Mandatory IFRS adoption and management forecasts: The impact of enforcement changes☆

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A B S T R A C T

We examine how concurrent enforcement changes affect the positive relationship between mandatory IFRS adoption and firms' voluntary disclosure. We show that the increase in the issuance of management forecasts after IFRS adoption is smaller for firms from IFRS-mandating countries with concurrent enforcement changes than for those from countries without such changes. We find no difference in the increase of forecast informativeness between firms from IFRS-mandating countries without concurrent enforcement changes and firms from non-IFRS-mandating countries; however, firms domiciled in IFRS-mandating countries with concurrent enforcement changes exhibit a significantly smaller increase in forecast informativeness. Our findings suggest that better IFRS enforcement distinctly weakens (strengthens) the positive effect of IFRS adoption on voluntary (mandatory) disclosure.
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1. Introduction

We examine the impact of substantive enforcement changes on the relationship between the mandatory adoption of International Financial Reporting Standards (IFRS) and firms' voluntary disclosure. Although

IFRS target—and appear to have achieved—improved mandatory financial reporting quality (e.g., Lang and Stice-Lawrence, 2016), IFRS adoption may also lead to improved voluntary disclosure. For example, the increase in financial reporting comparability due to mandatory IFRS adoption not only facilitates firms' access to foreign capital markets but also increases the diversity of investors, who tend to have higher information demands because of their information disadvantage. In addition, IFRS standards are commonly deemed to be more principles-based than local generally accepted accounting principles (GAAP) in many adopting countries, with more management judgment and discretion in the reporting process (Atwood et al., 2011; Ball, 2005). Managers could thus have greater incentives to increase voluntary disclosure and improve corporate transparency to attract investors and reduce the cost of capital. Furthermore, management is more willing to issue earnings forecasts when investors perceive earnings to be more informative (e.g., Ball et al., 2012; Lennox and Park, 2006). If IFRS are perceived to be of higher quality and to produce more informative earnings, management could also have a greater incentive to issue more earnings forecasts. Consistent with these arguments, Li and Yang (2016) show that the likelihood and frequency of management earnings forecasts significantly increase after mandatory IFRS adoption.

A significant factor in the effectiveness of IFRS adoption (or any regulation) is whether it can be enforced. Indeed, some countries have enhanced enforcement regimes accompanying mandatory IFRS adoption. Studies generally find that the capital market benefits related to IFRS adoption appear to accrue mainly to countries that make concurrent and substantive enforcement changes (e.g., Daske et al., 2008; Leuz and Wysocki, 2008; Holthausen, 2009; Landsman et al., 2012; Christensen et al., 2013). A natural question then arises: how does better enforcement affect the positive relationship between IFRS adoption and voluntary disclosure? At an intuitive level, one might conjecture that better enforcement would strengthen this relationship. The positive relationship itself indicates complementarity between mandatory and voluntary disclosures, as argued by Lennox and Park (2006) and Ball et al. (2012), because IFRS adoption has been found to be associated with higher quality mandatory and voluntary disclosures. If better enforcement concurrent with IFRS adoption further increases the quality of mandatory financial reporting, then voluntary disclosure could increase even more for firms domiciled in IFRS countries with heightened enforcement.

However, an alternative hypothesis on the moderating effect of enforcement changes can also be argued. First, more stringent enforcement could constrain management's opportunistic use of the discretion afforded by IFRS and limit its flexibility to manipulate the mandated earnings numbers, which would reduce investors' demand for additional information. In addition, the risk of earnings not meeting the forecasts would be higher, lowering managers' willingness to provide earnings forecasts (Feng and Koch, 2010). Reduced earnings manipulation due to more stringent enforcement could also weaken the disciplinary role of voluntarily disclosed earnings (Dutta and Gigler, 2002). Second, the complementary effect of mandatory and voluntary disclosures may not hold ubiquitously. The marginal benefit of additional information decreases as better enforcement enhances the information environment, possibly to the extent of being lower than the proprietary cost of voluntary disclosure (Verrecchia, 1983). In some countries with large controlling shareholders, the enforcement changes and improved transparency from IFRS adoption may already constrain firms' ability to expropriate from minority shareholders, and controlling shareholders may not want to be further constrained by additional voluntary disclosure. Lastly, if countries increase legal enforcement with IFRS adoption, the legal liability for providing earnings guidance that is subsequently not realized could increase, reducing managers' willingness to provide earnings forecasts (Rogers et al., 2011).

Overall, whether better enforcement would strengthen or weaken the positive relationship between IFRS adoption and voluntary disclosure is an empirical question. In our opinion, the findings in the large body of literature lean toward a strengthening effect due to the positive relationship itself and because better enforcement has been found to further improve the effectiveness of IFRS adoption.

We directly examine the impact of enforcement changes and conclude that better enforcement significantly weakens the positive relationship between IFRS adoption and voluntary disclosure. We also examine several quality attributes of management earnings forecasts, including a measure that captures how the disclosures matter to the ultimate users of the disclosed information, i.e., the informativeness of management earnings forecasts to investors. We provide a comprehensive and robust set of results that point to a weakening effect of enforcement changes. This weakening effect is somewhat surprising or at least not obvious in light of the literature, as we are aware of no study making such an argument or prediction.

We use a large sample of firm-year observations and management forecasts collected from 30 countries (17 of which mandated IFRS in 2005) and a difference-in-difference methodology to control for time-series variation across IFRS-adoption and non-IFRS-adoption countries. We first provide results consistent with Li and Yang (2016) that firms from IFRS-mandating countries increase their voluntary disclosure (measured by both management forecast likelihood and frequency) more after IFRS adoption than those from non-IFRS-mandating countries. We then introduce changes in countries' enforcement regimes into management forecast decisions. Using the empirical proxy for enforcement changes from Christensen et al. (2013), we find that the increases in management forecast likelihood and frequency following IFRS adoption are significantly smaller for firms from IFRS-mandating countries with concurrent enforcement changes than for those without enforcement changes. Thus, while IFRS adoption may increase firms' incentives to provide management forecasts, our findings suggest that changes in enforcement coupled with IFRS adoption attenuate these incentives.

Next, we examine the quality of management forecasts in terms of informativeness as measured by the market reaction to management forecasts (Chen et al. 2006). We find that although forecasts generally become more informative over time, those issued by firms from IFRS-mandating countries have smaller improvements in informativeness after IFRS adoption. Importantly, we find that these smaller improvements are driven by firms from IFRS-mandating countries with concurrent changes in enforcement; those from IFRS-mandating countries without concurrent changes exhibit similar degrees of improvement in informativeness to firms from non-IFRS-mandating countries. In other words, our results show that following mandatory IFRS adoption, management forecasts issued by firms domiciled in IFRS-mandating countries with concurrent enforcement changes show significantly reduced informativeness relative to management forecasts issued by firms from both non-IFRS-mandating countries and IFRS-mandating countries without enforcement changes.

We also examine several management forecast properties, including forecast precision (how specific a forecast is), forecast attribution (whether a firm provides any explanation for its forecasts), forecast disaggregation (the total number of performance measures forecasted), forecast accuracy (the absolute error in forecasts) and forecast timeliness. These attributes provide a rich source of variation in disclosure quality. In general, we do not find that changes in enforcement concurrent with IFRS adoption have significant effects on these forecast properties. At a minimum, our results do not indicate a strengthening effect of enforcement changes on the positive relationship between IFRS adoption and the quality of voluntary disclosure. Rather, they indicate a weakening effect between IFRS adoption and the market-perceived quality of voluntary disclosure.

Because different studies differ in terms of the samples used, in additional analyses, we confirm that in our sample, enforcement changes have distinct and opposite effects on mandatory and voluntary disclosures by investigating how enforcement changes affect the quality of mandatory financial reporting and the external information environment (Landsman et al., 2012; Tan et al., 2011). We find that firms from IFRS-mandating countries experience larger increases in the informativeness of earnings announcements and the number of analysts following after IFRS adoption than those from non-IFRS-mandating countries. The larger increase is primarily driven by firms from IFRS-mandating countries with concurrent changes in enforcement. These findings, together with the earlier main findings, are consistent with the notion that changes in enforcement can reinforce the positive effect of IFRS adoption on mandatory reporting, although they increase the cost of voluntary disclosure and mitigate the positive effect of IFRS adoption on voluntary disclosure.

Our study contributes to the literature on the effect of legal and regulatory environments on voluntary disclosure. It is well recognized that enforcement is an important component of a country's financial reporting infrastructure (Ball, 2001). International accounting studies thus investigate the effects of various institutional features on voluntary disclosure.[1] Both academics and regulators have emphasized the importance of considering the effect of enforcement changes on corporate disclosure behavior, especially voluntary disclosure such as manage-

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[1] Most of these studies focus on the effect of the pre-existing level of enforcement or regulatory quality on voluntary disclosure rather than a change in the legal regime, making it difficult to establish any causal inference. For example, Francis et al. (2005) argue that the capital market consequences of voluntary disclosure are affected by cross-country variations in the legal and information environments. Lang et al. (2012) show that the importance of firm-level transparency is conditional on the country-level institutional environment. More recently, Cao et al. (2017) find significant variation in the association between management forecasts and firms' cost of equity capital across countries with different enforcement regimes.

ment forecasts (e.g., Baginski et al., 2002; Kasznik and Lev, 1995; Rogers and Van Buskirk, 2009). However, capturing the across-country enforcement effect has traditionally been difficult, as it could be related to many country-specific factors (Ball, 2001). More importantly, even if the level of enforcement across countries can be measured, inferring causality is difficult (Holthausen, 2009). Given that the mandatory adoption of IFRS is an exogenous event that leads to changing accounting standards in many countries, the substantive changes in financial reporting enforcement regimes alongside mandatory IFRS adoption in some countries provide a unique setting in which to examine the effect of enforcement change on financial reporting outcomes.

Following the wide adoption of IFRS, many international organizations, such as the International Accounting Standards Board (IASB), the International Organization of Securities Commissions (IOSCO) and the World Federation of Exchanges (WFE), have actively promoted greater disclosure by firms and increased financial information transparency. The effects of mandatory IFRS adoption on financial markets and on managerial behavior have thus been studied extensively in the international accounting literature (e.g., Marra et al., 2011; Houqe et al., 2012; Houqe and Monem, 2016). Our findings that better enforcement of IFRS and voluntary disclosure have negative impacts highlights the importance of considering changes in both accounting standards and in countries' enforcement regimes when evaluating firms' voluntary disclosure and financial transparency, which should be of importance to international organizations and accounting regulators around the world. Ultimately, corporate financial reporting and disclosure practices are shaped by both firms' disclosing incentives and capital markets' demand and constraints (Beyer et al., 2010). In addition, because mandatory and voluntary disclosure decisions are endogenous, examining the intertwining relation between mandatory and voluntary disclosures will provide a more complete picture and will improve our understanding of the important relations among IFRS adoption, changes in enforcement and disclosure.

2. Related literature and hypothesis development

2.1. Related literature

The widespread adoption of IFRS is one of the most important developments in recent accounting history and it has spawned a growing body of research. Proponents of IFRS argue that a single set of high-quality accounting standards facilitates international comparability and significantly improves the information environment of IFRS-adopting firms (European Commission, 2002). Many studies show that IFRS adoption leads to increased analyst following (Tan et al., 2011), higher earnings informativeness (Landsman et al., 2012), an improved analyst information environment (Byard et al., 2013; Hodgdon et al., 2008; Horton et al., 2013) and increased cross-country information transfers (Kim and Li, 2010).[2] As firms' mandatory and voluntary disclosures are often intertwined (Beyer et al., 2010; Dutta and Gigler, 2002; Lennox and Park, 2006), IFRS adoption can affect the external information environment both directly through improved mandatory disclosure (Lang and Stice-Lawrence, 2016) and indirectly through improved voluntary disclosure (Hirst et al., 2008). As Li and Yang (2016) show, voluntary disclosure increases following IFRS adoption alongside improved mandatory reporting quality.

Research also suggests that changes in accounting standards alone may not lead to substantive changes in financial reporting outcomes because these standards may be less important than other institutional features of the reporting and legal environments (Ball and Shivakumar, 2005; Burgstahler et al., 2006). Holthausen (2009) and Leuz and Wysocki (2008) suggest that enforcement plays an important role in how changes in accounting standards, such as IFRS adoption, affect financial reporting outcomes. Consistent with this line of research, past research finds that better enforcement significantly affects various capital market consequences of IFRS adoption. For example, Daske et al. (2008) find that liquidity improvements around IFRS adoption are concentrated in countries with strong legal enforcement. Byard et al. (2013) show that while IFRS adoption improves analysts' information environment, this improvement is more pronounced when the changes mandated by IFRS are rigorously enforced. In a similar vein, Landsman et al. (2012) find that

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[2] Other studies examine the various economic consequences of mandatory IFRS adoption, such as lowered cost of capital (Li, 2010), increased institutional holdings and higher levels of foreign investment (Covrig et al., 2007; DeFond et al., 2011; Florou and Pope, 2012) and improved liquidity (Christensen et al., 2013).

increases in the information content of earnings announcements tend to be concentrated in IFRS countries with sufficient legal enforcement. Recent research thus increasingly emphasizes the importance of disentangling the confounding effects of concurrent changes in enforcement from mandatory IFRS adoption (Christensen et al., 2013).

