only to the extent that it indicate potential investment risk or provide signals about management competency (Murray et al. 2006). Some studies found that non-financial information could be considered immaterial to investors (EY 2015; Murray et al. 2006), while other studies found a positive relation between ESG disclosure and firm value (Cahan et al. 2016; de Klerk et al. 2015). Integrated reports would be value relevant if they have the ability to capture or summarise information that affects equity value. However, there are investors who consider integrated reports to be irrelevant to investing due to unawareness or unfamiliarity with the concept of IR and reliance on other information sources, such as third-party reports and conference calls, for investment decision-making (Hsiao and Kelly 2018; Abhayawansa et al. 2018).

Empirical evidence on mandatory IR is consistent in the conclusion that integrated report quality is positively associated with firm value. Lee and Yeo (2016) found a significant and positive association between reporting quality and Tobin's Q, with this association stronger for firms with higher organisational complexity and external financing needs. Barth et al. (2017) found the same association and further indicate that increases in firm value resulted from capital market and cash flow effects. Capital market effects are reflected in a positive association between reporting quality and market liquidity. Cash flow effects are reflected in a positive association between reporting quality and expected future cash flows. Additionally, Barth et al. (2017) did not identify any significant associations when substituting Tobin's Q

with share price and returns, suggesting the result is associated with the excess of market value over assets.

As there is no evidence that benefits identified for mandatory IR are extendable to voluntary IR, the third hypothesis follows the previous hypotheses and are stated in null form:

H3: Initiation of integrated reports prepared according to the IIRC Framework is not associated with firm value

3. Research Design and Sample

3.1 Definition and Sample Selection

This study defines IR firms as firms that satisfy the following two criterions: (1) acknowledge use of the IIRC Framework or involvement in the IIRC's pilot programme, and (2) disclose the eight content elements required by the IIRC Framework. The content elements include organisational overview and external environment, governance, business model, risks and opportunities, strategy and resource allocation, performance, outlook, and basis of preparation (IIRC 2013a). The initiation year is determined as the first year an IR firm satisfies these two criterions.

IR firms were identified through the IIRC website, the GRI database, Google and the matching process. All organisations listed on the IIRC website were assessed, as well as all organisations in the GRI database with reports labelled or tagged as 'integrated'. Additional IR firms were identified from Google searches, using the search term 'integrated report*' or the phrase integrated report in other languages, and when checking the cleanness of the matched non-IR group. The sample was re-matched after each iteration and process repeated until a clean sample of IR firms and non-IR firms is reached.

The IIRC website, GRI database and Google searches identified 1,562 organisations. Annual reports, annual reviews, management reports and sustainability reports from 2009 onwards were obtained for each listed firm. Content analysis was performed to assess whether firms satisfied the IR firm criteria. As the study focuses on voluntary disclosure by listed firms, non-publically listed organisations (627), firms listed on the Johannesburg Stock Exchange (266), and firms that did not satisfy the IR firm criteria (427) were filtered out of the sample. The matching process identified 62 additional IR firms. As at 22 September 2017, 304 listed firms were identified to have voluntarily prepared integrated reports based on the IIRC Framework.

To address self-selection bias, a matched group of non-IR firms was created by matching exactly on country, industry and year, and then the closest in market capitalisation

was taken. While the matching algorithm was a one-to-one match using nearest neighbour with replacement, there are no duplicate observations in the sample. In order to obtain a sample that had similar characteristics as IR firms and had data available for the variables of interest, the sample was matched on two-digit SIC using the ASSET4 universe.

3.2 Research Design

Our research design attempts to address endogeneity concerns relating to self-selection, omitted variables, reverse causality and simultaneity. While matching attempts to address the issue of self-selection and formed a group of non-IR firms with similar observable characteristics as IR firms, matching techniques are not an alternative to Heckman-type selection models (Shipman et al. 2017). TEM adjust for selection bias that arises from unobserved characteristics, such as organisational culture and internal changes. TEM first estimates a probit model for selection and then inserts a correction factor calculated from the probit model into the regression model of interest. The correction factor *lambda*, or the inverse Mills ratio, is the generalised probit residual obtained from the selection model. The two-step estimator is used in the main analyses, while full maximum likelihood estimator (MLE) is used as robustness tests. The selection model is specified as follow (variables defined in Appendix A):

$$\begin{aligned} IR_{i,t} = {} & \beta_0 + \beta_1 BOARDCOM\_CSR_{i,t-1} + \beta_2 BOARDSIZE_{i,t-1} + \beta_3 GENDIV_{i,t-1} \\ & + \beta_4 LEV_{i,t-1} + \beta_5 LnSUBSIDIARY_{i,t-1} + \beta_6 INTASSET_{i,t-1} \\ & + \beta_7 CONCENTRATE_{i,t-1} + \beta_8 SENSITIVE_{i,t-1} \\ & + \beta_9 CULTURE\_MUL_{i,t-1} + \beta_{10} NATION\_VF_{i,t-1} + \varepsilon_{i,t} \end{aligned} \quad (1)$$

The selection model includes a number of valid exclusion restrictions. For instance, Appendix B shows that presence of a corporate social responsibility committee (*BOARDCOM_CSR*), board size (*BOARDSIZE*) and number of subsidiaries (*LnSUBSIDIARY*) are statistically significant determinants of IR initiation. Untabulated regression analyses show that these variables are not important predictors of the capital market consequences, as they are not statistically significant and each increases adjusted r-squared by 0.02 at most. Moreover, the exclusion restrictions are valid as, conceptually, a number of variables in the selection model do not directly influence the information environment, perception of risk or prediction of cash flows. Further, these variables are not commonly included by prior studies as predictors of these capital market consequences.

The focus on initiation year and use of lead-lag models mitigates the issue of time lags, reverse causality and simultaneity. Lead-lag models are appropriate under the expectation that

the release of an integrated report in the current year would affect the level or changes in the investigated consequences at a later period, rather than vice versa. However, if this expectation does not hold, DID estimates may be reliable. DID compares the change in investigated consequences for IR firms before and after implementing IR with the corresponding change for matched non-IR firms. Further, a DID design using panelled observations controls for time-invariant unobservable characteristics. The DID model is stated in general form below:

$$y_{it} = \beta_0 + \beta_1 IR_{i,t} + \beta_2 POST_{i,t} + \beta_3 IR * POST_{i,t} + \sum CONTROLS_{i,t} + \varepsilon_{i,t} \quad (2)$$

The treatment variable (*IR*) equals 1 if a firm is an IR firm, and 0 otherwise. The post-treatment period (*POST*) equals 1 for post-treatment periods (*t*+1 and after), and 0 for pre-treatment periods (*t*-1 and before). The interaction (*IR***POST*) captures the difference-in-differences effect. If IR firms experience a relative improvement in the investigated consequence (*y*) when comparing the pre-treatment period to the post-treatment period, the coefficient of the interaction is expected to be statistically significant and positive. Following Roberts and Whited (2013), we test for the common trends assumption in four ways. First, a visual inspection of the outcome variable over *t*-10 to *t*+5 in both level and change specifications was conducted. Second, independent *t*-tests were used to test whether changes in pre-treatment trends for IR firms and matched non-IR firms are statistically different. The average change in the outcome variables in the pre-treatment periods (*t*-1 to *t*-2 and *t*-1 to *t*-4) for IR firms and matched non-IR firms were estimated. Third, DID analyses were repeated assuming the treatment occurs in pre-event years (*t*-1, *t*-2 or *t*-3). Forth, DID regressions were ran with and without control variables.

3.3 Sample Description

The sample size varies across analyses in order to maximise statistical power. While sample size differs, the samples share similar characteristics with each other and with all identified IR firms. The samples used in MLR composed of 236 firms for the information environment analyses, 214 firms for the cost of equity analyses, and 282 firms for the firm value analyses. Independent *t*-tests (untabulated) show that IR firms excluded from the analyses due to missing data or inadequate matches were significantly smaller and have lower cost of equity and lower analyst following. Thereby, the samples are biased towards larger and relatively higher risk firms.

Table 1 compares the country, industry and year distributions of each sample with the distribution of all identified IR firms. Panel A shows that the samples spread across 26 to 28

countries. Japan account for the largest proportion of the sample (41.12% to 44.92%), followed by firms in South Korea (6.78% to 8.41%). Panel B shows that, according to SIC industry divisions, the samples are dominated by manufacturing (46.61% to 50.47%), transportation and utilities (17.73% to 18.69%), and financial (13.56% to 16.82%). Panel C shows that the samples spread across 2011 to 2016, with initiation years concentrated in 2014 and 2015 (varying from 27.12% to 33.05%).

Observations were lost in the TEM and the DID analyses due to missing data for ESG variables or multiple periods. The samples for TEM (DID) composed of 190 (380) observations for the information environment analysis, 174 (310) observations for the cost of equity analysis, and 206 (440) observations for the firm value analysis. The attributes of the TEM and DID samples are consistent with the attributes described above (untabulated).

4. Analysis 1: Information Environment

4.1 Model

The model used to test the effect initiating an integrated report has on the information environment is based on Behn et al. (2008), Lang et al. (2003), Hope (2003) and Dhaliwal et al. (2012):

$$\begin{aligned} INFORMATION_{i,t+1} &= \beta_0 + \beta_1 IR_{i,t} + \beta_2 GRI_{i,t} + \beta_3 LnSIZE_{i,t} + \beta_4 SqEARNSURP_{i,t} \\ &+ \beta_5 LOSS_{i,t} + \beta_6 LnEARNVOLI_{i,t} + \beta_7 LISTING_{i,t} + \beta_8 FOLLOW_{i,t} \\ &+ \beta_9 HORIZON_{i,t} + \beta_{10} NATION\_VF_{i,t} + \beta_{11} NATION\_RRG_{i,t} + \varepsilon_{i,t} \end{aligned} \quad (3)$$

The model is also tested substituting country-level variables with country, industry and year dummies.

The dependent variable information environment (*INFORMATION*) takes the form of two measures: analyst forecast accuracy (*FERROR*) and analyst forecast dispersion (*DISPERSION*). *FERROR* is the mean absolute forecast error scaled by year-end share price. Three forecast error horizons are separately estimated, current-year earnings (*FERROR(0)*), one-year-ahead earnings (*FERROR(1)*) and two-year ahead earnings (*FERROR(2)*). *DISPERSION* is the standard deviation of one-year ahead analyst EPS forecast, scaled by the absolute value of the median consensus EPS forecast for a firm.

The variable of interest is integrated report (*IR*), an indicator variable equal to 1 for IR firms and 0 for non-IR firms. A number of control variables are included. GRI adoption (*GRI*) is an indicator variable equal to 1 for firms that applied GRI standards prior to year *t*, and 0 otherwise. Dhaliwal et al. (2012) found standalone CSR disclosures improve earnings forecast

accuracy, suggesting sustainability disclosures provide analysts with more and better quality non-financial information. GRI adoption is included to separate the effects of applying GRI and the effects attributable to initiating integrated reports.

Firm size (*LnSIZE*) is the natural logarithm of market capitalisation. It is included as a proxy for a firm's general information environment and various correlated factors, such as information availability and managers' incentives (Dhaliwal et al. 2012; Hope 2003). Earnings surprise (*SqEARNSURP*) is the square root transformation of the absolute value of the difference between a firm's EPS this year and prior year, scaled by year-end share price. Loss reported (*LOSS*) is an indicator variable coded 1 for firms that reported a loss, and 0 otherwise. Earnings volatility (*LnEARNVOLI*) is the natural logarithm of the standard deviation of EPS for a firm over the past ten years (past five years for DID estimations). These three measures reflect information uncertainty and forecast difficulty. It is more difficult to predict the earnings of firms that have volatile earnings, resulting in less accurate earnings forecast (Behn et al. 2008; Lang et al. 2003; Hope 2003). Loss reported is used as a crude measure of financial distress.