A key message of these studies is that mandated accounting standards, such as IFRS adoption, should not be examined in isolation because standards may have limited effects without substantive changes in other institutional factors that also affect firms' reporting incentives (Ball, 2001; Holthausen, 2009; Leuz and Wysocki, 2008). This consideration should also be salient for voluntary disclosures because changes in the legal and regulatory environment play an equally, if not more, important role in firms' voluntary disclosure decisions (Hirst et al., 2008). In the next section, we develop our hypotheses and discuss the possible effects of changes in enforcement alongside mandatory IFRS adoption on voluntary disclosure.

2.2. Hypothesis development

Many recent studies have examined whether voluntary and mandatory disclosures are substitutes or complements (e.g., Bagnoli and Watts, 2007; Ball et al., 2012; Bertomeu and Magee, 2015; Francis et al., 2008; Lang et al., 2012; Lennox and Park, 2006). Lennox and Park (2006) argue that management has stronger incentives to issue earnings forecasts when earnings are perceived to be more informative. Similarly, Ball et al. (2012) argue that mandatory financial reporting and voluntary disclosure are complementary because improved mandatory financial reporting quality could lend credibility to and improve the reliability of firms' voluntary disclosure.[3] Thus, if mandatory and voluntary disclosures are complements, findings that mandatory IFRS adoption increases the quality of mandated financial reporting (Ashbaugh and Pincus, 2001; Barth et al., 2008; Hong et al., 2014; Landsman et al., 2012; Lang and Stice-Lawrence, 2016) suggest an increase in voluntary disclosure following IFRS adoption, which is consistent with the research of Li and Yang (2016). More importantly, if substantive changes in reporting enforcement concurrent with IFRS adoption further increase the quality of mandatory financial reporting, as discussed earlier, we expect the level of voluntary disclosure to increase even more for firms domiciled in IFRS countries with concurrent enforcement changes.

However, it can also be argued that better enforcement could reduce firms' voluntary disclosure in the context of IFRS adoption for several reasons. First, increased financial reporting comparability due to IFRS adoption could draw a more diverse set of domestic and foreign investors with higher information demands. More principle-based IFRS that allows more management judgment and discretion may also increase investors' information demand for transparency. However, more stringent enforcement constrains managers' ability to manipulate the mandated earnings numbers, which investors can compare with the earlier voluntarily disclosed earnings forecasts. Thus, the risk of earnings missing the forecasts would be higher, which would lower managers' willingness to provide earnings forecasts (Feng and Koch, 2010). This is consistent with the theory of Dutta and Gigler (2002), who argue that providing earnings forecasts voluntarily could prevent managers from earnings manipulation. In addition, because more stringent enforcement of mandatory earnings disclosures directly plays a stronger disciplinary role, the need for earnings forecasts to play this role would become smaller. Thus, IFRS adoption could increase voluntary disclosure, and improved enforcement could attenuate this increase.

Second, the complementary effect of mandatory and voluntary disclosures may hold at certain levels of disclosure or in certain countries, but not ubiquitously. Outside the relevant range or in other countries, a substitution effect could emerge.[4] If IFRS adoption leads to a better external information environment that is further enhanced by increased enforcement, the marginal benefit of additional information can become sufficiently small compared to the proprietary cost of voluntary disclosure (Verrecchia, 1983). In response, managers may reduce the level or the quality of voluntary disclosure. In countries outside the U.S., large controlling shareholders are commonplace. Hope et al. (2011) show that financial transparency can limit the ability of controlling shareholders to consume private benefits. Given that IFRS adoption increases mandatory

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[3] Ball et al. (2012) find a greater stock market reaction to firms' voluntary disclosures for firms with a higher level of commitment to financial statement verification (i.e., a proxy for mandatory financial reporting quality), which supports the confirmation hypothesis.

[4] Consistent with this argument, Atiase et al. (2005) find that U.S. investors tend to have a strong preference for reliability (measured by earnings announcement) over relevance (measured by management forecasts) when a tradeoff between the two must be made.

financial reporting quality and that enhanced enforcement around IFRS adoption further constrains controlling shareholders' ability to expropriate from outsiders, controlling shareholders may not want further voluntary disclosure added to the other constraints that they face. Ultimately, incentives for additional disclosures to reduce information asymmetry between corporate insiders and market participants depend on the firms' overall information environment (Yohn, 1998).

Lastly, the enforcement changes that we measure could be correlated with overall enforcement changes that target not only IFRS adoption but also other capital market aspects, including voluntary disclosure itself. For example, more stringent enforcement may increase not only legal liability for failing to disclose material information to the market (Skinner, 1994) but also legal liability for providing misleading information to the market (Rogers et al., 2011). The net effect is unclear, and it may reduce voluntary disclosure given the already higher level of information transparency resulting from IFRS adoption.

To summarize, *ex ante*, it is unclear whether enforcement changes concurrent with mandatory IFRS adoption strengthen or weaken the positive relationship between IFRS adoption and voluntary disclosure. The resolution of the question lies in the empirical outcome. Following the discussion above, we formally state our two hypotheses, one concerning the quantity and the other concerning the quality of voluntary disclosures (both in null form), as follows:

H1. Following mandatory IFRS adoption, there is no change in the quantity (likelihood and frequency) of management forecasts in countries in which there are concurrent changes in enforcement.

H2. Following mandatory IFRS adoption, there is no change in the quality (informativeness and other properties) of management forecasts in countries in which there are concurrent changes in enforcement.

3. Data and methodology

3.1. Data and sample selection

We collect international management forecast data from Standard & Poor's Capital IQ database.[5] As in DeFond and Hung (2004), we first restrict our sample to countries with 100 or more observations during the final year of our sample period to ensure that each country has an adequate level of firm coverage. We further remove countries that are missing the country-level institutional variables used in the empirical tests. We exclude Japan, which effectively mandates management forecasts (Kato et al., 2009), and Singapore, which adopted IFRS in 2003 (PWC 2008). These data requirements result in a sample of 30 countries, 17 of which mandated IFRS in 2005, that constitute our treatment countries. To further examine the possible variation among IFRS-mandating countries, we further classify these 17 IFRS-mandating countries into IFRS countries with and without concurrent changes in enforcement.

The other 13 countries had not adopted IFRS by the end of our sample period of 2009 (i.e., non-IFRS-mandating countries), and they serve as our control group. We exclude 2005, the mandatory IFRS adoption year, from the sample period, as the effect of IFRS on management forecasts in the transition year could be less clear. We further remove all of the observations associated with firms that voluntarily adopt IFRS in the control countries by considering the actual accounting standards used by each firm in each year.

To reduce sample loss, we obtain all of the firm- and industry-level control variables from Capital IQ except for the analyst following data, which are obtained from the IBES database. Our final sample consists of 131,844 firm-year observations spanning 2004–2009.[6] Among these observations, managers issue at least one forecast per year in 22,766 firm-years and issue a total of 54,912 forecasts during our sample period.

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[5] Capital IQ provides the original texts of management forecasts aggregated from newspapers, filings, subscriptions and other similar sources for firms in about 100 countries and regions. These data are provided in its Key Developments section.

[6] Our sample starts from 2004 because Capital IQ indicates that its coverage for the Key Development data is more systematic and complete for the years after 2004 following its acquisition by Standard & Poor's. Additional (untabulated) results show that the number of management forecasts provided by firms before 2004 is indeed substantially smaller. For robustness, we also conduct additional tests with data from 2003 included and find results consistent with our findings.

3.2. Empirical methodology

We test hypothesis H1 by estimating the following regression model:

$$Forecast = \alpha_0 + \alpha_1 IFRS + \alpha_2 IFRS\_ENF + \alpha_3 POST + \alpha_4 IFRS \times POST + \alpha_5 IFRS\_ENF \times POST + \text{controls} + \varepsilon$$

(1)

where the dependent variable, *Forecast*, is alternately measured with either *FOCR*, an indicator variable that takes a value of one if a firm issues a management forecast during a given year and zero otherwise, or *FFREQ*, a count variable of the number of management forecasts issued by a firm during a given year. Accordingly, Eq. (1) is estimated using logistic (ordered probit) regressions when the dependent variable is *FOCR* (*FFREQ*).

In Eq. (1), *IFRS* is an indicator variable that takes a value of one if a firm is from one of the 17 sample countries that mandated IFRS in 2005. *IFRS_ENF* is an indicator variable that takes a value of one if the IFRS adoption in a country is accompanied by a concurrent and substantive change in financial reporting enforcement as identified by Christensen et al. (2013), and zero otherwise. Countries with *IFRS_ENF* = 1 include Finland, Germany, the Netherlands, Norway and the U.K. *POST* is an indicator variable that is equal to one for the post-mandatory-adoption window (i.e., 2006–2009), and zero otherwise. Thus, the coefficient on *POST*, α_3, gauges the change in the informativeness of management forecasts surrounding year 2005 in non-IFRS-mandating countries. The coefficients on the interaction terms *IFRS_ENF* × *POST* and *IFRS* × *POST*, our variables of interest, measure the change in the informativeness of management forecasts from pre-2005 to post-2005 in IFRS-mandating countries with and without a concurrent and substantive change in enforcement, respectively, relative to the change in the informativeness of management forecasts in non-IFRS-mandating countries over the same period.

In addition, following past studies, we control for an array of forecast-, firm- and industry-level variables identified in the literature as determinants of management forecast issuance (refer to the Appendix A for detailed definitions). We include scaled accruals (*ACCRUAL*) to control for potential earnings management (Dechow et al., 1995) and firms' opacity in mandatory financial reporting (Bhattacharya et al., 2003), as firms could have greater incentives to supply more voluntary disclosures when their mandatory reporting is of higher quality (Lennox and Park, 2006). Analyst following (*ANALYST*) and the proportion of institutional ownership (*INSTITUTION*) control for investors' demand for more voluntary disclosures (Lang and Lundholm, 1993, 1996). The indicator *BIG4*, which measures whether a firm is audited by a Big 4 auditor, controls for auditor quality (Lang and Lundholm, 1993; Ball et al., 2012). Firms with better quality auditors are likely to have higher quality financial information and hence to be more forthright in making voluntary disclosures. The book-to-market ratio (*BM*) serves as a control for a firm's growth opportunity set. Firms in the growth stage have more uncertainty and higher information asymmetry, and investors may thus have higher demand for voluntary disclosure (Coller and Yohn, 1997). We also include earnings volatility (*EARNVOL*) and the number of business segments reported by firms (*SEGMENT*) to control for information uncertainty and demands. Presumably, investors facing greater information uncertainty demand more voluntary disclosure, such as management forecasts of future earnings.

The proportion of equity owned by insiders (*INSIDER*) controls for the effect of agency problems on firms' information disclosure policies. A high level of insider ownership weakens a firm's incentive to voluntarily disclose information to its common shareholders, as lower disclosure makes monitoring more costly, which benefits mangers (Shleifer and Vishny, 1989). The natural log of total assets (*LNASSET*) controls for firm size, which is likely to influence corporate transparency (Kasznik and Lev, 1995). The indicator assessing whether a firm reports a loss, *LOSS*, controls for the difference in value relevance and the persistence of negative earnings (Hayn, 1995). The indicator variable *NEWS*, which measures whether the current-period EPS is greater than or equal to the prior-period EPS, controls for managers' incentive to preempt earnings surprises (Kasznik and Lev, 1995). The issuance of option grants during a particular year (*OPTGRANT*) controls for management's incentive to accelerate bad news disclosures when granting options (Aboody et al. 2004). The number of stock exchanges on which a firm is listed (*STKEXCH*) each year controls for the amount of information that the firm is required to provide for its cross-listings on various foreign stock exchanges.

Our industry-level controls include the industry-median dependence on external finance (*EXTFIN*) because firms that depend more on external capital are more likely to issue forecasts (Frankel et al., 1995). We also include industry concentration measured using the Herfindahl Index multiplied by (−1) (*HERF*), industry-median research and development intensity (*RD*), and whether the firm is in a high tech industry (*HITECH*) to control for firms' business environments. Firms facing greater business competition and firms in high tech industries with large R&D expenditures are likely to face greater competition for capital and hence to have greater incentives to improve transparency to reduce capital costs. We also include industry fixed effects in all of the regressions.

Finally, we include two country-level factors that could affect management forecasts: *CAPMKT*, which measures the relative size of the equity market over a country's GDP for each country-year as a proxy for the level of development of each country's equity market in each year, and *RULELAW*, a country-year measure of the rule of law index obtained from "Economic Freedom of the World" published by the Fraser Institute.

We test hypothesis H2 in two ways. First, we examine the relation between IFRS adoption concurrent with enforcement changes and the informativeness of management forecasts by estimating the following OLS regression model:

$$FCAR = \beta_0 + \beta_1 IFRS + \beta_2 IFRS\_ENF + \beta_3 POST + \beta_4 IFRS \times POST + \beta_5 IFRS\_ENF \times POST + \text{controls} + \varepsilon \tag{2}$$

where the dependent variable, *FCAR*, is the absolute value of the two-day cumulative market-adjusted abnormal return (in percentage) during the trading-day window $[0, +1]$ with day 0 as the management forecast date. *IFRS*, *IFRS_ENF* and *POST* are defined as in Eq. (1). Our primary variable of interest is *IFRS_ENF* × *POST*, and the coefficient β_5 captures the effect of the change in enforcement concurrent with IFRS adoption on the informativeness of management forecasts based on our difference-in-difference research design.

Second, we examine the relation between IFRS adoption concurrent with enforcement changes and the quality of management forecasts by estimating the following regression model:

$$\begin{aligned} Forecast\ Property = {} & \beta_0 + \beta_1 IFRS + \beta_2 IFRS\_ENF + \beta_3 POST + \beta_4 IFRS \times POST \\ & + \beta_5 IFRS\_ENF \times POST + \text{controls} + \varepsilon \end{aligned} \tag{3}$$

where we use five management forecast properties to estimate any change in quality following IFRS adoption. In particular, we examine whether forecasts exhibit differences in precision (*FPREC*), attribution (*FATTR*), the number of items included (*FITEM*), the forecast error (*FERR*) and timeliness (*FTIME*). Regression estimates with *FPREC*, *FATTR* or *FITEM* (*FERR* or *FTIME*) as the dependent variable are based on Ordered Probit (OLS) models.

4. Empirical results

4.1. Descriptive statistics

Table 1 Panels A and B present summary statistics for management forecast informativeness (*FCAR*), forecast likelihood (*FOCR*), forecast frequency (*FFREQ*) and various forecast properties by country. Panel A reports these statistics for IFRS adoption countries and Panel B reports the statistics for non-IFRS adoption countries. The results indicate that the management forecasts made by firms in IFRS adoption countries are generally less informative, as indicated by the average *FCAR* of 5.28% for IFRS countries vs. 6.59% for non-IFRS adoption countries. However, the result also indicates that firms in IFRS adoption countries are more likely to provide management forecasts in general (*FOCR*: IFRS 20.73% vs. non-IFRS 15.90%) but tend to make less frequent forecasts (*FFREQ*: IFRS 1.90 vs. non-IFRS 2.71). However, this pattern, which is inconsistent compared to the forecast likelihood, is largely driven by the observations from the U.S., where firms have an average forecast frequency of 3.14, while firms from all of the other countries in the non-IFRS adoption group have an average forecast frequency of only 1.79. Firms in IFRS adoption countries also appear to make less quantitatively specific forecasts than firms in non-IFRS adoption countries (*FPREC*: 1.98 vs. 2.46).

Table 1
Descriptive statistics.

Panel A IFRS adoption countries

	Country	N (Obs)	N (MF)	FCAR (%)	FOCR (%)	FFREQ	FPREC	FATTR (%)	FLOSS (%)	FITEM	FHORI	FERR	FTIME	EACAR (%)
1	Australia	6879	1504	6.56	21.86	1.94	2.19	19.48	6.85	1.51	0.51	25.79	97.35	2.51
2	Belgium	541	134	4.61	24.77	1.89	2.07	13.43	3.73	1.65	0.10	43.65	101.11	1.89
3	Denmark	714	398	4.58	55.74	2.71	2.61	25.88	8.79	1.75	0.26	25.77	81.30	2.07
4	Finland	524	363	4.89	69.27	2.35	1.84	32.23	4.96	1.83	0.06	47.58	95.57	1.51
5	France	3075	764	3.85	24.85	2.07	1.97	12.70	4.19	1.56	0.22	36.14	101.15	1.77
6	Germany	3176	1087	4.25	34.23	2.43	2.10	21.53	6.53	1.86	0.26	34.21	106.76	1.78
7	Greece	912	103	3.27	11.29	1.35	1.74	12.62	1.94	2.40	0.24	41.86	154.63	2.04
8	Hong Kong	5462	571	6.39	10.45	1.31	1.43	35.73	29.95	1.29	0.09	17.86	134.22	2.65
9	Italy	1259	343	3.02	27.24	1.75	1.97	13.12	4.37	1.90	0.40	41.32	119.29	1.48
10	Netherlands	618	228	5.82	36.89	2.08	2.10	20.61	4.82	1.67	0.13	24.49	124.24	2.06
11	Norway	953	95	6.75	9.97	1.41	2.01	22.11	5.26	1.60	0.21	19.70	93.00	1.99
12	Philippines	1045	140	3.34	13.40	1.71	1.64	12.86	3.57	1.44	0.14	34.70	110.75	1.69
13	Poland	1652	226	4.24	13.68	1.73	1.47	15.49	2.65	2.11	0.29	26.90	100.52	1.80
14	South Africa	1365	202	3.61	14.80	1.29	2.33	11.88	4.46	1.67	0.17	34.09	102.09	2.23
15	Spain	779	177	2.43	22.72	1.55	1.83	8.47	2.82	2.11	0.32	40.73	133.29	1.31
16	Sweden	1970	194	5.00	9.85	1.68	1.75	12.37	6.70	1.52	0.14	32.72	122.83	1.98
17	United Kingdom	6429	1213	7.14	18.87	1.50	1.86	13.93	4.95	1.53	0.20	20.74	110.80	2.26
	Sum/Mean	*37,353*	*7742*	*5.28*	*20.73*	*1.90*	*1.98*	*19.08*	*7.31*	*1.66*	*0.27*	*29.89*	*102.98*	*2.08*

Panel B Non-IFRS adoption countries

	Country	N (Obs)	N (MF)	FCAR (%)	FOCR (%)	FFREQ	FPREC	FATTR (%)	FLOSS (%)	FITEM	FHORI	FERR	FTIME	EACAR (%)
1	Brazil	1600	92	3.20	5.75	1.26	1.63	14.13	2.17	1.59	0.30	24.41	59.08	1.86
2	Canada	15,089	873	6.49	5.79	2.02	2.16	21.76	4.35	1.65	0.33	20.32	92.21	2.72
3	China	11,063	1269	7.03	11.47	1.99	1.97	30.42	7.72	1.55	0.12	28.91	89.94	2.80
4	India	12,159	530	4.04	4.36	1.40	2.19	5.85	2.08	1.53	0.74	13.36	151.83	2.17
5	Indonesia	1330	218	3.37	16.39	1.56	1.34	11.01	0.00	1.66	0.23	35.12	60.67	1.61
6	Malaysia	4409	415	3.47	9.41	1.25	1.69	22.17	2.41	1.53	0.37	42.73	118.86	1.98
7	Mexico	560	54	3.69	9.64	1.76	2.04	27.78	1.85	1.90	0.30	21.58	23.67	1.84
8	Peru	469	11	2.49	2.35	1.09	1.55	18.18	0.00	1.72	0.27	50.00	225.67	1.34
9	Russia	809	211	4.60	26.08	2.08	1.54	14.22	3.32	1.95	0.28	20.98	56.72	2.28
10	South Korea	7359	228	3.40	3.10	1.64	1.28	13.60	3.95	2.06	0.17	37.82	62.57	1.61
11	Switzerland	884	235	4.73	26.58	1.89	2.11	12.34	4.68	1.69	0.30	26.17	111.92	1.86
12	Thailand	2369	621	2.68	26.21	1.90	1.58	34.94	5.15	2.25	0.38	28.28	104.10	1.49
13	United States	36,391	10,267	7.32	28.21	3.14	2.73	26.25	9.62	1.92	0.39	16.59	97.19	2.97
	Sum/Mean	*94,491*	*15,024*	*6.59*	*15.90*	*2.71*	*2.46*	*24.99*	*8.03*	*1.86*	*0.36*	*17.86*	*100.17*	*2.61*

This table reports the descriptive statistics of our forecast variables. N (Obs) is the total number of observations; N (MF) is the total number of observations with management forecasts; *FCAR* (%) is the average absolute value of the two-day cumulative market-adjusted abnormal return in the trading-day window [0, +1]; *FOCR* (%) is the percentage of observations with management forecasts; *FFREQ* is the average forecast frequency; *FPREC* is the average forecast precision; *FATTR* (%) is the percentage of management forecasts with attribution (i.e., explanations); *FLOSS* (%) is the percentage of loss forecasts; *FITEM* is the average number of accounting/performance items forecasted; *FHORI* is the average forecast horizon; *FERR* is the average forecast accuracy; *FTIME* is the average forecast timeliness. *EACAR* is defined as the absolute value of the two-day cumulative market-adjusted return during the [0, 1] earnings announcement window with day 0 equal to the earnings announcement date. Refer to the Appendix A for more detailed variable definitions. Panel A (B) reports the statistics by country for each IFRS-mandating (non-IFRS-mandating) country.

Again, this relationship is reversed when we exclude U.S. firms, with *FPREC* averaging only 1.86 in the other non-IFRS adoption countries. On average, firms in IFRS adoption countries are less likely to provide explanations for management forecasts (*FATTR*: 19.08% vs. 24.99%) and are slightly less likely to forecast future losses (*FLOSS*: 7.31% vs. 8.03%) than firms from non-IFRS adoption countries. The numbers of items included in each forecast (*FITEM*), forecast horizon (*FHORI*) and forecast timeliness (*FTIME*) are not statistically different across IFRS and non-IFRS adoption countries, but the forecasts made by firms in IFRS adoption countries tend to exhibit greater forecast error (*FERR*: 29.89% vs. 17.86%).

Table 2
Management forecast before and after IFRS adoption.

Panel A IFRS adoption countries

Country		FCAR			FOCR			FFREQ		
		Pre	Post	Diff (Post − Pre)	Pre	Post	Diff (Post − Pre)	Pre	Post	Diff (Post − Pre)
1	Australia	4.21	6.88	2.67***	16.18	22.95	6.77***	1.84	1.95	0.11
2	Belgium	3.82	4.68	0.86	11.65	27.85	16.20***	2.00	1.88	−0.123
3	Denmark	3.36	4.73	1.38***	31.65	61.57	29.91***	2.00	2.80	0.80***
4	Finland	4.68	4.94	0.26	58.82	71.80	12.98*	1.93	2.43	0.50***
5	France	2.63	4.00	1.37***	14.58	27.28	12.71***	1.92	2.09	0.17
6	Germany	3.65	4.35	0.71**	24.80	36.53	11.73***	2.30	2.46	0.15
7	Greece	1.95	3.38	1.43*	5.37	12.45	7.08***	1.38	1.35	−0.03
8	Hong Kong	4.37	6.51	2.15*	3.21	12.13	8.92***	1.45	1.30	−0.16
9	Italy	1.75	3.23	1.49***	20.76	28.74	7.98***	1.53	1.78	0.25**
10	Netherlands	6.43	5.70	−0.73	32.76	37.85	5.09	1.97	2.11	0.13**
11	Norway	4.48	7.04	2.56	7.19	10.50	3.31*	1.18	1.44	0.26*
12	Philippines	2.35	3.63	1.28**	15.69	12.84	−2.84	1.84	1.68	−0.17
13	Poland	2.25	4.42	2.18***	7.45	14.82	7.37***	2.00	1.71	−0.29
14	South Africa	4.61	3.40	−1.21	14.53	14.85	0.32	1.32	1.29	−0.04
15	Spain	1.59	2.68	1.09***	26.85	21.75	−5.10	1.48	1.57	0.09
16	Sweden	4.29	5.12	0.83	8.70	10.07	1.38	1.71	1.67	−0.04
17	United Kingdom	6.81	7.19	0.39	15.85	19.52	3.67***	1.47	1.50	0.04
	Mean	4.21	5.44	1.23***	15.16	21.93	6.77***	1.80	1.92	0.12***

Panel B Non-IFRS adoption countries

Country		FCAR			FOCR			FFREQ		
		Pre	Post	Diff (Post − Pre)	Pre	Post	Diff (Post − Pre)	Pre	Post	Diff (Post − Pre)
1	Brazil	2.10	3.40	1.30**	4.76	5.97	1.21	1.36	1.24	−0.11
2	Canada	5.50	6.66	1.15*	4.70	6.02	1.32***	2.09	2.01	−0.08
3	China	5.14	7.12	1.98***	9.87	11.56	1.70	2.00	1.99	−0.01
4	India	2.74	4.17	1.43***	2.29	4.81	2.52***	1.56	1.38	−0.18
5	Indonesia	3.29	3.39	0.10	19.52	15.80	−3.72	1.98	1.47	−0.51***
6	Malaysia	2.74	3.66	0.92**	10.65	9.13	−1.52	1.20	1.27	0.07
7	Mexico	2.07	3.82	1.75	3.92	10.92	7.00***	2.00	1.74	−0.26
8	Peru	1.21	3.23	2.02	4.65	1.83	−2.82	1.00	1.14	0.14
9	Russia	3.13	4.70	1.57	9.85	29.25	19.40***	1.92	2.09	0.16
10	South Korea	3.40	3.40	0.00	8.79	2.42	−6.37***	1.90	1.53	−0.36***
11	Switzerland	2.38	5.12	2.73***	20.89	27.82	6.94**	2.09	1.85	−0.24
12	Thailand	2.56	2.71	0.15	30.14	25.32	−4.81**	2.36	1.77	−0.59***
13	United States	6.23	7.55	1.32***	25.85	28.79	2.94***	3.06	3.15	0.09**
	Mean	5.55	6.80	1.25***	15.82	15.92	0.10	2.77	2.70	−0.07*

This table reports forecast informativeness (*FCAR*), forecast likelihood (*FOCR*) and forecast frequency (*FFREQ*) by country for two groups of firms. Panel A (Panel B) reports statistics for countries that adopted (did not adopt) IFRS in 2005. Pre reports year 2004, and Post reports averages for years 2006–2009. ***, ** and * indicate that the difference is statistically significant at the 1%, 5% and 10% levels, respectively.