Market listing (*LISTING*) is the number of stock exchanges a firm is listed on. Lang et al. (2003) argue that firms listed on multiple exchanges face explicit disclosure requirements and implicit pressure from investors to provide more information, which in turn improves the information environment for these firms. Analyst following (*FOLLOW*) is the number of analysts following a firm. Following Dhaliwal et al. (2012), analyst following indicates competition among analysts, where greater competition as a result of higher following provides analysts with incentives to enhance forcast accuracy. Forecast horizon (*HORIZON*) is the median number of days between earnings announcement and forecast date. It is expected that forecasts announced closer to the actual earnings announcement is more accurate than one that is announced in an earlier period (Behn et al. 2008).

National institution measures are highly correlated and principle component analysis was used for data reduction[1]. National freedom and voice (*NATION_VF*) has a negative loading for voice and accountability (*VOICE*) and positive loading for freedom of press (*FREEPRESS*). National freedom and voice is reflective of media freedom. The media plays an important role in financial markets by disseminating and creating information, and greater press coverage has

[1] Analysis with varimax rotation and promax rotation returned the same result. For the five institutional measures (*FREEPRESS, VOICE, RULELAW, REGQUAL* and *GOVEFF*), the first component explained 0.5749 of the variance and has a cumulative explanation of 0.9091 with the second component. The components were labelled based on variables with loadings greater than 0.3. The Kaiser-Meyer-Olkin measure of sampling adequacy justifies the use of principle component analysis as the measure is above 0.59 for all variables.

been found to reduce information asymmetry (Bushee et al. 2010; Fang and Peress 2009). National regulatory environment (*NATION_RRG*) has positive leadings for all components of rule of law (*RULELAW*), regulatory quality (*REGQUAL*), and government effectiveness (*GOVEFF*). Hope (2003) argues that regulatory enforcement and prosecution of standard violation is as important as the accounting standards themselves. The study found a positive association between regulatory enforcement and analyst forecast accuracy, suggesting greater enforcement reduces accounting uncertainty and instances of reporting-related fraud.

4.2 Results

Table 2, Panel A presents the descriptive statistics for the MLR sample. The matching technique appears effective in forming a balanced sample of IR firms and non-IR firms as there are no statistically significant differences between the two groups for the continuous explanatory variables. IR firms and non-IR firms are similar in analyst forecast characteristics, analyst following, firm size, earnings predictability and market listing. For categorical variables, chi-square tests show firms that voluntarily adopt IR are statistically more likely to have adopted GRI guidelines ($\chi^2(1) = 18.59$, $p<0.01$). The DID sample is similar to the above, while IR firms in the TME sample have positive changes in current-year forecast error (means for IR firms and non-IR firms, $\Delta FERROR(0)$: 0.01 and -0.02, $p<0.05$).

Reflective of the descriptive statistics, correlation analysis in Table 2, Panel B shows no statistically significant relations between the initiation of integrated reports and measures of the information environment or other continuous variables. For the control variables, GRI adoption has significant and positive relations with forecast errors and dispersion. This initial result contrasts Dhaliwal et al. (2012), which found non-financial disclosures improves the information environment. The directions of the relationship for other variables are consistent with prior literature. Firm size, market listing and a stronger regulatory environment have inverse relationships with forecast error and dispersion, whereas measures of earnings volatility and predictability have a positive relationship. Multicollinearity is not a major problem in this study as indicated by the correlation analysis and the VIF. The highest VIF in Equation 3 is for *LnSIZE* (2.18 without fixed effect dummies (FE) and 5.74 with FE), and the mean VIF is 1.51 and 2.30 when modelling without and with FE, respectively. Models on changes specification (DID) are similar but with lower (higher) individual and mean VIFs.

Table 3 reports the regression results for Hypothesis 1, testing the effect initiating integrated reports has on analyst forecast characteristics. There is no evidence of a selection bias as *lambda* is not statistically significant in any specification. While there are instances

where there is weak evidence that *IR* has negative associations with the level of *DISPERSION* (Panel A, Model 19: coeff. = -0.379, $p<0.10$) and change in *FERROR(0)* (Panel B, Model 1: coeff. = -0.0591, $p<0.10$), the results are not consistent with estimations using FE. Further, *IR* does not improve the model as, in terms of changes in adjusted R-squared, *IR* only accounts for 0.000 to 0.019 of the variation of *FERROR* and *DISPERSION* in both level and change forms.

Overall, the results failed to provide evidence of a consistent statistical relation between *IR* and analyst forecast characteristics. The results suggest adoption of the IIRC Framework and initiation of integrated reports are not relevant predictors of analyst forecast error or forecast dispersion, and any changes in analyst forecast characteristics do not differ between IR firms and similar firms that do not[2].

For the control variables, the results for *GRI* are contrary to Dhaliwal et al. (2012), which found sustainability-related disclosures improves analyst forecasts. However, Dhaliwal et al. (2012) focused on initiation of stand-alone non-financial disclosures, while this study defines *GRI* as prior experience with GRI guidelines. It is possible that initiation of stand-alone non-financial disclosures provide incremental and material disclosures for investors, but there is little or no incremental information contained in such disclosures on an ongoing basis. Firm size, earnings volatility and loss have direction effects consistent with those documented by previous studies.

Similar results (untabulated) are obtained after removal of influential observations[3], winsorising continuous firm-level variables at the 5th and 95th percentile, analyses of dependent variables on a two-year lead, using the TEM sample for all analyses, and using MLE for TEM analyses. There are no consistent evidence of an association between IR initiation and analyst forecast characteristics in analyses on subsamples and alternative samples[4], leaving the inferences unchanged.

[2] While DID estimates also indicate no evidence of a relation, DID estimates are not appropriate for the information environment analysis. Analyst forecast variables do not satisfy the common trend assumption (Appendix C, Figure C1 and Figure C2) and are not robust to tests on pre-event years (untabulated).

[3] Observations with a standardised Pearson residual above 2.0 or below -2.0 were removed.

[4] Subsample analyses include testing Japanese firms and non-Japanese firms, manufacturing firms and non-manufacturing firms, financial firms and non-financial firms, and early adopters (observations that relate to 2014 and earlier) and later adopters (observations that relate to 2015 and after). Alternative samples include matches based on two-digit GICS, four-digit GICS and three-digit SIC.

5. Analysis 2: Cost of Equity

5.1 Model

The model used to test the effect initiating an integrated report has on cost of equity is based on Dhaliwal et al. (2011), Khurana and Raman (2004), Richardson and Welker (2001) and Gebhardt et al. (2001):

$$COE_{i,t+1} = \beta_0 + \beta_1 IR_{i,t} + \beta_2 GRI_{i,t} + \beta_3 LnSIZE_{i,t} + \beta_4 LnMTB_{i,t} + \beta_5 LEV_{i,t} + \beta_6 BETA_{i,t} + \beta_7 LTG_{i,t} + \beta_8 LnDISPERSION_{i,t} + \beta_9 FOLLOW_{i,t} + \varepsilon_{i,t} \quad (4)$$

The model is also tested with country, industry and year dummies.

The dependent variable cost of equity (*COE*) takes the estimates of cost of equity capital estimated by Bloomberg[5]. The variable of interest is integrated report (*IR*), as previously defined. A number of control variables are included, hereinafter defined variables are not repeated and can be found in Appendix A. For GRI adoption (*GRI*), Dhaliwal et al. (2011) found CSR disclosures reduce cost of equity capital, suggesting voluntary non-financial disclosures contain incremental information relevant to investors.

Firm size (*LnSIZE*), the market-to-book ratio (*LnMTB*), calculated as the natural logarithm of market capitalisation over book value of shareholders' equity, and leverage (*LEV*), total debt scaled by total assets, are three measures associated with risk in general. Market value is inversely associated, while market-to-book and leverage is positively associated (Khurana and Raman 2004).

Beta (*BETA*) compares the monthly price movements of a firm's share price over a five-year period with its respective market index. It is a measure of systematic risk and is positively correlated with the cost of equity capital according to the Capital Asset Pricing Model. Long-term growth (*LTG*) is the median consensus long-term growth forecast. It is positively associated with growth and risk as earnings derived from growth opportunities are more uncertain than normal earnings (Khurana and Raman 2004). Gebhardt et al. (2001) found the direction of analyst forecast dispersion (*LnDISPERSION*) alternates with different model specifications. In the absence of information from analysts, firm disclosures are a key source of information. Thereby, the benefits of firm disclosures could be greater for firms with lower analyst following (*FOLLOW*) (Richardson and Welker 2001).

[5] Attempts were made to estimate implied cost of equity using Gebhardt et al. (2001), Easton (2004) or Claus and Thomas (2001); however, the sample suffered from missing observations.

5.2 Results

Table 4, Panel A presents the descriptive statistics for the MLR sample. IR firms and non-IR firms are similar in investors' perspective of risk, firm size and performance, leverage and analyst forecast characteristics. Chi-square tests show firms that voluntarily adopt IR are statistically more likely to have adopted GRI guidelines ($\chi^2(1) = 21.77$, $p<0.01$). The TEM sample is similar to the above, while IR firms in the DID sample have significantly more analyst following (means for IR firms and non-IR firms, *FOLLOW*: 18.43 and 16.35, $p<0.05$).

Reflective of the descriptive statistics, correlation analysis in Table 4 Panel B shows no statistically significant relations between the initiation of integrated reports and cost of equity or other continuous variables. For the control variables, the direction for market-to-book ratio, leverage, beta and analyst forecast dispersion are consistent with prior literature. The prediction for firm size is inconsistent. Multicollinearity is not a major problem for Equation 4, estimations without FE, as the highest VIF is for *LnSIZE* (1.43) and the mean VIF is 1.19. However, for estimations with FE, the highest VIF is *LnMTB* (24.39) and the mean VIF is 3.09. Models on changes specification (DID) are similar but with lower (higher) individual and mean VIFs.

Table 5 reports the regression results for Hypothesis 2, testing the effect initiating integrated reports has on cost of equity. The results across models are not consistent, with variations in statistical significance and direction of the coefficients. With the exception of Model 1, *IR* is not statistically significant in other level and change models. The statistically significant *lambda* indicates it is important to adjust for selection when estimating cost of equity. While the results show that *IR* is a statistically significant predictor of the level of cost of equity, it is not an important predictor. In terms of changes in adjusted R-squared, *IR* only accounts for 0.000 to 0.020 of the variation of *COE* in both level and change forms. Further, Model 1 explains relatively little variance when compared to inclusion of FE or DID models. Regardless, the change specification and DID results provide no evidence that there is a relative difference between changes in cost of equity for firms that adopt the IIRC Framework and initiate integrated reports and similar firms that do not.

For the control variables, the results for *GRI* is consistent with Dhaliwal et al. (2011), suggesting sustainability-related disclosures reduce cost of equity. Firm size, leverage and beta have direction effects consistent with those documented by previous studies. The sign for analyst forecast dispersion switches when comparing change specification and DID estimates, this is similar to the results of Gebhardt et al. (2001), which also observes a sign reversion. Long-term growth is found to have an inverse relationship, which is inconsistent with Khurana

and Raman (2004). However, alternatively Gebhardt et al. (2001) suggests that high long-term growth firms earn lower subsequent returns due to analyst over-optimism in higher long-term growth firms. Under the assumption that high long-term growth firms tend to have optimistic earnings forecasts and over priced stocks, those firms are expected to have abnormally low implied risk premium.

Similar results (untabulated) are obtained after removal of influential observations, winsorising continuous firm-level variables at the 5th and 95th percentile, analyses of dependent variables on a two-year lead, using the TEM sample for all analyses, and using MLE for TEM analyses. Analysis removing *LnMTB*, due to problems with multicollinearity, for estimations with FE shows *IR* as statistically significant for the level of *COE* (similar to the results for Table 5, Model 1), and had no impact on the change in *COE*. Hence, the conclusions drawn from the main analysis remain robust. Analyses of subsamples indicate *IR* could have different influences on the level of *COE* for different countries, industries and years. Subsample analyses (untabulated) show a negative and statistically significant relation between *IR* and *COE* for Japanese firms and early adopters, estimated without FE. While other subsample analyses show a positive and statistically significant relation for non-manufacturing firms. The main results are robust to alternative sample specifications, where *IR* has a significant and negative relation with the level of *COE*, but no evidence that *IR* changes *COE*.