Table 2 tabulates more detailed descriptive statistics for management forecast informativeness (*FCAR*), forecast likelihood (*FOCR*) and forecast frequency (*FFREQ*) by country and by the pre- and post-IFRS adoption periods. Table 2 also reports the differences in *FCAR*, *FOCR* and *FFREQ* between the pre- and post-IFRS periods and whether these differences are statistically significant. We again separate our sample into IFRS countries (Panel A) and non-IFRS adoption countries (Panel B). The results in Panel A of Table 2 indicate a substantial increase in all three forecast variables in IFRS adoption countries following mandatory IFRS adoption. In contrast, Panel B shows that for non-IFRS adoption countries, while the magnitude of the increase in forecast informativeness from the pre- to post-IFRS periods is similar and comparable with that of the IFRS countries (1.25% for non-IFRS vs. 1.23% for IFRS countries), there are substantial differences in the changes in the likelihood and frequency of management forecasts across the pre- and post-IFRS periods for these two groups of countries. Specifically, in contrast to the non-IFRS adoption countries, in which we observe no significant increases in management forecast activities, the IFRS adoption countries appear to have significantly increased likelihood and frequency of forecasts after mandatory IFRS adoption.

Table 3 reports summary statistics for our major control variables. On average, our sample firms are followed by 3.18 analysts, have a 38 percent likelihood of being audited by a Big 4 accounting firm, and have assets of US$58 million. The standard deviations of these variables are relatively large, which suggests that substantial variation exists across our sample firms. As our sample covers a wide range of countries, this is not surprising.

4.2. IFRS, changes in enforcement and management forecast issuance

4.2.1. Base model

We first establish the relationship between IFRS adoption and the changes in the likelihood and frequency of management forecasts, and we reconcile these with the results of Li and Yang (2016). We report the results in Table 4. Across all of our specifications, we find that firms from IFRS-mandating countries tend to be less likely to issue management forecasts before IFRS adoption but significantly increase issuance after adoption relative to those from non-IFRS-mandating countries (Panel A). Likewise, firms from IFRS-mandating countries issue management forecasts with higher frequency following IFRS adoption than those from countries that do not adopt IFRS (Panel B). These results are consistent with those of past studies.

Table 3
Summary statistics.

Variable	Mean	Std. Dev.	25%	Median	75%
ACCRUAL	0.00	0.45	−0.06	0.00	0.09
ANALYST	3.18	8.13	0.00	0.00	2.00
BIG4	0.38	0.49	0.00	0.00	1.00
BM	0.75	0.90	0.37	0.57	0.86
EARNVOL	0.80	1.15	0.02	0.16	1.01
INSIDER	13.89	21.16	0.00	1.57	20.28
INSTITUTION	26.17	29.67	0.00	11.08	48.03
LNASSET	4.07	3.07	2.46	4.29	6.00
LOSS	0.35	0.48	0.00	0.00	1.00
NEWS	0.50	0.50	0.00	0.00	1.00
OPTGRANT	0.16	0.37	0.00	0.00	0.00
SEGMENT	2.08	1.82	1.00	1.00	3.00
STKEXCH	1.30	0.75	1.00	1.00	1.00
EXTFIN	−3.80	5.69	−4.81	−1.66	−0.42
HERF	−0.20	0.20	−0.27	−0.13	−0.07
HITECH	0.17	0.38	0.00	0.00	0.00
RD	0.04	0.09	0.00	0.00	0.03

This table presents the summary statistics for the control variables. Refer to the Appendix A for more detailed variable definitions. N = 131,844.

Table 4
Mandatory IFRS adoption and management forecast likelihood and frequency.

Panel A Mandatory IFRS adoption and management forecast likelihood

Dep. Var. = Model	1 Full sample FOCR Logistic		2 Exclude U.S. FOCR Logistic		3 Exclude E.U. FOCR Logistic		4 2004 & 2006 only FOCR Logistic		5 Constant sample FOCR Logistic	
	Coef	SE	Coef	SE	Coef	SE	Coef	SE	Coef	SE
IFRS	−0.415***	0.04	0.207***	0.05	−0.379***	0.06	−0.662***	0.05	−0.413***	0.04
POST	−0.438***	0.03	−0.255***	0.05	−0.474***	0.03	−0.479***	0.04	−0.251***	0.03
IFRS × POST	**0.586*****	**0.05**	**0.565*****	**0.06**	**0.486*****	**0.06**	**0.739*****	**0.06**	**0.540*****	**0.05**
ACCRUAL	0.070**	0.03	−0.095**	0.05	0.111***	0.03	0.050	0.05	0.096***	0.04
ANALYST	0.032***	0.00	0.026***	0.00	0.032***	0.00	0.033***	0.00	0.029***	0.00
BIG4	0.293***	0.02	0.222***	0.02	0.314***	0.02	0.392***	0.04	0.328***	0.02
BM	−0.260***	0.01	−0.216***	0.02	−0.258***	0.01	−0.450***	0.03	−0.273***	0.01
EARNVOL	−0.015	0.01	−0.060***	0.02	−0.009	0.01	−0.007	0.02	−0.031***	0.01
INSIDER	−0.074***	0.03	0.136***	0.03	−0.113***	0.03	−0.126***	0.05	−0.107***	0.03
INSTITUTION	0.008***	0.00	0.007***	0.00	0.008***	0.00	0.010***	0.00	0.006***	0.00
LNASSET	0.316***	0.01	0.301***	0.01	0.315***	0.01	0.312***	0.01	0.309***	0.01
LOSS	−0.021	0.02	−0.069**	0.03	−0.002	0.03	−0.079**	0.04	−0.012	0.02
NEWS	0.034**	0.02	0.012	0.02	0.049***	0.02	−0.032	0.03	0.069***	0.02
OPTGRANT	0.816***	0.02	0.648***	0.04	0.853***	0.03	0.644***	0.05	0.751***	0.02
SEGMENT	0.054***	0.00	0.040***	0.01	0.070***	0.01	0.056***	0.01	0.049***	0.01
STKEXCH	0.045***	0.01	0.061***	0.01	0.045***	0.02	0.096***	0.02	0.021*	0.01
EXTFIN	0.004**	0.00	0.010***	0.00	−0.004*	0.00	0.001	0.00	0.005***	0.00
HERF	0.133***	0.05	−0.474***	0.05	0.339***	0.06	0.152*	0.09	0.074	0.05
HITECH	0.514***	0.07	0.254***	0.10	0.560***	0.08	0.476***	0.12	0.545***	0.07
RD	2.627***	0.62	−0.430	0.81	3.005***	0.69	2.787***	1.08	4.573***	0.68
RULELAW	0.431***	0.01	0.120***	0.02	0.376***	0.02	0.614***	0.03	0.414***	0.02
CAPMKT	−0.001***	0.00	−0.001***	0.00	−0.001***	0.00	−0.005***	0.00	−0.001***	0.00
Intercept	−4.348***	0.05	−4.422***	0.07	−4.381***	0.06	−4.099***	0.08	−4.273***	0.06
N	131,844		95,453		110,195		49,392		100,248	
N (FOCR = 1)	22,766		12,499		17,536		7,649		20,900	
Pseudo R-sqr (%)	36.41		29.07		37.02		37.79		36.04	

Panel B Mandatory IFRS adoption and management forecast frequency

Dep. Var. = Model	1 Full sample FFREQ Ordered probit		2 Exclude U.S. FFREQ Ordered probit		3 Exclude E.U. FFREQ Ordered probit		4 2004 and 2006 only FFREQ Ordered probit		5 Constant sample FFREQ Ordered probit	
	Coef	SE	Coef	SE	Coef	SE	Coef	SE	Coef	SE
IFRS	−1.198***	0.05	−0.256***	0.05	−0.924***	0.08	−1.210***	0.05	−1.191***	0.05
POST	−0.185***	0.03	−0.032	0.04	−0.147***	0.03	−0.149***	0.04	−0.156***	0.03
IFRS × POST	**0.395*****	**0.05**	**0.245*****	**0.05**	**0.131***	**0.08**	**0.267*****	**0.06**	**0.367*****	**0.05**
ACCRUAL	0.158***	0.04	0.078*	0.05	0.155***	0.04	0.187***	0.06	0.191***	0.04
ANALYST	0.006***	0.00	0.008***	0.00	0.001	0.00	0.006***	0.00	0.005***	0.00
BIG4	0.272***	0.02	0.108***	0.02	0.351***	0.02	0.310***	0.04	0.264***	0.02
BM	−0.130***	0.01	−0.035***	0.01	−0.163***	0.01	−0.212***	0.03	−0.147***	0.01
EARNVOL	−0.040***	0.01	−0.002	0.01	−0.046***	0.01	−0.035*	0.02	−0.056***	0.01
INSIDER	−0.061**	0.03	0.067***	0.03	−0.111***	0.03	−0.052	0.05	−0.079***	0.03
INSTITUTION	−0.001	0.00	−0.001***	0.00	−0.001	0.00	−0.001	0.00	−0.001	0.00
LNASSET	0.122***	0.01	0.068***	0.01	0.128***	0.01	0.111***	0.01	0.118***	0.01
LOSS	−0.146***	0.02	−0.008	0.02	−0.182***	0.02	−0.236***	0.04	−0.151***	0.02
NEWS	−0.021	0.02	0.008	0.02	−0.021	0.02	0.008	0.03	−0.007	0.02
OPTGRANT	0.383***	0.02	0.216***	0.03	0.345***	0.02	0.358***	0.04	0.367***	0.02
SEGMENT	−0.001	0.00	−0.005	0.00	0.002	0.00	0.006	0.01	−0.001	0.00
STKEXCH	0.010	0.01	0.071***	0.01	−0.015	0.01	0.024	0.02	0.013	0.01

Table 4 (*continued*)

Panel B Mandatory IFRS adoption and management forecast frequency

Dep. Var. = Model	1 Full sample *FFREQ* Ordered probit		2 Exclude U.S. *FFREQ* Ordered probit		3 Exclude E.U. *FFREQ* Ordered probit		4 2004 and 2006 only *FFREQ* Ordered probit		5 Constant sample *FFREQ* Ordered probit	
	Coef	SE	Coef	SE	Coef	SE	Coef	SE	Coef	SE
EXTFIN	0.009***	0.00	0.005***	0.00	0.006***	0.00	0.010***	0.00	0.010***	0.00
HERF	0.127***	0.05	−0.223***	0.04	0.371***	0.06	0.245***	0.08	0.124***	0.05
HITECH	0.131**	0.06	−0.080	0.07	0.229***	0.07	0.043	0.11	0.068***	0.06
RD	3.561***	0.51	1.091**	0.55	4.518***	0.57	3.055***	0.87	3.477***	0.54
RULELAW	0.491***	0.01	0.106***	0.01	0.480***	0.02	0.522***	0.03	0.496***	0.02
CAPMKT	−0.001***	0.00	−0.001***	0.00	−0.001***	0.00	−0.002***	0.00	−0.001***	0.00
Intercept	1.083***	0.05	0.881***	0.06	1.080***	0.06	1.242***	0.09	1.113***	0.05
N	22,766		12,499		17,536		7,649		20,900	
Adj. R-sqr (%)	27.15		13.45		27.48		27.10		26.77	

This table reports the regression estimates of our base difference-in-difference models that test the relations between mandatory IFRS adoption and forecast likelihood (*FOCR*, Panel A) and forecast frequency (*FFREQ*, Panel B). All of the firm-level continuous variables are winsorized at the 1st and 99th percentiles. All of the regressions include industry fixed effects and robust standard errors clustered by firm. ***, ** and * indicate that the estimated coefficients are statistically significant at the 1%, 5% and 10% levels, respectively. Refer to the Appendix A for more detailed variable definitions.
The bolded rows include our main variable(s) of interest for each regression.

4.2.2. Univariate results

Table 5 reports the results on the changes in the likelihood and frequency of management forecasts following IFRS adoption across IFRS adoption countries with and without a concurrent change in enforcement. Univariate tests of the difference in the likelihood and frequency of management forecasts are reported in Panel A. On average, we find that firms tend to increase the likelihood of issuing management forecasts over time regardless of whether their home country experiences a concurrent change in enforcement.

4.2.3. Regression results

We report the regression results from our formal tests of H1 in Panels B and C of Table 5. We consistently find a positive and significant coefficient on the variable *IFRS × POST*, which suggests that IFRS adoption is associated with an increase in the likelihood and frequency of management forecasts. However, the coefficient on *IFRS_ENF × POST* is negative and significant in our primary test in model 1. In Table 5, we also test the robustness of our results against several other specifications. First, we examine whether the change in management forecast likelihood differs across firms that experience *Good News* (*Bad News*), an indicator variable that takes a value of one if a firm's EPS increases (decreases or experiences no change) over its EPS in the previous years. We also examine another specification where we directly test the effect of enforcement changes on the mandatory IFRS adoption subsample. In all three tests, we find that substantive changes in enforcement and forecast likelihood have negative effects, while the combined effect of *IFRS × POST* and *IFRS_ENF × POST* remains positive. Together, these results suggest that while firms from the IFRS adoption countries show increased likelihood and frequency of issuing management forecasts post-IFRS adoption, concurrent and substantive changes in enforcement attenuate these increases.

Most of the control variables also have the expected loading. For example, a higher analyst following (*ANALYST*) and a larger institutional holding (*INSTITUTION*) are associated with a greater likelihood of forecasting. Larger firms (*LNASSET*), firms audited by a Big 4 auditor (*BIG4*) and firms with greater growth opportunities (lower *BM*) are also more likely to issue forecasts. Moreover, as predicted, the likelihood of forecasting is positively associated with firms' option-granting activities (*OPTGRANT*), number of business segments (*SEGMENT*), number of stock listings (*STKEXCH*), dependence on external financing (*EXTFIN*), membership of a high tech industry (*HITECH*) and R&D expenditure (*RD*).

Table 5
IFRS, changes in enforcement and management forecast likelihood and frequency.

Panel A – Univariate statistics

	IFRS adoption countries without enforcement change			IFRS adoption countries with enforcement change		
	Pre	Post	*Diff*	Pre	Post	*Diff*
FOCR	12.49	19.83	7.34***	20.83	26.57	5.74***
FFREQ	1.75	1.86	0.11**	1.86	2.01	0.15*

Panel B Change in enforcement and management forecast likelihood

	1		2 *Good News*		3 *Bad News*		4 *IFRS Only*	
Dep. Var. =	*FOCR*		*FOCR*		*FOCR*		*FOCR*	
Model	Logistic		Logistic		Logistic		Logistic	
	Coef	SE	Coef	SE	Coef	SE	Coef	SE
IFRS	−0.787***	0.06	−0.792***	0.08	−0.772***	0.08		
IFRS_ENF	0.444***	0.08	0.390***	0.12	0.482***	0.11	0.416***	0.08
POST	−0.504***	0.03	−0.447***	0.04	−0.567***	0.04		
IFRS × POST	0.908***	0.06	0.822***	0.09	0.978***	0.09	0.521***	0.05
IFRS_ENF × POST	**−0.356***	**0.09**	**−0.334***	**0.13**	**−0.370***	**0.12**	**−0.331***	**0.08**
ACCRUAL	0.063**	0.03	0.050	0.04	0.077	0.05	−0.079	0.06
ANALYST	0.033***	0.00	0.030***	0.00	0.036***	0.00	0.029***	0.00
BIG4	0.330***	0.02	0.301***	0.03	0.352***	0.03	0.150***	0.03
BM	−0.266***	0.01	−0.253***	0.02	−0.284***	0.02	−0.121***	0.02
EARNVOL	−0.011	0.01	0.019	0.02	−0.034**	0.02	−0.098***	0.02
INSIDER	−0.068***	0.03	−0.092**	0.04	−0.046	0.04	0.112***	0.04
INSTITUTION	0.008***	0.00	0.008***	0.00	0.008***	0.00	0.003***	0.00
LNASSET	0.311***	0.01	0.303***	0.01	0.316***	0.01	0.269***	0.01
LOSS	−0.027	0.02	−0.240***	0.04	0.110***	0.03	0.269***	0.01
NEWS	0.041**	0.02					−0.170***	0.04
OPTGRANT	0.837***	0.02	0.858***	0.03	0.823***	0.03	0.497***	0.04
SEGMENT	0.053***	0.00	0.052***	0.01	0.052***	0.01	0.017**	0.01
STKEXCH	0.043***	0.01	0.100***	0.02	0.002	0.02	0.020	0.02
EXTFIN	0.020***	0.00	0.013***	0.00	0.026***	0.00	0.022***	0.00
HERF	−0.074	0.05	−0.155**	0.07	0.030	0.07	−0.574***	0.07
HITECH	0.406***	0.07	0.350***	0.10	0.464***	0.10	0.260**	0.13
RD	0.002	0.62	−1.358	0.90	1.336	0.87	1.512	0.94
RULELAW	0.426***	0.01	0.431***	0.02	0.434***	0.02	0.469***	0.03
CAPMKT	−0.001***	0.00	−0.001***	0.00	−0.001***	0.00	−0.001***	0.00
Intercept	−3.996***	0.05	−3.940***	0.07	−4.011***	0.07	−4.388***	0.09
N	131,844		65,630		66,214		37,353	
N (*FOCR* =1)	22,766		10,650		12,116		7,742	
Pseudo R-sqr (%)	35.84		33.91		37.82		27.84	

Panel C Changes in enforcement (*IFRS_ENF*) and forecast frequency (*FFREQ*)

	1	
Dep. Var. =	*FFREQ*	
Model	Ordered probit	
	Coef	SE
IFRS	−1.166***	0.06
IFRS_ENF	−0.115	0.07
POST	−0.181***	0.03
IFRS × POST	0.408***	0.06
IFRS_ENF × POST	**−0.064**	**0.08**
ACCRUAL	0.162***	0.04
ANALYST	0.006***	0.00
BIG4	0.276***	0.02

Table 5 (*continued*)

Panel C Changes in enforcement (*IFRS_ENF*) and forecast frequency (*FFREQ*)

Dep. Var. = Model	1 *FFREQ* Ordered probit Coef	SE
BM	−0.136***	0.01
EARNVOL	−0.044***	0.01
INSIDER	−0.056**	0.03
INSTITUTION	−0.001	0.00
LNASSET	0.127***	0.01
LOSS	−0.145***	0.02
NEWS	−0.024	0.02
OPTGRANT	0.374***	0.02
SEGMENT	0.001	0.00
STKEXCH	0.011	0.01
EXTFIN	0.010***	0.00
HERF	0.166***	0.05
HITECH	0.149***	0.06
RD	3.633***	0.50
RULELAW	0.518***	0.01
CAPMKT	−0.001***	0.00
Intercept	1.026***	0.05
N	22,766	
Adj. R-sqr (%)	27.22	

This table reports the estimates of the relation between enforcement changes coupled with mandatory IFRS adoption and management forecast likelihood (*FOCR*) and forecast frequency (*FFREQ*). Panel A reports univariate tests of the differences in *FOCR* and *FFREQ* from the Pre to Post IFRS adoption periods across whether the IFRS adoption country also undertakes an enforcement change. Five countries mandate IFRS adoption along with a concurrent and substantive change in financial reporting enforcement (including Finland, Germany, Netherlands, Norway and the U.K.), as identified by Christensen et al. (2013). Panel B (Panel C) reports the multivariate regression estimates of model (1): $Forecast = \alpha_0 + \alpha_1 IFRS + \alpha_2 IFRS\_ENF + \alpha_3 POST + \alpha_4 IFRS \times POST + \alpha_5 IFRS\_ENF \times POST$ + controls + ε, where *Forecast* is measured using *FOCR* (*FFREQ*). All firm-level continuous variables are winsorized at the 1st and the 99th percentiles. All of the regressions include industry fixed effects and robust standard errors clustered by firm. ***, ** and * indicate that the estimated coefficients are statistically significant at the 1%, 5% and 10% levels, respectively. Refer to the Appendix A for more detailed variable definitions.
The bolded rows include our main variable(s) of interest for each regression.

4.3. IFRS, changes in enforcement and management forecast informativeness

4.3.1. Base model

Similar to our tests of the relationship between IFRS adoption, changes in enforcement and management forecast issuance, we first examine the possible effect of mandatory IFRS adoption on the change in the average informativeness of management forecasts before formally testing our hypothesis H2. We estimate the base model, which regresses *FCAR* on *IFRS, POST* and the interaction term between *IFRS* and *POST* (i.e., $FCAR = \alpha_0 + \alpha_1 IFRS + \alpha_2 POST + \alpha_3 IFRS \times POST$ + controls + ε).

The results are tabulated in Table 6. In three of our six models (columns 1–3), we find a significantly negative coefficient on *IFRS* × *POST*, and we find an insignificant coefficient on the remaining three models (columns 4–6). These results provide weak evidence that relative to firms from non-IFRS adoption countries, firms from IFRS adoption countries experience smaller increases in forecast informativeness after IFRS adoption. Specifically, we find a negative relation between *FCAR* and *IFRS* × *POST* for our full sample (column 1) and for two alternate specifications: excluding U.S. firms (column 2) and using a relatively short event window focusing on only one year preceding and one year following the mandatory IFRS adoption to reduce the potential effects of concurrent confounding events (column 3). Among our other specifications—using a constant sample that only includes firms that issue at least one forecast both before and after IFRS adoption (column 4), excluding forecasts bundled with earnings announcements (column 5) and including the forecast error as an additional control (column 6)—we do not find a significant relation between *FCAR* and *IFRS* × *POST*.

Table 6
IFRS and management forecast informativeness.