6. Analysis 3: Firm Value

6.1 Model

The models used to test the effect initiating an integrated report has on firm value modifies the Ohlson (1995) model:

$$LnPRICE_{i,t+1} = \beta_0 + \beta_1 IR_{i,t} + \beta_2 GRI_{i,t} + \beta_3 LnBVPS_{i,t} + \beta_4 ABEARN_{i,t} + \varepsilon_{i,t} \quad (5)$$

$$LnMVCDA_{i,t+1} = \beta_0 + \beta_1 IR_{i,t} + \beta_2 GRI_{i,t} + \beta_3 BVINV_{i,t} + \beta_4 NIBV_{i,t} + \varepsilon_{i,t} \quad (6)$$

The models are also tested with country, industry and year dummies.

The Ohlson (1995) model defines the market value of equity as a function of book value, accounting earnings and other non-financial information. Equation 5 states the dependent variable as share price (*LnPRICE*), which is the natural logarithm of the closing price of a firm. Book value per share (*LnBVPS*) is the natural logarithm of the book value per share of common shareholders' equity. Abnormal earnings (*ABEARN*) is calculated on a per share basis as net income before extraordinary expenses, less cost of equity multiplied by opening book value of equity. Equation 6 follows Hassel et al. (2005), restating the model in terms of cum-dividend

market value, opening book value, earnings and other information, and scaling by book value to control for size difference. The dependent variable cum-dividend market value (*LnMVCDA*) is the sum of market value and dividends distributed of a firm, scaled by its opening book value. *BVINV* represents the inverse of opening book value. *NIBV* represents net income after interest and tax, scaled by opening book value. For both models, the variable of interest is integrated report (*IR*) and it is included as a proxy for other non-financial information along with *GRI*, which is included to parse out effects related to sustainability reporting.

6.2 Results

Table 6, Panel A presents the descriptive statistics for the MLR sample. IR firms and non-IR firms are similar in market value, book value and abnormal earnings. Chi-square tests show firms that voluntarily adopt IR are statistically more likely to have adopted GRI guidelines ($\chi^2(1) = 28.45$, $p<0.01$). The TEM and DID samples are similar to the above.

Consistent with the descriptive statistics, correlation analysis in Table 6, Panel B shows no statistically significant relations between the initiation of integrated reports and firm value measures or other continuous variables. Multicollinearity is not a major problem in this study as indicated by the correlation analysis and the VIF. The highest VIF for Equation 5 is *ABEARN* (1.60) for estimations without FE and *LnBVPS* (3.22) for estimations with FE, and the mean VIF is 1.35 and 1.83, respectively. Models on changes specification and cum-dividend market value (DID) are similar but with lower (higher) individual and mean VIFs.

Table 7 reports the regression results for Hypothesis 3, testing the effect initiating integrated reports has on firm value. There is no evidence of a selection bias, as *lambda* is not statistically significant in any specification. The results provide no evidence that *IR* is an important predictor for firm value. Further, any relative changes in firm value do not differ between firms that adopt the IIRC Framework and initiate integrated reports and similar firms that do not. In terms of changes in adjusted R-squared, *IR* only accounts for 0.000 to 0.002 of the variation of *LnPRICE* and *MVCDA* in both level and change forms. The direction of the control variables is consistent with prior literature.

These results are robust to removal of influential observations, to winsorising continuous firm-level variables at the 5th and 95th percentile, to analyses of dependent variables on a two-year lead, to using the TEM sample for all analyses, and to using MLE for TEM (untabulated). Further, these results hold for analyses on subsamples and alternative

matches (untabulated). Additional analysis using Tobin's Q (*TOBIN*) as a proxy for firm value found no statistically significant relation between *IR* and *TOBIN*[6].

7. Conclusion

We assess the effects voluntary adoption of the IIRC Framework and initiation of integrated reports has on the information environment, cost of equity and firm value. The results provide no consistent evidence that voluntary IR results in significant changes in the information environment and investors' valuation of a firm.

The results suggest that the adoption of the IIRC Framework and initiation of integrated reports has not resulted in substantial changes in reporting practices. There may be no clear differences between the information content, connectivity of information, and communication of financial value creation in integrated reports when compared to the information content of other disclosures combined, such as annual reports and sustainability reports. Incremental information in integrated reports are possibly limited as reporters face difficulties in measuring the impacts of changes in capitals and establishing direct relationships between non-financial performance and financial performance (Adams et al. 2016; Haji and Anifowose 2016). These measurement problems are reflected in available integrated reports, which have been criticised to lack connectivity, comparability and disclosure of material information (IIRC 2013b; Pistoni et al. 2018; Kılıç and Kuzey 2018). Given difficulties in connecting information and disclosure of sensitive and forward-looking information, it is possible that integrated reports contain no incremental and material information that can be used to estimate risk or future cash flows. The reporting practices of IR firms may not differ from prior year practices, and further, it may not differ from non-IR firms with similar characteristics. Thereby, it would not be possible to detect a difference, or relative difference, in changes for the information environment, cost of equity and firm value.

[6] The Tobin's Q model is based on Lee and Yeo (2016). The model is also tested with country, industry and year dummies.

$$TOBIN_{i,t+1} = \beta_0 + \beta_1 IR_{i,t} + \beta_2 GRI_{i,t} + \beta_3 LnSIZE_{i,t} + \beta_4 ROA_{i,t} + \beta_5 LEV_{i,t} + \beta_6 INTASSET_{i,t} + \beta_7 BOARDIND_{i,t} + \beta_8 BOARDSIZE_{i,t} + \varepsilon_{i,t} \quad (7)$$

The dependent variable *TOBIN* is the summation of market capital, preferred shares and total debt, divided by total assets. The variable of interest is integrated report (*IR*). Controls are included for GRI adoption (*GRI*), firm size (*LnSIZE*) and leverage (*LEV*). For previously undefined variables, profitability (*ROA*) is calculated as net income before extraordinary items, scaled by average total assets, and intangible assets (*INTASSET*) is intangible assets scaled by total assets. Board independence (*BOARDIND*) is defined as the percentage of independent and non-executive directors to total number of directors. Board size (*BOARDSIZE*) is the number of board of directors.

Alternatively, as the study has not examined changes in disclosure content, it is possible that integrated reports do contain relevant information for capital providers. Under this possibility, another explanation of the results is that the market is ignorant of IR or does not consider integrated reports in their current investment decision-making processes (Hsiao and Kelly 2018; Abhayawansa et al. 2018). Regardless of the interpretation, the study findings present novel evidence that is consistent with prior interview and case studies, suggesting integrated reports do not have a clear influence on capital markets.

The study findings provide further insights into the results of studies on mandatory IR. Studies on mandatory IR found an advantage to better quality integrated reports in settings where all firms are required to adopt IR. These studies have found a positive association between higher quality reports, often defined as reports more aligned with the IIRC Framework, and improved analyst forecasts and firm value (Bernardi and Stark 2018; Zhou et al. 2017; Lee and Yeo 2016; Arguelles et al. 2016; Barth et al. 2017). Our study does not measure IR quality and only assesses adoption of the IIRC Framework. The results show that any changes in the information environment, cost of equity and firm value for IR firms are not statistically different compared to non-IR firms. Thereby, in countries where IR is voluntary, it is possible that disclosure practices have already been trending towards adoption of general IR concepts and voluntary adoption of the IIRC Framework has not led to additional improvements.

This apparent contrast between the capital market consequence of voluntary IR and mandatory IR suggests that the benefits detected by mandatory IR studies are due to country-specific effects. IR was mandated in South Africa as a part of ongoing corporate reforms intended to appeal to international investors and improve poor CSR practices (Haji and Anifowose 2016). Following from the introduction of IR requirements, South African firms have increased the extent and detail of information disclosed over time on stakeholder relationships, risk management practices and non-financial information (Haji and Anifowose 2016; Solomon and Maroun 2012). Despite increases in the amount of information disclosed, IR in South Africa is more ceremonial than substantive and the practice has not brought about major changes in how firms connect information (Haji and Anifowose 2016). Taken together, the findings of this study and prior content analysis studies suggest the capital market advantages detected in mandatory IR studies are due to improved information disclosure in general rather than the application of the IIRC Framework or specific IR concepts, such as integrated thinking or connectivity of information.

While it is apparent that mandating IR has led to substantial improvements in reporting practices in South Africa, it is improper to conclude that adoption of the IIRC Framework or

specific IR concepts would improve a firm's disclosure practices relative to their prior year disclosure or signal higher quality disclosure relative to non-IR firms. Hence, our findings suggest that in countries where it is not common for firms to disclose detailed information or non-financial information, adoption of the IIRC Framework could result in greater disclosure levels and subsequently improve the information environment. However, this effect may not be detectable in environments where non-financial disclosures or IR concepts are already common. In such environments, adoption of the IIRC Framework may not substantially improve firms' reporting practices relative to prior years or relative to non-IR firms.

The results must be interpreted with regard to their limitations. First, the sample size is limited and is biased towards larger firms that are perceived to be of higher risk by investors. Hence, the results are possibly restricted to firms with similar characteristics. Second, it is not possible to rule out the possibility that there are factors not controlled for that could influence the relation between IR and the investigated consequences. However, given the extensive set of control variables included and use of different research designs, the possibility of omitted variables is not considered a serious threat to the conclusions.

Our study findings do not discourage voluntary adoption of the IIRC Framework, but rather questions its usefulness relative to application of general IR concepts. While the results show that there are no significant changes in the capital market consequences after voluntary adoption of the IIRC Framework and initiation of integrated reports, it is possible that any consequences are gradual and more prevalent towards the long-term. Further, this study does not assess IR quality and only assesses IR initiation. Similar to the findings for mandatory IR, there may be relative difference in effects among integrated reports of varied quality. We leave this research direction to future research.

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Appendix A: Variable Definitions

Table A1: Selection model

Code	Label	Definition	Source
$BOARDCOM\_CSR_{i,t}$	Board committee (CSR)	Indicator variable coded 1 if firm *i* has a CSR committee in year *t*, and 0 otherwise	ASSET4
$BOARDSIZE_{i,t}$	Board size	Number of directors on the board of directors of firm *i* at year-end *t*	ASSET4
$CONCENTRATE_{i,t}$	Industry concentration	Based on the Herfindahl–Hirschman index, calculated as the sum of squares of market shares for firm *i* in industry *j*, based on two-digit SIC	Compustat
$CULTURE\_MUL_{i,t}$	National culture (MUL)	A principle component from the principle component analysis of Hofstede's cultural dimensions. It is a composite measure of Masculinity versus Femininity, Uncertainty Avoidance Index, and Long Term Orientation versus Short Term Normative Orientation	geerthofstede.com (Official website)
$GENDIV_{i,t}$	Gender diversity	Percentage of female directors to total number of directors on the board of firm *i* at year-end *t*	ASSET4
$INTASSET_{i,t}$	Intangible assets	Intangible assets scaled by total assets for firm *i* at year-end *t*	Worldscope
$IR_{i,t}$	Integrated report	Indicator variable coded 1 if firm *i* issues an integrated report for the first time in year *t*, and 0 otherwise	Corporate websites, Mergent Online
$LEV_{i,t}$	Leverage	Total debt scaled by total assets for firm *i* at year-end *t*	Worldscope
$LnSUBSIDIARY_{i,t}$	Subsidiaries (all)	Natural logarithm of the number of recorded subsidiaries of firm *i*	OSIRIS
$NATION\_VF_{i,t}$	National institution (VF)	A principle component from the principle component analysis of national institution. It is a composite measure of voice and accountability, and freedom of press	World Bank, Reporters Without Borders
$SENSITIVE_{i,t}$	Environmentally sensitive	Indicator variable coded 1 if firm *i* operates in an environmentally sensitive industry, and 0 otherwise	Compustat (main), OSIRIS (missing data)

Table A2: Difference-in-differences model

Code	Label	Definition	Source
$IR_{i,t}$	Integrated report	Indicator variable coded 1 if firm *i* is an IR firm, and 0 otherwise	Corporate websites, Mergent Online
$POST_{i,t}$	Post-treatment period	Indicator variable coded 1 if the firm observation relates to post-treatment periods (*t*+1 and after), and 0 for pre-treatment periods (*t*-1 and before).	Corporate websites, Mergent Online

Table A3: Consequences models

Code	Label	Definition	Source
$ABEARN_{i,t}$	Abnormal earnings	Firm *i*'s net income before extraordinary expenses at year-end *t*, less its cost of equity at year-end *t* multiplied by book value of equity at *t*-1	Worldscope, Bloomberg
$BETA_{i,t}$	Beta	Comparison of the monthly price movements of firm *i*'s share price over a five year period with the total market index for the respective country	Datastream
$BVINV_{i,t}$	Inverse book value	Inverse of opening book value for firm *i* at year-end *t*	Worldscope
$COE_{i,t}$	Cost of equity	Derived by the Capital Asset Pricing Model	Bloomberg
$DISPERSION_{i,t}$	Analyst forecast dispersion	Standard deviation of firm *i*'s one-year ahead analyst EPS forecast, scaled by its absolute value of the median consensus EPS forecast for the forecast year *t*	I/B/E/S
$EARNSURP_{i,t}$	Earnings surprise	Absolute value of the difference between firm *i*'s EPS at year *t* and EPS at year *t*-1, scaled by year-end *t* share price	Datastream
$FERROR_{i,t}$	Analyst forecast error	Mean absolute forecast errors made in year *t* for firm *i*, scaled by firm *i*'s year-end price	I/B/E/S Datastream
$FOLLOW_{i,t}$	Analyst following	Number of analyst following firm *i* throughout year *t*	I/B/E/S
$FREEPRESS_{i,t}$	National institution (freedom of press)	The degree of freedom journalists and the media have	Reporters Without Borders
$GOVEFF_{i,t}$	National institution (government effectiveness)	Perceptions of the quality of public services, the quality of the civil service and the degree of its independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government's commitment to such policies	World Bank
$GRI_{i,t}$	GRI adoption	Indicator variable coded 1 if firm *i* applied GRI standards prior to year *t*, and 0 otherwise	GRI website/dataset
$HORIZON_{i,t}$	Forecast horizon	Median number of days between earnings announcement and forecast date for firm *i* in year *t*	I/B/E/S
$IR_{i,t}$	Integrated report	Indicator variable coded 1 if firm *i* issues an integrated report for the first time in year *t*, and 0 otherwise	Corporate websites, Mergent Online
$LISTING_{i,t}$	Market listing	Number of stock exchanges firm *i* is listed on at year-end *t*	OSIRIS
$LOSS_{i,t}$	Loss reported	Indicator variable coded 1 if firm *i* reports negative earnings for year *t*, and 0 otherwise	Worldscope
$LTG_{i,t}$	Long-term growth	Consensus (median) long-term growth forecast for firm *i* at year-end *t*	I/B/E/S
$LnBVPS_{i,t}$	Book value per share	Natural logarithm of the book value per share of common shareholders' equity for firm *i* at year-end *t*	Worldscope

Table A3 (continue): Consequences models

Code	Label	Definition	Source
$LnEARNVOLI_{i,t}$	Earnings volatility	Natural logarithm of the standard deviation of annual EPS for firm *i* over the previous ten years ending at year *t*	Datastream
$LnMVCDA_{i,t}$	Cum-dividend market value	Natural logarithm of the cum-dividend adjusted market value, scaled by opening book value, for firm *i* at year-end *t*	Datastream, Worldscope
$LnPRICE_{i,t}$	Share price	Natural logarithm of the closing share price for firm *i* at year-end *t*	Datastream
$LnSIZE_{i,t}$	Firm size	Natural logarithm of market capitalisation for firm *i* at year-end *t*	Datastream
$MTB_{i,t}$	Market-to-book	Market capitalisation over book value of shareholders' equity for firm *i* at year-end *t*	Worldscope, Datastream
$NATION\_RRG_{i,t}$	National institution (RRG)	First principle component from the principle component analysis of national institution. It is composite measure of rule of law, regulatory quality, and government effectiveness	World Bank, Reporters Without Borders
$NATION\_VF_{i,t}$	National institution (VF)	Second principle component from the principle component analysis of national institution. It is a composite measure of voice and accountability, and freedom of press	World Bank, Reporters Without Borders
$NIBV_{i,t}$	Net income over book value	Net income after interest and tax, scaled by opening book value for firm *i* at year-end *t*	Worldscope
$REGQUAL_{i,t}$	National institution (regulatory quality)	Perceptions of the governments' ability to formulate and implement sound policies and regulations that permit and promote private sector development	World Bank
$RULELAW_{i,t}$	National institution (rule of law)	Extent to which agents have confidence in, and abide by, the rules of society	World Bank
$VOICE_{i,t}$	National institution (voice and accountability)	Extent to which a country's citizens are able to participate in selecting their government and the extent of freedom of expression, freedom of association, and a free media	World Bank

Appendix B: Treatment effect models

Table B1
First stage estimates

Dependent variable = IR_t	Information environment	Cost of Equity	Firm Valuation
$BOARDCOM\_CSR_{t-1}$	0.941***	0.887***	0.853***
	(3.09)	(2.84)	(3.13)
$BOARDSIZE_{t-1}$	-0.0656**	-0.0655**	-0.0536**
	(-2.39)	(-2.23)	(-2.01)
$GENDIV_{t-1}$	0.0262**	0.0295**	0.0267**
	(2.11)	(2.21)	(2.17)
LEV_{t-1}	0.267	0.372	0.302
	(0.42)	(0.53)	(0.52)
$LnSUBSIDIARY_{t-1}$	0.117	0.176**	0.177**
	(1.45)	(2.04)	(2.23)
$INTASSET_{t-1}$	-0.598	-1.211	-0.750
	(-0.90)	(-1.60)	(-1.12)
$CONCENTRATE_{t-1}$	0.822	1.574	1.631
	(0.62)	(1.10)	(1.43)
$SENSITIVE_{t-1}$	0.0894	0.134	0.111
	(0.43)	(0.62)	(0.56)
$CULTURE\_MUL_{t-1}$	0.0550	0.0717	0.0622
	(0.57)	(0.69)	(0.67)
$NATION\_VF_{t-1}$	0.145*	0.152*	0.142*
	(1.79)	(1.78)	(1.82)

Two-tailed tests of significance: * p<0.10, ** p<0.05, and *** p<0.01. Regression coefficients are reported with *t*-statistics in parentheses. Robust standard errors are used. Variables are as defined in Appendix A.

Table 1
Sample Distribution
Panel A: Distribution by Country

	Information Environment (matched)		Cost of Equity (matched)		Firm Valuation (matched)		Identified IR firms	
Country	No.	%	No.	%	No.	%	No.	%
Argentina	-	-	-	-	-	-	1	0.33
Australia	2	0.85	2	0.93	2	0.71	2	0.66
Austria	2	0.85	2	0.93	2	0.71	1	0.33
Belgium	2	0.85	2	0.93	4	1.42	3	0.99
Brazil	10	4.24	14	6.54	16	5.67	20	6.58
Canada	2	0.85	2	0.93	4	1.42	2	0.66
Chile	2	0.85	2	0.93	4	1.42	4	1.32
China	-	-	-	-	-	-	1	0.33
Colombia	-	-	-	-	-	-	8	2.63
Costa Rica	-	-	-	-	-	-	1	0.33
Denmark	2	0.85	2	0.93	2	0.71	1	0.33
Finland	4	1.69	4	1.87	4	1.42	6	1.97
France	8	3.39	6	2.80	8	2.84	8	2.63
Germany	4	1.69	2	0.93	4	1.42	3	0.99
Greece	-	-	-	-	-	-	1	0.33
Hong Kong	4	1.69	2	0.93	4	1.42	5	1.64
India	2	0.85	2	0.93	4	1.42	2	0.66
Italy	4	1.69	6	2.80	6	2.13	10	3.29
Japan	106	44.92	88	41.12	124	43.97	88	28.95
Kenya	-	-	-	-	-	-	1	0.33
Mauritius	-	-	-	-	-	-	1	0.33
Mexico	2	0.85	2	0.93	2	0.71	2	0.66
Netherland	8	3.39	8	3.74	8	2.84	20	6.58
New Zealand	-	-	-	-	-	-	2	0.66
Pakistan	-	-	-	-	-	-	2	0.66
Poland	2	0.85	-	-	-	-	4	1.32
Portugal	2	0.85	2	0.93	2	0.71	1	0.33
Russian Federation	4	1.69	6	2.80	4	1.42	4	1.32
Singapore	4	1.69	4	1.87	4	1.42	5	1.64
South Korea	16	6.78	18	8.41	20	7.09	19	6.25
Spain	16	6.78	8	3.74	12	4.26	21	6.91
Sri Lanka	-	-	-	-	-	-	26	8.55
Sweden	2	0.85	4	1.87	6	2.13	4	1.32
Switzerland	4	1.69	4	1.87	4	1.42	4	1.32
Taiwan	2	0.85	-	-	-	-	2	0.66
Turkey	2	0.85	2	0.93	2	0.71	1	0.33
United Kingdom	10	4.24	8	3.74	14	4.96	9	2.96
United States	8	3.39	12	5.61	16	5.67	9	2.96
Total	236	100	214	100	282	100	304	100

Panel B: Distribution by Industry

	Information Environment (matched)		Cost of Equity (matched)		Firm Valuation (matched)		Identified IR firms	
SIC Industry Division	No.	%	No.	%	No.	%	No.	%
Agriculture, Forestry and Fishing	-	-	-	-	-	-	1	0.33
Mining	4	1.69	2	0.93	2	0.71	4	1.32
Construction	10	4.24	6	2.80	12	4.26	13	4.28
Manufacturing	110	46.61	108	50.47	134	47.52	115	37.83
Transportation, Communications, Electric, Gas and Sanitary service	44	18.64	40	18.69	50	17.73	52	17.11
Wholesale Trade	8	3.39	4	1.87	8	2.84	12	3.95
Retail Trade	10	4.24	8	3.74	12	4.26	9	2.96
Finance, Insurance and Real Estate	32	13.56	36	16.82	44	15.60	69	22.70
Services	16	6.78	10	4.67	20	7.09	24	7.89
Non-classifiable	2	0.85	-	-	-	-	5	1.64
Total	236	100	214	100	282	100	304	100

Panel C: Distribution by Year

	Information Environment (matched)		Cost of Equity (matched)		Firm Valuation (matched)		Identified IR firms	
Year	No.	%	No.	%	No.	%	No.	%
2010	-	-	-	-	-	-	3	0.99
2011	4	1.69	8	3.74	10	3.55	11	3.62
2012	24	10.17	18	8.41	26	9.22	29	9.54
2013	42	17.80	38	17.76	58	20.57	55	18.09
2014	64	27.12	60	28.04	78	27.66	89	29.28
2015	78	33.05	60	28.04	78	27.66	84	27.63
2016	24	10.17	30	14.02	32	11.35	32	10.53
2017	-	-	-	-	-	-	1	0.33
Total	236	100	214	100	282	100	304	100

Table 2
Information Environment Analysis: Descriptive Statistics and Bivariate Tests
Panel A: Descriptive statistics and independent t-tests