	1 All forecasts		2 Exclude U.S.		3 2004 & 2006 only		4 Constant sample		5 Exclude bundled forecasts		6 Include *FERR* *t*−1	
Dep. Var. Model	*FCAR* OLS		*FCAR* OLS		*FCAR* OLS		*FCAR* OLS		*FCAR* OLS		*FCAR* OLS	
	Coef	SE	Coef	SE	Coef	SE	Coef	SE	Coef	SE	Coef	SE
IFRS	−0.465***	0.13	0.174	0.14	−0.497***	0.14	−0.858***	0.13	−0.647***	0.21	−1.019***	0.20
POST	0.919***	0.08	1.04	0.14	0.367***	0.10	0.803***	0.08	0.683***	0.14	0.895***	0.10
IFRS × POST	**−0.361***	**0.14**	**−0.372**	**0.16**	**−0.464***	**0.16**	**−0.131**	**0.14**	**0.192**	**0.22**	**−0.112**	**0.21**
FFREQ	0.146***	0.02	0.224***	0.03	0.106***	0.03	0.079***	0.02	0.093***	0.03	0.071***	0.03
FPREC	0.169***	0.02	0.275***	0.03	0.182***	0.03	0.165***	0.03	0.234***	0.04	0.041	0.03
FATTR	0.177***	0.05	0.204***	0.07	−0.061	0.08	0.058	0.06	0.496***	0.09	0.115	0.06
FLOSS	−0.211***	0.09	−0.252*	0.13	0.172	0.13	0.087	0.10	−0.393***	0.15	−0.090	0.10
FITEM	0.211***	0.03	−0.046	0.04	0.049	0.04	0.142***	0.03	0.127**	0.05	0.257***	0.03
FHOR	−0.128***	0.04	−0.158***	0.05	−0.062	0.06	−0.098**	0.05	−0.297***	0.07	−0.083*	0.05
FTIME	−0.001	0.00	−0.001	0.00	0.001	0.00	0.001	0.00	0.001	0.00	−0.001	0.00
FERR											−0.004***	0.00
ACCRUAL	0.296**	0.13	0.183	0.19	0.201	0.17	0.446***	0.16	−0.093	0.20	0.322*	0.17
ANALYST	−0.008***	0.00	−0.008***	0.00	0.006**	0.00	−0.005**	0.00	−0.017***	0.00	−0.002	0.00
BIG4	0.047	0.06	−0.044	0.08	0.043	0.09	0.143*	0.08	−0.013	0.11	0.299***	0.08
BM	0.287***	0.04	0.173***	0.05	−0.205**	0.09	0.289***	0.06	0.307***	0.07	0.456***	0.06
EARNVOL	0.032	0.04	0.010	0.05	−0.071	0.05	0.021	0.05	0.417***	0.07	−0.083*	0.05
INSIDER	0.007	0.09	0.249***	0.10	0.350***	0.14	−0.049	0.12	−0.122	0.16	0.169	0.13
INSTITUTION	−0.001	0.00	−0.002**	0.00	−0.004**	0.00	−0.004***	0.00	−0.003	0.00	−0.002	0.00
LNASSET	−0.359***	0.02	−0.237***	0.02	−0.433***	0.03	−0.379***	0.02	−0.367***	0.03	−0.448***	0.02
LOSS	0.918***	0.06	0.948***	0.09	0.731***	0.10	0.756***	0.07	1.253***	0.11	0.746***	0.08
NEWS	−0.089**	0.05	−0.245***	0.06	−0.009	0.07	−0.046	0.05	−0.140*	0.08	−0.081	0.06
OPTGRANT	0.210***	0.06	0.284***	0.09	0.057	0.10	0.216***	0.07	0.086	0.11	0.104	0.07
SEGMENT	−0.040***	0.01	−0.017	0.01	−0.020	0.02	−0.038***	0.01	−0.043**	0.02	−0.043***	0.02
STKEXCH	0.116***	0.02	0.059**	0.03	−0.001	0.04	0.076***	0.02	0.082883**	0.04	0.109***	0.03
EXTFIN	−0.009	0.01	−0.013**	0.01	−0.018**	0.01	−0.009	0.01	−0.014	0.01	−0.002	0.01
HERF	1.328***	0.14	0.823***	0.14	0.618***	0.21	0.876***	0.16	1.369***	0.24	1.286***	0.20
HITECH	0.504***	0.17	0.705***	0.25	−0.049	0.24	0.516***	0.18	0.622*	0.33	0.389**	0.19
RD	5.217***	1.34	5.486***	1.76	7.643***	1.91	2.628**	1.36	2.551	2.08	4.750***	1.43
RULELAW1	0.486***	0.04	0.151***	0.05	0.589***	0.07	0.821***	0.06	0.664***	0.07	0.289***	0.06
CAPMKT	−0.001***	0.00	0.001	0.00	0.002*	0.00	−0.005***	0.00	−0.001***	0.00	−0.006***	0.00
Intercept	5.282***	0.19	3.957***	0.24	5.094***	0.27	5.583***	0.23	5.863***	0.31	7.362***	0.27
N	54,912		22,565		18,328		36,960		19,882		37,513	
Adj. R-sqr (%)	6.31		5.30		10.86		8.55		7.88		7.16	

This table reports the regression estimates of our base difference-in-difference models that test the relation between mandatory IFRS adoption and forecast informativeness (*FCAR*). All of the firm-level continuous variables are winsorized at the 1st and 99th percentiles. All of the regressions include industry fixed effects and robust standard errors clustered by firm. ***, ** and * indicate that the estimated coefficients are statistically significant at the 1%, 5% and 10% levels, respectively. Refer to the Appendix A for more detailed variable definitions.
The bolded rows include our main variable(s) of interest for each regression.

4.3.2. Univariate results

Table 7 reports our results on the change in forecast informativeness following IFRS adoption across IFRS adoption countries with and without concurrent changes in enforcement. First, in Panel A of Table 7, we separately tabulate the univariate forecast informativeness (*FCAR*) by whether a country's IFRS adoption is bundled with a concurrent change in enforcement (*IFRS_ENF*). We tabulate the average *FCAR* in the pre-IFRS and post-IFRS periods and the difference in *FCAR* between the two periods. The results in Panel A of Table 7 indicate that across both groups of IFRS adopting countries (i.e., IFRS countries with or without concurrent changes in enforcement), forecast informativeness increases from the pre- to the post-IFRS period on average. More importantly, the results show that the increases in forecast informativeness for firms from IFRS countries without concurrent changes in enforcement appear to be of a higher magnitude. Thus, this finding pro-

Table 7
IFRS, changes in enforcement and management forecast informativeness.

Panel A – Univariate statistics

	IFRS adoption countries without enforcement change			IFRS adoption countries with enforcement change		
	Pre	Post	*Diff*	Pre	Post	*Diff*
FCAR=	3.29	5.19	1.90***	4.57	5.52	0.95***

Panel B Changes in enforcement, good news, bad news and IFRS only tests

	1		2 Good News		3 Bad News		4 IFRS Only	
Dep. Var. =	*FCAR*		*FCAR*		*FCAR*		*FCAR*	
Model	OLS		OLS		OLS		OLS	
	Coef	SE	Coef	SE	Coef	SE	Coef	SE
IFRS	−0.846***	0.17	−0.845***	0.26	−0.780***	0.22		
IFRS_ENF	0.515**	0.23	0.345	0.36	0.548*	0.30	0.455**	0.19
POST	0.843***	0.08	0.773***	0.12	0.912***	0.10		
IFRS × POST	0.090	0.18	−0.139	0.27	0.217	0.23	0.999***	0.14
IFRS_ENF × POST	**−0.559****	**0.25**	**−0.309**	**0.38**	**−0.617****	**0.29**	**−0.375***	**0.20**
FFREQ	0.147***	0.02	0.144***	0.03	0.138***	0.02	0.089***	0.03
FPREC	0.146***	0.02	0.149***	0.03	0.137***	0.03	0.121***	0.04
FATTR	0.113**	0.05	0.098	0.07	0.085	0.06	0.053	0.08
FLOSS	−0.127	0.08	−0.174	0.13	−0.131	0.10	−0.149	0.14
FITEM	0.189***	0.03	0.144***	0.04	0.234***	0.04	−0.056	0.05
FHOR	−0.124***	0.04	−0.069	0.06	−0.130***	0.05	0.097	0.06
FTIME	0.001	0.00	0.001***	0.00	−0.001**	0.00	0.001	0.00
ACCRUAL	0.355***	0.12	0.267	0.18	0.295*	0.16	0.103	0.22
ANALYST	−0.007***	0.00	−0.013***	0.00	−0.003	0.00	−0.004	0.00
BIG4	0.075	0.06	−0.105	0.09	0.208***	0.08	0.067	0.09
BM	0.231***	0.04	0.331***	0.06	0.149***	0.05	0.391***	0.06
EARNVOL	0.026	0.03	0.012	0.05	0.037	0.05	−0.253***	0.05
INSIDER	0.031	0.09	−0.090	0.13	0.166	0.11	0.322***	0.11
INSTITUTION	−0.001	0.00	0.003**	0.00	−0.005***	0.00	−0.005***	0.00
LNASSET	−0.335***	0.02	−0.345***	0.03	−0.319***	0.02	−0.294***	0.03
LOSS	0.826***	0.06	1.006***	0.10	0.759***	0.07	0.683***	0.10
NEWS	−0.076*	0.04					−0.212***	0.07
OPTGRANT	0.243***	0.06	0.256***	0.08	0.182**	0.08	0.195**	0.10
SEGMENT	−0.036***	0.01	−0.051***	0.02	−0.024*	0.01	0.007	0.02
STKEXCH	0.098***	0.02	0.133***	0.04	0.061**	0.03	0.108***	0.03
EXTFIN	−0.008	0.01	−0.012	0.01	−0.007	0.01	−0.001	0.01
HERF	1.138***	0.14	1.246***	0.21	1.112***	0.18	0.685***	0.16
HITECH	0.434***	0.16	−0.024	0.25	0.721***	0.20	0.088	0.28
RD	4.351***	1.26	2.359	2.00	6.888***	1.61	2.088	1.76
RULELAW	0.493***	0.04	0.513***	0.06	0.458***	0.06	0.663***	0.08
CAPMKT	−0.001***	0.00	−0.001	0.00	−0.002***	0.00	−0.001	0.00
Intercept	5.018***	0.17	4.955	0.26	5.001***	0.23	3.511***	0.28
N	54,912		25,006		29,906		14,808	
Adj. R-sqr (%)	6.31		5.89		7.23		6.04	

This table reports the estimates of the relation between enforcement changes coupled with mandatory IFRS adoption and management forecast informativeness (*FCAR*). Panel A reports univariate tests of differences in FCAR from the Pre to Post periods across whether an IFRS mandating country also undertakes an enforcement change. Five countries mandate IFRS adoption along with a concurrent and substantive change in financial reporting enforcement (including Finland, Germany, Netherlands, Norway and the U.K.), as identified by Christensen et al. (2013). Panel B reports multivariate regression estimates of model (2): $FCAR = \beta_0 + \beta_1 IFRS + \beta_2 IFRS\_ENF + \beta_3 POST + \beta_4 IFRS \times POST + \beta_5 IFRS\_ENF \times POST + controls + \varepsilon$. All of the continuous variables are winsorized at the 1st and 99th percentiles. All of the regressions include industry fixed effects and robust standard errors clustered by firm. All of the regressions include industry fixed effects and robust standard errors clustered by firm.
The bolded rows include our main variable(s) of interest for each regression.

vides preliminary evidence rejecting H2 that enforcement changes do not affect the informativeness of management forecasts following IFRS adoption.

4.3.3. Regression results

Table 7, Panel B reports the regression results for our first set of tests of hypothesis H2. In model 1, we include the full sample and use the existence of a concurrent and substantive change in financial reporting enforcement (Christensen et al. 2013) to proxy for a change in enforcement. In models 2 and 3, we separately estimate the relation between a change in enforcement and forecast informativeness for *Good News* and *Bad News* firms. Column 1 shows a significantly negative coefficient on *IFRS* and on the sum of the coefficients on *IFRS* and *IFRS_ENF*, which suggests that in the pre-IFRS period, the management forecasts made by firms in countries that mandatorily adopt IFRS later (during our sample period) are less informative than management forecasts made by firms in non-IFRS adoption countries. This finding is consistent with the univariate differences presented in Table 2. The significantly positive coefficient on *POST* indicates that it is important to use a difference-in-difference research design to examine the effect of IFRS adoption on the informativeness of management forecasts, as management forecasts appear to be more informative after 2006, even in non-IFRS countries.

The generally insignificant coefficient on $IFRS \times POST$ suggests that on average, there is no significant change in forecast informativeness following IFRS adoption in the IFRS adoption countries without a concurrent change in enforcement. Our test of H2 is estimated by the coefficients on $IFRS\_ENF \times POST$. The insignificant coefficient on $IFRS \times POST$ and the significantly negative coefficient on $IFRS\_ENF \times POST$ indicate that the lower forecast informativeness for firms from IFRS-mandating countries compared to those from non-IFRS-mandating countries documented in Table 6 is primarily driven by those from IFRS-mandating countries with concurrent enforcement changes. In terms of economic significance, a coefficient on $IFRS\_ENF \times POST$ of -0.559 translates to a 10.3% reduction in forecast likelihood compared with the mean *FCAR* of 5.44% for firms in IFRS adoption countries in the *POST* period. This value is both economically and statistically significant. When we separately analyze the effect of concurrent enforcement change with IFRS adoption on FCAR for firms that report *Good News* and *Bad News*, we find that the negative relation between *FCAR* and $IFRS\_ENF \times POST$ derives primarily from firms that experience a decrease in EPS from the previous year. Together, our results suggest that an increase in enforcement appears to have a negative impact on forecast informativeness, rejecting H2.[7]

To sum up, the empirical evidence in Table 7 rejects hypothesis H2. That is, a substantive change in enforcement concurrent with IFRS adoption is associated with a decrease in the informativeness of management forecasts relative to other firms, whereas firms from non-IFRS adoption countries and from IFRS adoption countries with no concurrent enforcement changes show no significant difference. These findings suggest a reduction in the value relevance of voluntary disclosure for firms from IFRS-mandating countries that experience changes in enforcement.

4.4. Other forecast properties

In addition to the informativeness of management forecasts, we also examine whether changes in enforcement coupled with IFRS adoption could be related to the quality of management forecasts measured by other properties of the forecasts in hypothesis H2. We examine this question using Eq. (3). More specifically, we estimate the effect of a concurrent enforcement change with IFRS adoption on forecast precision (*FPREC*), forecast attribution (*FATTR*), the number of items included in a forecast (*FITEM*), forecast error (*FERR*) and the timeliness of a forecast (*FTIME*).

These results are reported in Table 8. Overall, we find no significant change in any of these forecast properties between firms from IFRS adoption countries with an enforcement change and firms from IFRS adoption countries without such a change, except that the forecasts appear to be more timely—that is, issued earlier

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[7] The estimation of the other control variables is generally consistent with expectations. For example, we find that management forecasts are more informative if they occur more frequently (*FFREQ*), are more precise (*FPREC*), include an explanation (*FATTR*) or include more forecast items (*FITEM*). However, forecasts are less informative if they forecast a loss (*FLOSS*) or are of a longer horizon (*FHOR*). We explicitly test for changes in these forecast properties in the next section.

Table 8
IFRS, Changes in enforcement and other management forecast properties.

Dep. Var. = Model	1 FPREC Ordered Probit		2 FATTR Ordered Probit		3 FITEM Ordered Probit		4 FERR OLS		5 FTIME OLS	
	Coef	SE	Coef	SE	Coef	SE	Coef	SE	Coef	SE
IFRS	−0.303***	0.05	−0.473***	0.17	−0.109***	0.03	6.986***	1.24	−10.355***	3.87
IFRS_ENF	−0.201***	0.06	0.318	0.23	0.106***	0.04	−0.987	2.09	−34.597***	5.14
POST	−0.047*	0.02	0.561***	0.07	−0.133***	0.02	−0.588	0.49	2.497	2.00
IFRS × POST	0.057	0.05	0.268	0.17	0.037	0.03	−1.090	1.28	6.268	4.06
IFRS_ENF × POST	**−0.043**	**0.07**	**−0.048**	**0.23**	**−0.059**	**0.04**	**1.243**	**2.22**	**19.406*****	**5.50**
FFREQ	0.208***	0.01	0.421***	0.01	0.115***	0.00	−0.589***	0.11	−4.620***	0.43
ACCRUAL	0.018	0.03	−0.158*	0.09	0.107***	0.02	−2.970***	0.80	−0.003	2.81
ANALYST	−0.005***	0.00	−0.003*	0.00	0.006***	0.00	0.004	0.02	0.471***	0.06
BIG4	0.150***	0.02	0.116***	0.04	0.040***	0.01	−0.983***	0.38	−3.001**	1.35
BM	−0.062***	0.01	0.083***	0.03	0.011	0.01	1.170***	0.30	1.572*	0.91
EARNVOL	−0.002	0.01	−0.101***	0.03	−0.002	0.01	−0.423**	0.22	−5.017***	0.80
INSIDER	−0.059**	0.02	−0.082	0.07	0.016	0.01	−1.385**	0.60	−6.120***	1.97
INSTITUTION	−0.001	0.00	0.002**	0.00	0.003***	0.00	0.028***	0.01	−0.068***	0.02
LNASSET	0.006	0.00	−0.008	0.01	−0.039***	0.00	−0.085	0.11	−1.341***	0.38
LOSS	−0.045***	0.02	0.207***	0.04	−0.060***	0.01	3.094***	0.36	−0.618	1.38
NEWS	−0.031**	0.01	−0.051	0.04	−0.004	0.01	0.496*	0.29	3.816***	1.10
OPTGRANT	0.105***	0.02	−0.026	0.04	0.080***	0.01	−0.749**	0.35	−0.634	1.43
SEGMENT	−0.006*	0.00	0.016*	0.01	0.001	0.00	0.063	0.08	−0.191	0.28
STKEXCH	−0.022***	0.01	0.003	0.02	0.003	0.00	0.441***	0.16	−3.044***	0.57
EXTFIN	0.001	0.00	−0.001	0.00	0.007***	0.00	0.071*	0.04	−0.021	0.12
HERF	0.161***	0.04	−0.203**	0.10	−0.105***	0.02	−1.366	1.02	7.042**	3.13
HITECH	−0.031	0.05	−0.064	0.13	−0.020	0.03	−3.285***	0.98	−0.547	4.11
RD	−0.994**	0.45	1.589	1.05	−0.909***	0.27	24.872***	7.68	−112.547***	34.66
RULELAW1	0.333***	0.01	−0.171***	0.03	−0.006	0.01	−2.033***	0.29	4.357***	0.98
CAPMKT	−0.001***	0.00	0.001***	0.00	−0.001***	0.00	−0.013***	0.00	−0.022***	0.00
Intercept	1.581***	0.04	−2.899***	0.12	1.539***	0.03	18.462***	1.05	231.487***	3.52
N	22,766		22,766		22,766		11,665		22,766	
N (Dep Var = 1)			5232							
Adj. R-sqr (%)	17.38		11.08		9.32		6.64		2.66	

This table reports the regression estimates of the relation between enforcement changes coupled with mandatory IFRS adoption and a number of management forecast properties, including forecast precision (*FPREC*), forecast attribution (*FATTR*), the number of items included in each forecast (*FITEM*), forecast error (*FERR*) and forecast timeliness (*FTIME*). The test of *FERR* is conducted on a limited sample with available data with which to calculate forecast errors. Five countries mandate IFRS adoption along with a concurrent and substantive change in financial reporting enforcement (including Finland, Germany, Netherlands, Norway and the U.K.), as identified by Christensen et al. (2013). All of the firm-level continuous variables are winsorized at the 1st and 99th percentiles. All of the regressions include industry fixed effects and robust standard errors clustered by firm. ***, ** and * indicate that the estimated coefficients are statistically significant at the 1%, 5% and 10% levels, respectively. Refer to the Appendix A for more detailed variable definitions. The bolded rows include our main variable(s) of interest for each regression.

in a period—for firms from IFRS adoption countries with enforcement changes. These results suggest that the reduction in forecast informativeness following IFRS adoption for firms from IFRS adoption countries with concurrent changes in enforcement reflects market perception but is not due to reductions in the other quality measures of management forecasts. At a minimum, we do not find consistent evidence that better enforcement strengthens the positive relationship between IFRS adoption and the quality of management forecasts.

4.5. Additional analysis

4.5.1. IFRS adoption, changes in enforcement and earnings informativeness

In our results of the tests of hypothesis 2 reported in Table 7, we find a decrease in management forecast informativeness only for firms from IFRS-mandating countries with concurrent changes in enforcement. There may be changes in the information environment for such firms in general and for mandatorily reported

earnings in particular. We explicitly test whether IFRS adoption with concurrent enforcement changes is associated with a change in the informativeness of earnings announcements in Table 9. We find that the informativeness of mandatorily reported earnings becomes higher for firms from IFRS adoption countries with concurrent changes in enforcement (column 2). In terms of economic significance, the 0.130 increase in *EACAR* for firms in countries that impose substantive enforcement changes along with IFRS adoption is 6.25% higher relative to the average *EACAR* of 2.08% for earnings announcements made by firms in IFRS adopting countries.

When we separately examine the potential effect of substantive enforcement changes along with IFRS adoption on EACAR separately for firm-years that include a management forecast (FOCR = 1) and those that do not (FOCR = 0), we find that the positive relation is driven by firms that do not issue a forecast. This finding is intuitive because investors have less information on which to rely when firms do not issue an earnings forecast, so earnings announcements are more informative. This result is consistent with previous findings and indicates that better enforcement has distinct opposite effects on voluntary and mandatory disclosures.

4.5.2. IFRS adoption, changes in enforcement and analyst following

We further examine the possible effect that IFRS adoption and change in enforcement may have on firms' information environment measured by analyst following. These results, tabulated in Table 10, show that among the three types of firms (i.e., firms from non-IFRS adoption countries and firms from IFRS adoption countries with and without enforcement changes), firms from countries with enforcement changes experience the highest increase in the number of analysts following relative to firms from the other countries. These results are again consistent with past findings that IFRS adoption coupled with substantive changes in

Table 9
IFRS, Change in Enforcement and the Informativeness of Earnings Announcements.

Dep. Var. =	1 EACAR		2		3 FOCR = 1		4 FOCR = 0		5 High FCAR		6 Low FCAR	
	Coef	SE	Coef	SE	Coef	SE	Coef	SE	Coef	SE	Coef	SE
IFRS	−0.413***	0.04	−0.344***	0.04	−0.430***	0.07	−0.243***	0.06	−0.782***	0.19	−0.160***	0.06
IFRS_ENF			−0.182***	0.06	−0.276***	0.10	−0.103	0.09	−0.469*	0.25	−0.140*	0.08
POST	0.279***	0.02	0.278***	0.02	0.267***	0.03	0.282***	0.03	−0.052	0.06	0.233***	0.03
IFRS × POST	0.088**	0.04	0.033	0.05	0.036	0.08	−0.020	0.06	0.349*	0.20	−0.055	0.07
IFRS_ENF × POST			**0.130***	**0.07**	0.064	0.11	0.215**	0.10	0.104	0.26	0.086	0.09
|UE|	0.030***	0.01	0.029***	0.01	0.071***	0.02	0.015	0.01	0.045**	0.02	0.096***	0.02
LOSS	0.228***	0.02	0.227***	0.02	0.262***	0.03	0.207***	0.02	0.216***	0.04	0.132***	0.03
REPLAG	0.001***	0.00	0.001***	0.00	−0.001***	0.00	0.001***	0.00	−0.001***	0.00	0.001	0.00
LNASSET	−0.015***	0.00	−0.015***	0.00	−0.035***	0.01	−0.035***	0.01	−0.024**	0.01	−0.015**	0.01
ANALYST	−0.001	0.00	−0.001	0.00	−0.001	0.00	0.001	0.00	0.001	0.00	0.001	0.00
STKEXCH	0.022***	0.01	0.024***	0.01	0.013	0.01	0.063***	0.01	0.014	0.02	0.010	0.01
RULELAW	0.093***	0.01	0.099***	0.01	0.192***	0.02	0.021*	0.01	0.100***	0.03	0.090***	0.02
CAPMKT	0.001***	0.00	0.001***	0.00	0.001	0.00	0.001***	0.00	0.001	0.00	0.001**	0.00
Intercept	1.473***	0.03	1.469***	0.03	1.780***	0.06	1.465***	0.05	2.686***	0.12	1.248***	0.06
N	135,318		135,318		53,459		81,859		27,043		26,416	
Adj. R-sqr (%)	3.36		3.38		3.29		1.23		3.38		3.43	

This table reports the estimates of the relation between enforcement changes coupled with mandatory IFRS adoption and the informativeness of earnings announcements (*EACAR*). EACAR is defined as the absolute value of the two-day cumulative market-adjusted return during the [0,1] earnings announcement window, with day 0 equal to the earnings announcement date. ***, ** and * indicate that the estimated coefficients are statistically significant at the 1%, 5% and 10% levels, respectively. All of the variables are defined in the Appendix A. All of the continuous variables are winsorized at the 1st and 99th percentiles. Five countries mandate IFRS adoption along with a concurrent and substantive change in financial reporting enforcement (including Finland, Germany, Netherlands, Norway and the U.K.), as identified by Christensen et al. (2013). All of the regressions include industry fixed effects and robust standard errors clustered by firm.
The bolded rows include our main variable(s) of interest for each regression.

Table 10
IFRS, Change in enforcement and analysts following.

Dep. Var. =	1 Analyst		2		3 FOCR = 1		4 FOCR = 0		5 High FCAR		6 Low FCAR	
	Coef	SE	Coef	SE	Coef	SE	Coef	SE	Coef	SE	Coef	SE
IFRS	−0.702***	0.04	−0.294***	0.04	1.673***	0.20	0.013	0.03	0.848**	0.36	2.113***	0.26
IFRS_ENF			−1.407***	0.07	−2.963***	0.29	−0.746***	0.04	−1.962***	0.47	−3.334***	0.38
POST	0.103***	0.02	0.109***	0.02	0.999***	0.10	0.101***	0.02	1.148***	0.14	0.900***	0.16
IFRS × POST	0.402***	0.04	0.192***	0.05	−1.296***	0.23	0.039	0.03	−0.696*	0.39	−1.428***	0.31
IFRS_ENF × POST			**0.723***	0.08**	2.719***	0.33	0.483***	0.05	2.255***	0.51	2.634***	0.44
LNASSET	0.801***	0.00	0.802***	0.00	2.278***	0.02	0.368***	0.00	2.209***	0.03	2.332***	0.03
EARNVOL	−0.106***	0.01	−0.113***	0.01	−0.105*	0.06	−0.042***	0.01	−0.157**	0.07	−0.098***	0.09
ROA	−0.008***	0.00	−0.008***	0.00	−0.019***	0.00	−0.003***	0.00	−0.020***	0.00	−0.014***	0.00
RD	17.418***	0.69	17.400***	0.69	5.228**	2.34	6.730***	0.46	4.421	2.81	6.862***	3.93
BM	−0.505***	0.01	−0.508***	0.01	−1.662***	0.06	−0.233***	0.01	−1.494***	0.07	−1.874***	0.10
RULELAW	0.774***	0.01	0.831***	0.01	0.847***	0.06	0.281***	0.01	1.038***	0.08	0.649***	0.09
CAPMKT	−0.001***	0.00	−0.002***	0.00	−0.002***	0.00	−0.001***	0.00	−0.002***	0.00	−0.001***	0.00
Intercept	−2.399***	0.04	−2.393***	0.04	−9.044***	0.20	−0.912***	0.02	−8.503***	0.28	−9.607***	0.30
N	124,502		124,502		23,968		100,534		11,840		12,128	
Adj. R-sqr (%)	33.44		33.55		39.76		23.36		39.56		40.09	

This table reports the estimates of the relation between enforcement changes coupled with mandatory IFRS adoption and number of analysts following (*ANALYST*). ***, ** and * indicate that the estimated coefficients are statistically significant at the 1%, 5% and 10% levels, respectively. All of the variables are defined in the Appendix A. All of the continuous variables are winsorized at the 1st and 99th percentiles. Five countries mandate IFRS adoption along with a concurrent and substantive change in financial reporting enforcement (including Finland, Germany, Netherlands, Norway and the U.K.), as identified by Christensen et al. (2013). All of the regressions include industry fixed effects and robust standard errors clustered by firm.
The bolded rows include our main variable(s) of interest for each regression.

enforcement is associated with greater improvement in firms' external information environment, in contrast to the effect on voluntary disclosure.