	Full Sample (n = 236)					IR Firms		Matched Firms		*t*-test	M-W
Variable (levels)	Mean	Median	Sd	Min	Max	Mean	Sd	Mean	Sd	p-value	p-value
$FERROR(0)_{t+1}$	0.04	0.01	0.20	0.00	1.77	0.04	0.17	0.05	0.23	0.733	0.347
$FERROR(1)_{t+1}$	0.05	0.01	0.12	0.00	0.77	0.05	0.13	0.04	0.10	0.650	0.929
$FERROR(2)_{t+1}$	0.06	0.02	0.16	0.00	1.18	0.06	0.16	0.07	0.17	0.892	0.682
$DISPERSION_{t+1}$	0.27	0.10	0.54	0.01	3.86	0.30	0.58	0.25	0.49	0.528	0.418
$LnSIZE_t$	8.85	8.77	1.24	6.01	11.90	8.88	1.27	8.81	1.22	0.663	0.565
$SqEARNSURP_t$	0.14	0.12	0.10	0.00	0.50	0.14	0.10	0.13	0.10	0.434	0.542
$LnEARNVOLI_t$	0.66	0.39	0.76	0.01	3.91	0.67	0.72	0.65	0.80	0.883	0.309
$LISTING_t$	5.82	6.00	3.49	1.00	16.00	5.95	3.55	5.69	3.45	0.564	0.585
$FOLLOW_t$	16.40	15.00	8.68	2.00	43.00	16.99	9.13	15.81	8.19	0.295	0.427
$HORIZON_t$	198.92	195.25	28.75	131.00	292.50	199.38	28.91	198.47	28.71	0.808	0.367
$NATION\_VF_t$	0.00	0.14	1.34	-3.62	4.57	0.00	1.34	0.00	1.34	1.000	1.000
$NATION\_RRG_t$	0.00	0.57	1.69	-6.06	2.44	0.00	1.70	0.00	1.70	1.000	1.000

	Full Sample (n = 236)					IR Firms		Matched Firms		*t*-test	M-W
Variable (changes)	Mean	Median	Sd	Min	Max	Mean	Sd	Mean	Sd	p-value	p-value
$\Delta FERROR(0)_{t+1}$	0.00	0.00	0.07	-0.30	0.41	0.00	0.08	0.01	0.06	0.300	0.441
$\Delta FERROR(1)_{t+1}$	0.00	0.00	0.12	-0.67	0.61	0.00	0.14	0.01	0.10	0.712	0.412
$\Delta FERROR(2)_{t+1}$	0.00	0.00	0.16	-0.90	0.75	0.00	0.17	0.00	0.15	0.869	0.589
$\Delta DISPERSION_{t+1}$	0.01	0.00	0.44	-1.78	2.14	-0.02	0.47	0.04	0.40	0.331	0.867
$\Delta SIZE_t$	84.63	-1.70	4627.49	-13661.45	20313.31	593.51	4740.25	-424.26	4474.15	0.091	0.349
$\Delta EARNSURP_t$	0.00	0.00	0.04	-0.12	0.17	0.00	0.05	0.00	0.04	0.637	0.276
$\Delta EARNVOLI_t$	0.06	0.00	0.49	-1.16	3.47	0.02	0.35	0.10	0.59	0.164	0.419
$\Delta FOLLOW_t$	-0.22	0.00	2.06	-5.50	5.00	-0.06	1.94	-0.38	2.16	0.243	0.395
$\Delta HORIZON_t$	-0.31	1.00	36.29	-108.00	97.50	3.35	36.40	-3.97	35.96	0.122	0.292
ΔEPS_t	-0.22	0.00	3.68	-24.85	16.57	-0.18	3.32	-0.27	4.02	0.843	0.235

Panel B: Correlation matrix

Variable (levels)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
(1) FERROR(0)$_{t+1}$		**0.887**	**0.816**	**0.740**	0.061	0.115	**-0.204**	**0.329**	**0.365**	0.102	-0.069	0.067	-0.103	**0.246**	**-0.135**
(2) FERROR(1)$_{t+1}$	**0.672**		**0.925**	**0.674**	-0.006	**0.128**	**-0.201**	**0.360**	**0.340**	0.126	-0.038	0.109	-0.075	**0.205**	-0.125
(3) FERROR(2)$_{t+1}$	**0.743**	**0.961**		**0.645**	-0.027	**0.138**	**-0.190**	**0.350**	**0.360**	**0.191**	-0.033	0.125	-0.060	**0.168**	-0.098
(4) DISPERSION$_{t+1}$	**0.605**	**0.622**	**0.584**		0.053	**0.166**	**-0.143**	**0.335**	**0.411**	0.090	-0.047	-0.004	-0.122	**0.175**	**-0.228**
(5) IR$_t$	-0.022	0.030	-0.009	0.041		**0.281**	0.038	0.040	0.029	0.066	0.036	0.052	0.059	0.000	0.000
(6) GRI$_t$	0.095	**0.140**	**0.135**	**0.154**	**0.281**		**0.278**	0.113	**0.140**	**0.130**	**0.154**	**0.331**	-0.001	0.013	-0.113
(7) LnSIZE$_t$	**-0.221**	**-0.244**	**-0.258**	**-0.195**	0.029	**0.252**		0.071	-0.098	**0.177**	**0.537**	**0.589**	-0.049	-0.112	0.035
(8) SqEARNSURP$_t$	-0.024	**0.216**	**0.167**	**0.164**	0.051	0.115	0.023		0.066	**0.145**	0.116	0.062	-0.019	0.109	-0.056
(9) LOSS$_t$	**0.266**	**0.295**	**0.336**	**0.353**	0.029	**0.140**	-0.114	**0.167**		**0.152**	0.023	0.029	-0.098	-0.016	-0.093
(10) LnEARNVOLI$_t$	**0.181**	0.087	**0.135**	**0.163**	0.010	0.081	0.102	-0.016	0.113		**0.202**	**0.266**	0.077	**-0.320**	0.108
(11) LISTING$_t$	**-0.131**	**-0.154**	**-0.149**	-0.123	0.038	**0.141**	**0.561**	0.078	0.017	0.072		**0.410**	0.059	**-0.570**	**0.302**
(12) FOLLOW$_t$	0.009	0.064	0.067	0.038	0.069	**0.324**	**0.520**	0.079	0.057	**0.279**	**0.327**		0.087	-0.106	-0.070
(13) HORIZON$_t$	-0.096	-0.037	-0.043	-0.104	0.016	-0.073	-0.062	-0.052	**-0.135**	0.060	0.051	0.029		-0.119	0.093
(14) NATION_VF$_t$	0.106	0.082	0.074	0.050	0.000	0.031	-0.017	0.059	0.013	**-0.242**	**-0.448**	-0.106	**-0.132**		**-0.409**
(15) NATION_RRG$_t$	**-0.152**	**-0.176**	**-0.189**	-0.118	0.000	-0.119	0.038	-0.091	-0.125	0.119	**0.327**	-0.036	**0.175**	**-0.612**	

Variable (changes)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
(1) ΔFERROR(0)$_{t+1}$		**0.622**	**0.384**	**0.547**	-0.050	-0.099	-0.024	-0.038	**-0.139**	-0.011	-0.097	0.085	-0.035	**0.152**	0.009
(2) ΔFERROR(1$_{)t+1}$	**0.747**		**0.692**	**0.446**	-0.054	-0.047	-0.070	0.027	-0.014	-0.040	-0.011	0.112	0.033	0.090	0.018
(3) ΔFERROR(2$_{)t+1}$	**0.644**	**0.904**		**0.302**	-0.035	-0.038	-0.046	0.039	-0.050	-0.008	0.006	0.017	0.018	0.026	0.093
(4) ΔDISPERSION$_{t+1}$	**0.691**	**0.435**	**0.380**		0.011	0.091	-0.024	-0.048	-0.023	0.028	-0.084	0.070	-0.047	0.090	0.014
(5) IR$_t$	-0.068	-0.024	-0.011	-0.064		**0.281**	0.061	-0.071	0.029	-0.053	0.036	0.056	0.069	0.000	0.000
(6) GRI$_t$	0.015	0.014	-0.007	0.058	**0.281**		-0.041	-0.053	**0.140**	0.103	**0.154**	0.009	0.037	0.013	-0.113
(7) ΔSIZE$_t$	-0.022	-0.024	-0.030	-0.018	0.110	-0.001		**-0.159**	-0.057	-0.009	**0.278**	-0.011	**0.138**	**-0.314**	0.121
(8) ΔEARNSURP$_t$	-0.067	-0.047	0.015	-0.054	-0.031	-0.037	-0.111		0.110	0.121	0.031	0.039	-0.020	0.119	-0.006
(9) LOSS$_t$	-0.045	-0.124	**-0.133**	-0.069	0.029	**0.140**	-0.025	**0.185**		**0.181**	0.023	0.015	-0.094	-0.016	-0.093
(10) ΔEARNVOLI$_t$	0.027	-0.015	-0.010	0.021	-0.091	0.095	-0.124	0.085	0.078		0.024	0.003	-0.010	-0.040	0.006
(11) LISTING$_t$	-0.122	-0.090	-0.037	-0.099	0.038	**0.141**	**0.234**	0.014	0.017	0.057		-0.025	0.087	**-0.570**	**0.302**
(12) ΔFOLLOW$_t$	-0.004	0.066	-0.023	0.031	0.076	0.014	-0.045	-0.010	0.003	-0.024	-0.084		0.102	**0.231**	0.031
(13) ΔHORIZON$_t$	**-0.147**	-0.046	-0.046	-0.069	0.101	-0.004	0.118	0.007	-0.094	-0.058	0.084	**0.128**		-0.125	0.015
(14) NATION_VF$_t$	0.089	0.072	0.039	0.081	0.000	0.031	**-0.280**	0.058	0.013	-0.083	**-0.448**	**0.195**	**-0.151**		**-0.409**
(15) NATION_RRG$_t$	-0.111	-0.082	-0.038	-0.053	0.000	-0.119	**0.291**	-0.072	-0.125	0.049	**0.327**	-0.071	0.087	**-0.612**	

Panel A reports tests for differences based on two-tailed independent *t*-test (parametric) and Mann-Whitney *U*-test (non-parametric). Panel B reports Pearson correlations below the diagonal and Spearman correlations above the diagonal. Correlation coefficients in bold indicates two-tailed statistical significance at the 0.05 level. Variables are as defined in Appendix A.

Table 3
Information Environment Analysis: Multivariate Tests
Panel A: Level specification

		FERROR(0)$_{t+1}$ [(*t*) in DID]						FERROR(1)$_{t+1}$ [(*t*) in DID]					
		TEM		MLR		DID		TEM		MLR		DID	
Variable	Pred. Sign	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
IR_t	-	-0.172	-0.0751	-0.0218	-0.0208	0.000869	0.000945	-0.0680	-0.0820	-0.00434	-0.00579	-0.0132	-0.0134
		(-1.56)	(-0.66)	(-0.78)	(-0.81)	(0.21)	(0.23)	(-1.23)	(-1.64)	(-0.30)	(-0.51)	(-1.50)	(-1.52)
$POST_t$	-					0.00175	-0.000573					-0.00270	-0.00760
						(0.37)	(-0.09)					(-0.29)	(-0.57)
IR_t*$POST_t$	-					0.00586	0.00426					0.0241	0.0216
						(0.76)	(0.57)					(1.63)	(1.53)
GRI_t	-	0.0557	0.0382	0.0480**	0.0396	0.00193	0.00618	0.0210	0.0364*	0.0301**	0.0290**	0.00884	0.0209**
		(1.60)	(0.87)	(1.99)	(1.46)	(0.61)	(1.39)	(1.45)	(1.90)	(2.39)	(2.31)	(1.38)	(2.37)
$LnSIZE_t$	-	-0.0468*	-0.0482	-0.0569**	-0.0663*	-0.0106***	-0.0125***	-0.0203***	-0.0123	-0.0320***	-0.0193*	-0.0206***	-0.0282***
		(-1.77)	(-1.47)	(-2.37)	(-1.96)	(-3.17)	(-2.78)	(-2.78)	(-0.99)	(-3.21)	(-1.72)	(-3.36)	(-3.41)
$SqEARNSURP_t$	+	-0.0174	-0.0974	-0.173	-0.127	0.0902**	0.0471	0.305**	0.325**	0.187	0.243*	0.212***	0.168**
		(-0.09)	(-0.44)	(-0.85)	(-0.70)	(2.33)	(1.25)	(2.20)	(2.33)	(1.44)	(1.88)	(3.05)	(2.25)
$LOSS_t$	+	0.0743	0.0311	0.124	0.0851	0.119***	0.109***	0.0366	0.0114	0.0743*	0.0383	0.254***	0.233***
		(1.00)	(0.41)	(1.43)	(1.04)	(5.14)	(5.32)	(0.97)	(0.29)	(1.68)	(1.04)	(5.66)	(5.83)
$LnEARNVOLI_t$	+	0.0599	0.128	0.0556	0.128	0.00459	0.00782	0.00893	0.00352	0.0105	0.00670	0.00652	0.00516
		(1.57)	(1.66)	(1.56)	(1.61)	(1.49)	(0.92)	(0.88)	(0.16)	(1.04)	(0.31)	(1.05)	(0.29)
$LISTING_t$	-	0.00265	0.00980	0.00633	0.0111	0.000741	0.00309*	-0.00342	0.00441	-0.000294	0.00267	0.000266	0.00764***
		(0.45)	(1.19)	(0.97)	(1.34)	(0.72)	(1.83)	(-1.27)	(1.03)	(-0.09)	(0.68)	(0.13)	(2.66)
$FOLLOW_t$	-	0.00167	-0.00266	0.00186	0.00142	0.000874**	0.000364	0.00248*	0.000563	0.00225	0.00209	0.00236***	0.000799
		(0.68)	(-0.83)	(0.76)	(0.58)	(2.57)	(0.75)	(1.71)	(0.27)	(1.49)	(1.37)	(3.53)	(0.95)
$HORIZON_t$	+	-0.000982	-0.000530	-0.000554	-0.000252	0.0000217	0.0000867	-0.000185	0.000186	-0.0000168	0.000330	0.0000275	0.000123
		(-1.40)	(-0.79)	(-1.05)	(-0.46)	(0.41)	(1.08)	(-1.10)	(0.78)	(-0.08)	(1.54)	(0.26)	(0.76)
$NATION\_RRG_t$	-	0.000379		-0.00669		-0.00142		0.00325		-0.00595		-0.00236	
		(0.06)		(-0.98)		(-0.94)		(0.66)		(-1.09)		(-0.85)	
$NATION\_VF_t$	-	0.0123		0.0247		0.00360*		0.00401		0.00333		0.00615	
		(1.39)		(1.50)		(1.80)		(0.98)		(0.43)		(1.64)	
lambda		0.0907	0.0285					0.0385	0.0445				
		(1.51)	(0.43)					(1.13)	(1.44)				
Country dummies		N	Y	N	Y	N	Y	N	Y	N	Y	N	Y
Industry dummies		N	Y	N	Y	N	Y	N	Y	N	Y	N	Y
Year dummies		N	Y	N	Y	N	Y	N	Y	N	Y	N	Y
N		190	190	236	236	380	380	190	190	236	236	380	380
R^2		0.204	0.404	0.195	0.419	0.511	0.611	0.241	0.574	0.224	0.600	0.578	0.674
Adj. R^2		0.150	0.092	0.155	0.173	0.493	0.524	0.189	0.351	0.186	0.430	0.563	0.602

Panel A (continue): Level specification

		FERROR(2)$_{t+1}$ [(*t*) in DID]						DISPERSION$_{t+1}$ [(*t*) in DID]					
		TEM		MLR		DID		TEM		MLR		DID	
Variable	Pred. Sign	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)
IR$_t$	-	-0.0882	-0.0978	-0.000311	-0.00329	-0.0121	-0.0120	-0.379*	-0.208	-0.0735	-0.0446	0.0751	0.0793
		(-1.37)	(-1.61)	(-0.01)	(-0.16)	(-0.98)	(-0.95)	(-1.91)	(-0.98)	(-1.17)	(-0.82)	(0.90)	(1.19)
POST$_t$	-					-0.00336	-0.0114					-0.0483	-0.0815
						(-0.25)	(-0.66)					(-1.22)	(-1.19)
IR$_t$*POST$_t$	-					0.0163	0.0128					0.0253	0.00547
						(0.86)	(0.70)					(0.22)	(0.05)
GRI$_t$	-	0.0271	0.0414*	0.00497	0.0225	0.0174*	0.0250**	0.158**	0.125	0.0956*	0.0506	0.0896*	0.161***
		(1.55)	(1.84)	(0.27)	(1.22)	(1.96)	(2.35)	(2.13)	(1.32)	(1.66)	(0.75)	(1.67)	(2.72)
LnSIZE$_t$	-	-0.0286***	-0.0191	-0.000000283	6.18e-08	-0.0188*	-0.0241*	-0.0929*	-0.0660	0.00000269	-0.00000890	-0.0761***	-0.0615*
		(-3.06)	(-1.17)	(-0.25)	(0.03)	(-1.77)	(-1.93)	(-1.76)	(-0.73)	(0.85)	(-1.43)	(-2.66)	(-1.75)
SqEARNSURP$_t$	+	0.337**	0.339*	0.156	0.525	0.148*	0.0452	0.937	0.865	-0.390	0.526	0.927**	0.620
		(2.13)	(1.93)	(0.26)	(0.83)	(1.68)	(0.51)	(1.25)	(0.94)	(-0.29)	(0.33)	(2.37)	(1.41)
LOSS$_t$	+	0.0533	0.0224	-0.0839	-0.166*	0.295***	0.269***	0.393**	0.286	-0.120	-0.334	0.743***	0.734***
		(1.27)	(0.48)	(-1.05)	(-1.96)	(5.56)	(5.93)	(1.99)	(1.39)	(-0.55)	(-1.21)	(4.22)	(4.21)
LnEARNVOLI$_t$	+	0.0194	0.0256	-0.00138	0.0157	0.0176**	0.0347	0.111	0.154	0.0199	0.0141	0.0246	0.00647
		(1.46)	(0.79)	(-0.14)	(1.13)	(2.08)	(1.59)	(1.64)	(0.79)	(0.48)	(0.25)	(0.78)	(0.08)
LISTING$_t$	-	-0.00343	0.00486	-0.000927	0.00478	0.00159	0.00798**	-0.00432	0.00945	-0.0115	-0.0169	-0.00504	0.0240
		(-1.04)	(0.96)	(-0.27)	(0.93)	(0.62)	(2.16)	(-0.26)	(0.44)	(-1.19)	(-1.02)	(-0.54)	(1.64)
FOLLOW$_t$	-	0.00323*	0.000142	-0.00162	-0.000277	0.00156	0.000296	0.00233	-0.0146	0.00658	0.0215	0.00457	-0.0107
		(1.92)	(0.06)	(-0.21)	(-0.03)	(1.64)	(0.29)	(0.36)	(-1.60)	(0.46)	(1.23)	(1.16)	(-1.64)
HORIZON$_t$	+	-0.000342	0.000120	-0.000229	-0.000215	0.0000732	0.000230	-0.00239	-0.000973	-0.000728	-0.00119	-0.000334	0.000705
		(-1.46)	(0.38)	(-0.52)	(-0.39)	(0.62)	(1.23)	(-1.50)	(-0.58)	(-0.73)	(-0.96)	(-0.26)	(0.91)
NATION_RRG$_t$	-	0.00252		-0.00404		-0.00944**		-0.00174		-0.00206		0.00257	
		(0.47)		(-0.63)		(-2.21)		(-0.08)		(-0.11)		(0.17)	
NATION_VF$_t$	-	0.00480		-0.000337		0.00878*		0.0177		0.00973		-0.000475	
		(1.00)		(-0.03)		(1.96)		(0.80)		(0.43)		(-0.02)	
lambda		0.0465	0.0509					0.227	0.126				
		(1.17)	(1.34)					(1.64)	(0.81)				
Country dummies		N	Y	N	Y	N	Y	N	Y	N	Y	N	Y
Industry dummies		N	Y	N	Y	N	Y	N	Y	N	Y	N	Y
Year dummies		N	Y	N	Y	N	Y	N	Y	N	Y	N	Y
N		190	190	236	236	380	380	190	190	236	236	380	380
R^2		0.283	0.561	0.026	0.358	0.509	0.620	0.259	0.474	0.036	0.314	0.198	0.481
Adj. R^2		0.234	0.331	-0.022	0.086	0.491	0.536	0.209	0.199	-0.012	0.023	0.170	0.365

Panel B: Change specification

		$\Delta FERROR(0)_{t+1}$				$\Delta FERROR(1)_{t+1}$			
		TEM		MLR		TEM		MLR	
Variable	Pred. Sign	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
IR_t	-	-0.0591*	-0.0421	-0.00917	-0.00633	0.0146	-0.0791	-0.00766	-0.00899
		(-1.66)	(-1.12)	(-0.94)	(-0.73)	(0.16)	(-1.02)	(-0.48)	(-0.65)
GRI_t	-	-0.00256	-0.00805	0.00614	0.00608	-0.0157	0.0132	0.0111	0.0224
		(-0.17)	(-0.43)	(0.64)	(0.57)	(-0.53)	(0.39)	(0.78)	(1.53)
$\Delta SIZE_t$	-	0.000000792	-0.000000227	0.000000699	-0.000000324	0.000000291	-0.00000304	0.000000426	-0.000000974
		(1.02)	(-0.18)	(1.36)	(-0.38)	(0.23)	(-0.97)	(0.49)	(-0.64)
$\Delta EARNSURP_t$	+	-0.260	-0.260	-0.1000	0.107	-0.380	-0.383	-0.0620	0.262
		(-0.70)	(-0.61)	(-0.43)	(0.41)	(-0.43)	(-0.42)	(-0.15)	(0.61)
$LOSS_t$	+	-0.0425	-0.0694	-0.0158	-0.0564	-0.194	-0.244**	-0.0586	-0.139**
		(-1.15)	(-1.31)	(-0.49)	(-1.26)	(-1.63)	(-2.15)	(-1.00)	(-2.03)
$\Delta EARNVOLI_t$	+	0.00345	0.00852	0.00506	0.00779	0.000359	0.00595	-0.000766	0.00727
		(0.96)	(1.37)	(1.04)	(1.06)	(0.06)	(0.37)	(-0.09)	(0.52)
$LISTING_t$	-	-0.00226	-0.000637	-0.00208	-0.00222	-0.00158	0.0193	-0.00244	0.00421
		(-1.31)	(-0.18)	(-1.33)	(-0.96)	(-0.48)	(1.64)	(-0.97)	(1.07)
$\Delta FOLLOW_t$	-	0.00233	0.00507	0.000302	0.00197	0.0136	0.0159	0.00413	0.00764
		(0.60)	(1.28)	(0.12)	(0.77)	(1.36)	(1.66)	(0.90)	(1.60)
$\Delta HORIZON_t$	+	-0.000603*	-0.000902*	-0.000272	-0.000381*	-0.000166	-0.000322	-0.000195	-0.000206
		(-1.73)	(-1.89)	(-1.60)	(-1.75)	(-0.21)	(-0.38)	(-0.55)	(-0.44)
$NATION\_RRG_t$	-	-0.00108		-0.00434		0.00122		-0.00614	
		(-0.32)		(-1.29)		(0.18)		(-1.13)	
$NATION\_VF_t$	-	-0.00206		-0.00117		0.00247		-0.00248	
		(-0.52)		(-0.23)		(0.33)		(-0.32)	
lambda		0.0250	0.0150			-0.0247	0.0330		
		(1.02)	(0.63)			(-0.42)	(0.62)		
Country dummies		N	Y	N	Y	N	Y	N	Y
Industry dummies		N	Y	N	Y	N	Y	N	Y
Year dummies		N	Y	N	Y	N	Y	N	Y
N		190	190	236	236	190	190	236	236
R^2		0.135	0.365	0.053	0.352	0.129	0.394	0.037	0.370
Adj. R^2		0.076	0.032	0.007	0.078	0.070	0.077	-0.010	0.103

Panel B (continue): Change specification

		$\Delta FERROR(2)_{t+1}$				$\Delta DISPERSION_{t+1}$			
		TEM		MLR		TEM		MLR	
Variable	Pred. Sign	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
IR_t	-	0.0201	-0.0915	-0.000311	-0.00329	-0.209	-0.162	-0.0735	-0.0446
		(0.21)	(-1.06)	(-0.01)	(-0.16)	(-1.16)	(-0.77)	(-1.17)	(-0.82)
GRI_t	-	-0.0202	0.0131	0.00497	0.0225	0.122	0.0483	0.0956*	0.0506
		(-0.59)	(0.34)	(0.27)	(1.22)	(1.59)	(0.46)	(1.66)	(0.75)
$\Delta SIZE_t$	-	-0.000000457	-0.00000310	-0.000000283	6.18e-08	0.000000392	-0.00000539	0.00000269	-0.00000890
		(-0.30)	(-0.97)	(-0.25)	(0.03)	(0.11)	(-0.66)	(0.85)	(-1.43)
$\Delta EARNSURP_t$	+	0.0155	-0.0307	0.156	0.525	-0.476	0.575	-0.390	0.526
		(0.02)	(-0.03)	(0.26)	(0.83)	(-0.30)	(0.29)	(-0.29)	(0.33)
$LOSS_t$	+	-0.239*	-0.276**	-0.0839	-0.166*	-0.225	-0.501	-0.120	-0.334
		(-1.87)	(-2.26)	(-1.05)	(-1.96)	(-0.82)	(-1.49)	(-0.55)	(-1.21)
$\Delta EARNVOLI_t$	+	0.00154	0.00958	-0.00138	0.0157	-0.00275	0.00944	0.0199	0.0141
		(0.24)	(0.58)	(-0.14)	(1.13)	(-0.13)	(0.24)	(0.48)	(0.25)
$LISTING_t$	-	-0.000187	0.0177	-0.000927	0.00478	-0.0173	-0.0173	-0.0115	-0.0169
		(-0.04)	(1.47)	(-0.27)	(0.93)	(-1.52)	(-0.71)	(-1.19)	(-1.02)
$\Delta FOLLOW_t$	-	0.00607	0.00545	-0.00162	-0.000277	-0.00382	0.0202	0.00658	0.0215
		(0.49)	(0.38)	(-0.21)	(-0.03)	(-0.20)	(0.96)	(0.46)	(1.23)
$\Delta HORIZON_t$	+	-0.000209	-0.000439	-0.000229	-0.000215	-0.00142	-0.00199	-0.000728	-0.00119
		(-0.25)	(-0.48)	(-0.52)	(-0.39)	(-1.11)	(-1.27)	(-0.73)	(-0.96)
$NATION\_RRG_t$	-	0.00519		-0.00404		0.00525		-0.00206	
		(0.66)		(-0.63)		(0.24)		(-0.11)	
$NATION\_VF_t$	-	0.00464		-0.000337		-0.0185		0.00973	
		(0.54)		(-0.03)		(-0.83)		(0.43)	
lambda		-0.0225	0.0489			0.0894	0.0689		
		(-0.34)	(0.82)			(0.68)	(0.49)		
Country dummies		N	Y	N	Y	N	Y	N	Y
Industry dummies		N	Y	N	Y	N	Y	N	Y
Year dummies		N	Y	N	Y	N	Y	N	Y
N		190	190	236	236	190	190	236	236
R^2		0.106	0.359	0.026	0.358	0.066	0.347	0.036	0.314
Adj. R^2		0.045	0.022	-0.022	0.086	0.002	0.004	-0.012	0.023

Two-tailed tests of significance: * p<0.10, ** p<0.05, and *** p<0.01. Regression coefficients are reported with *t*-statistics in parentheses. Robust standard errors are used. Variables are as defined in Appendix A.

Table 4
Cost of Equity Analysis: Descriptive Statistics and Bivariate Tests
Panel A: Descriptive statistics and independent t-tests

	All (n = 214)					IR Firms		Matched Firms		*t*-test	M-W
Variable (levels)	Mean	Median	Sd	Min	Max	Mean	Sd	Mean	Sd	p-value	p-value
COE_{t+1}	11.10	10.46	3.26	5.86	21.36	11.26	3.38	10.94	3.14	0.472	0.464
$LnSIZE_t$	9.05	8.92	1.12	6.61	11.90	9.15	1.13	8.96	1.11	0.219	0.173
$LnMTB_t$	1.04	0.91	0.54	0.30	3.56	1.00	0.56	1.07	0.52	0.368	0.179
LEV_t	0.26	0.25	0.17	0.00	0.68	0.27	0.17	0.25	0.17	0.328	0.336
$BETA_t$	0.97	0.92	0.42	0.15	1.89	1.00	0.46	0.94	0.38	0.361	0.344
LTG_t	12.35	10.13	15.15	-25.50	69.22	10.92	14.38	13.77	15.83	0.168	0.185
$LnDISPERSION_t$	-2.06	-2.24	1.10	-4.09	0.89	-2.00	1.17	-2.11	1.02	0.474	0.725
$FOLLOW_t$	17.59	16.00	8.16	4.50	43.00	18.55	8.50	16.63	7.73	0.084	0.158

	All (n = 214)					IR Firms		Matched Firms		*t*-test	M-W
Variable (changes)	Mean	Median	Sd	Min	Max	Mean	Sd	Mean	Sd	p-value	p-value
ΔCOE_{t+1}	0.19	0.00	2.09	-3.96	8.48	0.30	2.04	0.08	2.14	0.452	0.499
$\Delta SIZE_t$	-35.41	11.13	4213.99	-12789.39	16551.06	472.85	4379.06	-543.67	3998.15	0.078	0.383
ΔMTB_t	-0.10	-0.02	0.72	-3.79	1.44	-0.08	0.77	-0.12	0.67	0.707	0.547
ΔLEV_t	0.00	0.00	0.04	-0.15	0.15	0.00	0.04	0.00	0.05	0.328	0.115
$\Delta BETA_t$	0.00	-0.01	0.19	-0.57	0.47	0.00	0.19	0.01	0.18	0.642	0.543
ΔLTG_t	-0.39	-0.14	19.14	-83.10	83.80	0.10	16.52	-0.88	21.51	0.709	0.668
$\Delta DISPERSION_t$	-0.06	0.00	0.50	-3.10	0.98	-0.05	0.59	-0.07	0.40	0.794	0.463
$\Delta FOLLOW_t$	-0.07	0.00	2.25	-5.50	5.00	0.06	2.19	-0.21	2.31	0.379	0.472

Panel B: Correlation matrix

Variable (levels)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
(1) COE_{t+1}		0.050	0.113	**-0.135**	**-0.388**	**0.207**	**0.483**	0.024	**0.363**	0.028
(2) IR_t	0.049		**0.319**	0.093	-0.092	0.066	0.065	-0.091	0.024	0.097
(3) GRI_t	0.098	**0.319**		**0.251**	-0.104	**0.181**	**0.148**	-0.058	0.124	**0.230**
(4) $LnSIZE_t$	-0.130	0.084	**0.239**		**0.199**	**-0.144**	0.032	**-0.142**	**-0.235**	**0.453**
(5) $LnMTB_t$	**-0.311**	-0.062	-0.050	0.134		**-0.143**	**-0.434**	0.057	**-0.424**	-0.019
(6) LEV_t	**0.213**	0.067	0.131	**-0.196**	0.010		0.056	0.000	0.130	-0.005
(7) $BETA_t$	**0.452**	0.063	0.124	0.009	**-0.419**	0.043		0.122	**0.235**	**0.186**
(8) LTG_t	0.015	-0.095	-0.096	**-0.199**	-0.007	0.046	0.090		**0.150**	0.017
(9) $LnDISPERSION_t$	**0.366**	0.049	0.110	**-0.273**	**-0.389**	**0.136**	**0.246**	**0.195**		-0.076
(10) $FOLLOW_t$	0.059	0.118	**0.239**	**0.382**	-0.037	-0.042	**0.195**	-0.022	-0.008	

Variable (changes)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
(1) ΔCOE_{t+1}		0.046	-0.019	**-0.153**	-0.092	0.117	-0.084	0.065	0.020	-0.081
(2) IR_t	0.052		**0.319**	0.060	0.041	-0.108	-0.042	0.029	0.050	0.049
(3) GRI_t	-0.031	**0.319**		-0.006	0.045	0.000	0.012	-0.085	-0.069	0.045
(4) $\Delta SIZE_t$	**-0.187**	0.121	0.015		**0.643**	**-0.268**	-0.018	0.043	**-0.242**	-0.062
(5) ΔMTB_t	-0.059	0.026	0.064	**0.264**		-0.081	-0.023	**0.190**	-0.126	-0.060
(6) ΔLEV_t	0.126	-0.067	0.020	**-0.222**	0.054		**0.158**	0.025	**0.177**	-0.092
(7) $\Delta BETA_t$	-0.043	-0.032	0.008	-0.022	-0.022	**0.173**		0.083	0.013	-0.036
(8) ΔLTG_t	0.075	0.026	-0.127	0.023	0.071	0.082	**0.187**		-0.091	-0.066
(9) $\Delta DISPERSION_t$	-0.032	0.018	-0.069	-0.084	0.001	0.127	0.108	0.002		**-0.170**
(10) $\Delta FOLLOW_t$	-0.018	0.060	0.058	-0.049	-0.079	-0.126	-0.004	0.050	-0.056	

Panel A reports tests for differences based on two-tailed independent *t*-test (parametric) and Mann-Whitney *U*-test (non-parametric). Panel B reports Pearson correlations below the diagonal and Spearman correlations above the diagonal. Correlation coefficients in bold indicates two-tailed statistical significance at the 0.05 level. Variables are as defined in Appendix A.

Table 5
Cost of Equity Analysis: Multivariate Tests

		COE_{t+1} [(*t*) in DID]							ΔCOE_{t+1}			
		TEM		MLR		DID			TEM		MLR	
Variable	Pred. Sign	(1)	(2)	(3)	(4)	(5)	(6)		(7)	(8)	(9)	(10)
IR_t	-	-3.171**	-0.724	-0.0412	0.0963	0.100	0.142	IR_t	-0.225	-0.208	0.399	0.269
		(-2.01)	(-0.71)	(-0.11)	(0.42)	(0.23)	(0.44)		(-0.20)	(-0.25)	(1.50)	(1.31)
$POST_t$	-					-0.153	0.539	GRI_t	-0.0416	0.0782	-0.245	-0.0734
						(-0.35)	(1.12)		(-0.11)	(0.23)	(-0.75)	(-0.25)
IR_t*$POST_t$	-					-0.112	-0.0686	$\Delta SIZE_t$	-0.000106*	-0.0000248	-0.0000880*	-0.0000300
						(-0.18)	(-0.15)		(-1.90)	(-0.54)	(-1.85)	(-0.68)
GRI_t	-	0.642	0.143	0.0534	-0.0511	-0.128	-0.567*	ΔMTB_t	0.0000305	0.000375	-0.0759	-0.284
		(1.18)	(0.34)	(0.12)	(-0.15)	(-0.34)	(-1.76)		(0.12)	(1.24)	(-0.44)	(-1.39)
$LnSIZE_t$	-	0.161	-0.578*	-0.152	-0.187	-0.0572	-0.0237	ΔLEV_t	4.288	0.770	5.164	-0.790
		(0.65)	(-1.77)	(-0.73)	(-0.94)	(-0.37)	(-0.11)		(1.17)	(0.19)	(1.48)	(-0.22)
$LnMTB_t$	-	-0.174	0.384	-0.369	-0.167	-0.0742	-0.198	$\Delta BETA_t$	0.0416	0.267	-0.796	-0.650
		(-1.51)	(1.04)	(-0.86)	(-0.50)	(-0.96)	(-0.69)		(0.06)	(0.32)	(-1.17)	(-0.92)
LEV_t	+	0.655	0.717	3.067**	2.445**	2.322*	2.537**	ΔLTG_t	0.00372	0.00463	0.00851	0.00760
		(0.36)	(0.43)	(2.42)	(2.05)	(1.88)	(2.23)		(1.07)	(1.09)	(1.40)	(1.12)
$BETA_t$	+	2.939***	2.471***	2.840***	2.821***	4.008***	3.165***	$\Delta DISPERSION_t$	-0.0129***	-0.000721	-0.250	0.187
		(7.66)	(4.60)	(6.27)	(6.11)	(9.95)	(7.91)		(-12.07)	(-0.41)	(-0.76)	(0.87)
LTG_t	+	-0.00768	-0.000471	-0.0175	-0.0112	-0.00105	-0.0177**	$\Delta FOLLOW_t$	-0.0320	-0.171**	-0.0239	-0.0540
		(-0.64)	(-0.05)	(-1.29)	(-1.14)	(-0.07)	(-2.06)		(-0.49)	(-2.01)	(-0.37)	(-0.68)
$LnDISPERSION_t$	+	0.909***	0.540**	0.688***	0.200	0.337*	0.218	lambda	0.483	0.458		
		(3.18)	(2.10)	(3.65)	(1.35)	(1.91)	(1.43)		(0.57)	(0.76)		
$FOLLOW_t$	-	0.0113	0.0629	0.00415	0.00293	0.00566	0.0140	Country dummies	N	Y	N	Y
		(0.37)	(1.29)	(0.14)	(0.07)	(0.26)	(0.47)	Industry dummies	N	Y	N	Y
lambda		2.145*	0.630					Year dummies	N	Y	N	Y
		(1.88)	(0.88)					N	174	174	214	214
Country dummies		N	Y	N	Y	N	Y	R^2	0.091	0.676	0.066	0.595
Industry dummies		N	Y	N	Y	N	Y	Adj. R^2	0.035	0.495	0.025	0.413
Year dummies		N	Y	N	Y	N	Y					
N		174	174	214	214	310	310					
R^2		0.291	0.819	0.310	0.821	0.334	0.723					
Adj. R^2		0.247	0.718	0.280	0.740	0.309	0.654					

Two-tailed tests of significance: * p<0.10, ** p<0.05, and *** p<0.01. Regression coefficients are reported with *t*-statistics in parentheses. Robust standard errors are used. Variables are as defined in Appendix A.

Table 6
Firm Valuation Analysis: Descriptive Statistics and Bivariate Tests
Panel A: Descriptive statistics and independent t-tests

	All (n = 282)					IR Firms		Matched Firms		*t*-test	M-W
Variable (levels)	Mean	Median	Sd	Min	Max	Mean	Sd	Mean	Sd	p-value	p-value
$LnPRICE_{t+1}$	3.01	2.88	1.47	0.19	8.03	2.97	1.45	3.06	1.49	0.607	0.717
$LnBVPS_t$	2.39	2.40	1.06	0.00	5.48	2.37	1.04	2.42	1.09	0.718	0.926
$ABEARN_t$	-2.29	-0.98	5.68	-46.79	0.00	-2.05	4.83	-2.53	6.43	0.478	0.921
$LnMVCDA_{t+1}$	0.99	0.91	0.53	-1.21	2.63	0.97	0.50	1.00	0.56	0.717	0.431
$BVINV_t$	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.933	0.083
$NIBV_t$	0.12	0.09	0.43	-4.24	3.19	0.09	0.52	0.15	0.31	0.223	0.133

	All (n = 282)					IR Firms (n = 141)		Matched Firms (n = 141)		*t*-test	M-W
Variable (changes)	Mean	Median	Sd	Min	Max	Mean	Sd	Mean	Sd	p-value	p-value
$\Delta PRICE_{t+1}$	1.29	-0.01	42.77	-188.99	237.89	-0.41	39.12	2.99	46.21	0.506	0.504
$\Delta BVPS_t$	0.17	-0.01	4.73	-16.91	31.58	-0.35	3.08	0.68	5.90	0.065	0.274
$\Delta ABEARN_t$	0.22	0.02	1.02	-1.95	7.34	0.27	1.03	0.17	1.02	0.398	0.378
$\Delta MVCDA_{t+1}$	-0.02	0.00	0.94	-6.06	2.30	-0.03	0.99	-0.01	0.90	0.856	0.888
$\Delta BVINV_t$	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.395	0.974
$\Delta NIBV_t$	0.04	0.00	0.53	-1.98	6.78	0.03	0.64	0.04	0.38	0.902	0.924

Panel B: Correlation matrix

Variable (levels)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
(1) $LnPRICE_{t+1}$		-0.022	-0.031	**0.635**	**-0.572**	**0.449**	-0.074	**0.187**
(2) IR_t	-0.031		**0.318**	-0.006	0.006	-0.047	-0.103	-0.090
(3) GRI_t	-0.027	**0.318**		0.021	-0.060	0.009	**-0.356**	0.022
(4) $LnBVPS_t$	**0.496**	-0.022	0.024		**-0.966**	-0.102	**-0.283**	**-0.139**
(5) $ABEARN_t$	**-0.258**	0.042	-0.039	**-0.610**		**0.153**	**0.296**	**0.191**
(6) $LnMVCDA_{t+1}$	**0.401**	-0.022	0.010	-0.126	**0.174**		**0.219**	**0.405**
(7) $BVINV_t$	-0.077	0.005	**-0.172**	**-0.289**	0.099	**0.170**		0.105
(8) $NIBV_t$	0.063	-0.073	0.015	**-0.127**	0.060	-0.007	0.117	

Variable (changes)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
(1) $\Delta PRICE_{t+1}$		-0.040	-0.108	**0.211**	-0.017	0.033	0.003	**0.177**
(2) IR_t	-0.040		**0.318**	-0.065	0.053	0.008	0.002	-0.006
(3) GRI_t	-0.102	**0.318**		-0.071	-0.041	0.043	-0.008	0.005
(4) $\Delta BVPS_t$	-0.035	-0.110	-0.094		**-0.156**	-0.021	-0.039	**0.180**
(5) $\Delta ABEARN_t$	**-0.137**	0.051	-0.020	**0.185**		0.099	**0.286**	**0.227**
(6) $\Delta MVCDA_{t+1}$	0.082	-0.011	0.037	0.012	0.009		0.103	0.000
(7) $\Delta BVINV_t$	-0.041	0.051	-0.048	0.071	0.022	**-0.155**		**0.351**
(8) $\Delta NIBV_t$	-0.017	-0.007	0.041	0.015	0.072	0.104	**0.305**	

Panel A reports tests for differences based on two-tailed independent *t*-test (parametric) and Mann-Whitney *U*-test (non-parametric). Panel B reports Pearson correlations below the diagonal and Spearman correlations above the diagonal. Correlation coefficients in bold indicates two-tailed statistical significance at the 0.05 level. Variables are as defined in Appendix A.

Table 7
Firm Value Analysis: Multivariate Tests
Panel A: Level specification

		$LnPRICE_{t+1}$ [(*t*) in DID]						$LnMVCDA_{t+1}$ [(*t*) in DID]					
		TEM		MLR		DID		TEM		MLR		DID	
Variable	Pred. Sign	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
IR_t	+	0.613	-0.0406	-0.0338	-0.0829	-0.00384	-0.0323	-0.220	-0.199	-0.0446	-0.0566	-0.250	-0.127
		(1.14)	(-0.11)	(-0.20)	(-1.09)	(-0.02)	(-0.44)	(-1.05)	(-0.89)	(-0.72)	(-1.01)	(-0.93)	(-1.50)
$POST_t$	+					-0.00782	0.0936					0.0990	0.102
						(-0.04)	(0.90)					(0.39)	(0.84)
IR_t*$POST_t$	+					-0.0485	-0.0356					-0.0163	-0.00557
						(-0.20)	(-0.34)					(-0.04)	(-0.05)
GRI_t	+	-0.272	0.0907	-0.104	0.0841	-0.0631	0.0407	0.104	0.164**	0.0617	0.104*	0.408**	0.0846
		(-1.00)	(0.69)	(-0.56)	(0.93)	(-0.42)	(0.61)	(1.40)	(2.19)	(0.95)	(1.67)	(2.00)	(1.23)
$LnBVPS_t$	+	0.686***	0.826***	0.746***	0.820***	0.697***	0.783***						
		(6.11)	(8.94)	(8.23)	(10.00)	(12.44)	(13.97)						
$ABEARN_t$	+	0.0139	0.0126	0.0182	0.0110	30.22***	20.64**						
		(0.65)	(0.58)	(0.84)	(0.52)	(2.92)	(2.14)						
$BVINV_t$	+							50616.8	97730.8	61372.3**	52004.5**	3640.2***	537.2**
								(0.63)	(1.19)	(2.04)	(2.08)	(7.75)	(2.03)
$NIBV_t$	+							0.438**	0.369*	-0.0395	-0.0337	0.00641**	0.00251***
								(2.60)	(1.96)	(-0.21)	(-0.22)	(2.12)	(7.80)
lambda		-0.447	-0.0252					0.133	0.117				
		(-1.27)	(-0.10)					(0.94)	(0.80)				
Country dummies		N	Y	N	Y	N	Y	N	Y	N	Y	N	Y
Industry dummies		N	Y	N	Y	N	Y	N	Y	N	Y	N	Y
Year dummies		N	Y	N	Y	N	Y	N	Y	N	Y	N	Y
N		206	206	282	282	440	440	206	206	282	282	440	440
R^2		0.213	0.873	0.251	0.858	0.263	0.890	0.139	0.580	0.033	0.413	0.223	0.930
Adj. R^2		0.194	0.819	0.240	0.815	0.253	0.871	0.118	0.402	0.019	0.236	0.212	0.918

Panel B: Change specification

		$\Delta PRICE_{t+1}$				$\Delta MVCDA_{t+1}$			
		TEM		MLR		TEM		MLR	
Variable	Pred. Sign	(1)	(2)	(3)	(4)	(7)	(8)	(9)	(10)
IR_t	+	14.92	-6.606	-0.127	0.834	-0.0804	-0.0621	-0.0122	-0.00809
		(0.72)	(-0.29)	(-0.02)	(0.12)	(-0.30)	(-0.19)	(-0.12)	(-0.08)
GRI_t	+	-12.83	-6.938	-9.655	-10.84	0.108	0.151	0.0457	0.0611
		(-1.05)	(-0.44)	(-1.28)	(-1.15)	(0.83)	(1.11)	(0.41)	(0.50)
$\Delta BVPS_t$	+	-0.304	-0.282	-0.182	-0.0567				
		(-0.42)	(-0.36)	(-0.26)	(-0.07)				
$\Delta ABEARN_t$	+	-4.677	-7.816*	-5.645*	-10.28**				
		(-1.35)	(-1.86)	(-1.89)	(-2.04)				
$\Delta BVINV_t$	+					-375846.0	-359423.3	-389542.9	-552667.8
						(-0.32)	(-0.37)	(-1.09)	(-1.45)
$\Delta NIBV_t$	+					0.106	0.0428	0.296	0.358
						(0.55)	(0.26)	(1.16)	(1.50)
lambda		-9.999	4.693			0.135	0.118		
		(-0.84)	(0.37)			(0.69)	(0.52)		
Country dummies		N	Y	N	Y	N	Y	N	Y
Industry dummies		N	Y	N	Y	N	Y	N	Y
Year dummies		N	Y	N	Y	N	Y	N	Y
N		206	206	282	282	206	206	282	282
R^2		0.025	0.182	0.030	0.189	0.017	0.347	0.050	0.350
Adj. R^2		0.000	-0.164	0.016	-0.055	-0.008	0.071	0.036	0.155

Two-tailed tests of significance: * p<0.10, ** p<0.05, and *** p<0.01. Regression coefficients are reported with *t*-statistics in parentheses. Robust standard errors are used. Variables are as defined in Appendix A.