4.5.3. Sensitivity analysis

We conduct several tests for sensitivity analysis to ensure that our results are not unduly driven by research design choices. First, we test whether our results change when we introduce country and year fixed effects into our regression models. Our main results are based on regression estimates with firm, industry and country control variables and with industry fixed effects. Past research does not appear to provide a consensus on how best to implement the difference-in-difference research design following IFRS adoption. For example, Bae et al. (2008) and Hong et al. (2014) include industry fixed effects in their main analyses as we do, sometimes also with year indicators. The working paper version of Hong et al. (2014) also includes country fixed effects when country-level controls are excluded in the regression estimates, but these analyses were dropped from the published version (2014). Christensen et al. (2013) and Li and Yang (2016) include industry, year and country fixed effects, but both specifically only include firm-level control variables and use country fixed effects to control for other country-invariant effects. We test the robustness of our results to the inclusion of country and year fixed effects in addition to the industry fixed effects. For completeness, we also control for European Union (EU) membership because EU and non-EU members potentially exhibit different institutional and economic characteristics and levels of regulatory quality. Finally, as Christensen et al. (2013) document an improvement in liquidity for firms domiciled in IFRS-mandating countries with a substantive enforcement change, we control for lagged liquidity. Our regression estimates with all of these controls are reported in Table 11. The results in Table 11 are consistent with our primary results for both forecast likelihood (Panel A) and forecast informativeness (Panel B), and the robustness of these results to the different specifications indicate that our results are not driven by research design choices.

Table 11
Sensitivity analysis.

Panel A Changes in enforcement (*IFRS_ENF*), forecast likelihood and alternate controls

Dep. Var. = Model	1 IFRS only, Ctry and year FE FOCR OLS		2 Controlling for EU identity FOCR OLS		3 Controlling for level of regulatory quality FOCR OLS		4 Controlling for lagged liquidity FOCR OLS	
	Coef	SE	Coef	SE	Coef	SE	Coef	SE
IFRS			−0.755***	0.07	−0.659***	0.05	−0.680***	0.06
CTRL			-0.072	0.09	0.653***	0.06		
IFRS_ENF	1.492***	0.09	0.481***	0.09	0.334***	0.03	0.332***	0.09
POST			−0.507***	0.03	−0.372***	0.05	−0.689***	0.03
IFRS × POST	0.746***	0.06	0.827***	0.08	0.706***	0.05	0.953***	0.07
CTRL × POST			0.161*	0.10	0.066*	0.04		
IFRS_ENF × POST	**−0.211****	**0.09**	**−0.420***	**0.10**	**−0.108***	**0.06**	**−0.381***	**0.10**
ACCRUAL	−0.099	0.06	0.062**	0.03	0.061**	0.03	0.129***	0.04
ANALYST	0.031***	0.00	0.033***	0.00	0.033***	0.00	0.035***	0.00
BIG4	0.148***	0.03	0.331***	0.02	0.336***	0.02	0.407***	0.02
BM	−0.171***	0.02	−0.265***	0.01	−0.254***	0.01	−0.388***	0.02
EARNVOL	−0.001	0.02	−0.013	0.01	−0.024***	0.01	−0.015	0.01
INSIDER	0.143***	0.04	−0.069***	0.03	−0.060**	0.03	0.038	0.03
INSTITUTION	0.004***	0.00	0.008***	0.00	0.008***	0.00	0.005***	0.00
LNASSET	0.334***	0.01	0.309***	0.01	0.306***	0.01	0.262***	0.01
LOSS	−0.240***	0.04	−0.026	0.02	−0.025	0.02	−0.183***	0.03
NEWS	−0.085***	0.03	0.041**	0.02	0.049***	0.02	0.033	0.02
OPTGRANT	0.132***	0.05	0.846***	0.02	0.787***	0.02	0.823***	0.03
SEGMENT	0.012*	0.01	0.053***	0.00	0.057***	0.00	0.063***	0.01
STKEXCH	0.015	0.02	0.042***	0.01	0.056***	0.01	0.025*	0.01
EXTFIN	0.027***	0.00	0.019***	0.00	0.020***	0.00	0.016***	0.00
HERF	−0.454***	0.07	−0.079	0.05	−0.049	0.05	−0.005	0.06
HITECH	0.231*	0.13	0.403***	0.07	0.423	0.07	0.377***	0.08
RD	1.087	0.95	0.021	0.62	−0.063	0.62	1.627**	0.74
RULELAW	−0.434***	0.04	0.424***	0.01	0.127***	0.02	0.414***	0.02
CAPMKT	0.001***	0.00	−0.001***	0.00	−0.001***	0.00	−0.003***	0.00
Liquidity$_{t-1}$							**2.692***	**0.53**
Intercept	−4.504***	0.10	−3.996***	0.05	−4.211***	0.06	−3.190***	0.06
Fixed Effect	Ind, Ctry and Year		Industry		Industry		Industry	
N	37,353		131,844		131,844		79,426	
N (*FOCR* = 1)	7742		22,766		22,766		15,548	
Adj. R-sqr (%)	8.36		35.84		36.16		35.66	

Panel B Changes in enforcement (*IFRS_ENF*)

IFRS_ENF = Dep Var = Model	1 IFRS Only, Ctry and year FE ENF_IND FCAR OLS		2 Controlling for EU identity ENF_IND FCAR OLS		3 Controlling for level of regulatory quality ENF_IND FCAR OLS		4 Controlling for lagged liquidity ENF_IND FCAR OLS	
	Coef	SE	Coef	SE	Coef	SE	Coef	SE
IFRS			−0.782***	0.22	−0.194	0.15	−0.464***	0.17
CTRL			−0.144	0.30	1.372***	0.19		
IFRS_ENF	0.934***	0.35	0.525*	0.28	−0.478***	0.09	0.332	0.22
POST			0.867***	0.08	1.255***	0.17	0.582***	0.08
IFRS × POST	1.523***	0.16	0.475**	0.24	−0.101	0.15	0.119	0.17
CTRL × POST			−0.297	0.29	−0.230**	0.10		
IFRS_ENF × POST	**−0.362***	**0.21**	**−0.445***	**0.21**	**−0.418***	**0.18**	**−0.431***	**0.24**

Table 11 (*continued*)

Panel B Changes in enforcement (*IFRS_ENF*)

	1 IFRS Only, Ctry and year FE		2 Controlling for EU identity		3 Controlling for level of regulatory quality		4 Controlling for lagged liquidity	
IFRS_ENF =	*ENF_IND*		*ENF_IND*		*ENF_IND*		*ENF_IND*	
Dep Var =	*FCAR*		*FCAR*		*FCAR*		*FCAR*	
Model	OLS		OLS		OLS		OLS	
	Coef	SE	Coef	SE	Coef	SE	Coef	SE
FFREQ	0.107***	0.03	0.151***	0.02	0.141***	0.02	0.104***	0.02
FPREC	0.137***	0.04	0.141***	0.02	0.142***	0.02	0.141***	0.02
FATTR	−0.002	0.08	0.101**	0.05	0.115**	0.05	0.069	0.05
FLOSS	−0.129	0.14	−0.130	0.08	−0.125	0.08	−0.158*	0.10
FITEM	0.010	0.05	0.196***	0.03	0.183***	0.03	0.137***	0.03
FHOR	0.083	0.06	−0.146**	0.04	−0.106***	0.04	−0.076*	0.04
FTIME	0.001	0.00	0.001	0.00	0.001	0.00	−0.001	0.00
ACCRUAL	0.156	0.22	0.351***	0.12	0.332***	0.12	0.362***	0.13
ANALYST	−0.011***	0.00	−0.007***	0.00	−0.004**	0.00	−0.008***	0.00
BIG4	−0.048	0.09	0.068	0.06	0.047	0.06	−0.029	0.07
BM	0.336***	0.06	0.232***	0.04	0.278***	0.04	0.017	0.05
EARNVOL	−0.041	0.05	0.063*	0.03	0.013	0.03	−0.043	0.04
INSIDER	0.480***	0.11	0.023	0.09	0.056	0.09	0.294***	0.09
INSTITUTION	−0.007***	0.00	−0.001	0.00	−0.001	0.00	0.003***	0.00
LNASSET	−0.254***	0.03	−0.318***	0.02	−0.352***	0.02	−0.356***	0.02
LOSS	0.594**	0.10	0.830***	0.06	0.816***	0.06	0.715***	0.07
NEWS	0.017	0.08	−0.086**	0.04	−0.055	0.04	−0.279***	0.05
OPTGRANT	0.086	0.10	0.185	0.06	0.232***	0.06	0.104*	0.06
SEGMENT	−0.012	0.02	−0.042***	0.01	−0.036***	0.01	−0.030**	0.01
STKEXCH	0.025	0.03	0.103***	0.02	0.111***	0.02	0.071***	0.02
EXTFIN	0.005	0.01	−0.005	0.01	−0.005	0.01	−0.022***	0.01
HERF	0.421**	0.18	1.118***	0.14	1.189***	0.14	0.557***	0.15
HITECH	0.061	0.28	0.436***	0.16	0.415***	0.16	0.222	0.17
RD	1.172	1.75	4.105***	1.26	3.928***	1.26	6.416***	1.39
RULELAW	−0.356	0.85	0.498***	0.04	0.026	0.07	0.501***	0.05
CAPMKT	−0.002***	0.00	−0.001***	0.00	−0.001***	0.00	−0.002***	0.00
Liquidity$_{t-1}$							0.952***	3.04
Intercept	5.369***	1.67	4.983***	0.17	4.535***	0.22	4.776***	0.20
Fixed effect	Ind, Ctry and Year		Industry		Industry		Industry	
N	14,808		14,808		14,808		38,450	
Adj. R-sqr (%)	8.36		8.29		8.23		9.49	

Panel C Changes in enforcement (Δ*ENF)* and forecast informativeness

	1 Δ*RULELAW*		2 Δ*REGQUA*	
Δ*ENF* =				
Dep Var =	*FCAR*		*FCAR*	
Model	OLS		OLS	
	Coef	SE	Coef	SE
Δ*ENF*	−0.108	0.20	3.312***	1.08
IFRS	−0.488***	0.14	−0.459***	0.16
IFRS × Δ*ENF*	−0.481	0.30	−2.140*	1.21
POST	1.112***	0.09	0.851***	0.10
POST × Δ*ENF*	0.940***	0.20	0.960	1.22
IFRS × *POST*	−0.571***	0.14	−0.247	0.16
IFRS* × *POST* × Δ*ENF	**−0.703****	**0.32**	**−3.970*****	**1.35**
FFREQ	0.157***	0.02	0.145***	0.02
FPREC	0.153***	0.02	0.136***	0.02

Table 11 (*continued*)

Panel C Changes in enforcement (ΔENF) and forecast informativeness				
	1		2	
ΔENF =	ΔRULELAW		ΔREGQUA	
Dep Var =	FCAR		FCAR	
Model	OLS		OLS	
	Coef	SE	Coef	SE
FATTR	0.116**	0.05	0.139***	0.05
FLOSS	−0.154*	0.08	−0.155*	0.08
FITEM	0.201***	0.03	0.211***	0.03
FHOR	−0.111***	0.04	−0.129***	0.04
FTIME	−0.001	0.00	0.001	0.00
ACCRUAL	0.365***	0.12	0.339***	0.12
ANALYST	−0.005**	0.00	−0.008***	0.00
BIG4	0.031	0.06	0.105*	0.06
BM	0.282***	0.04	0.280***	0.04
EARNVOL	0.041	0.04	0.050	0.04
INSIDER	−0.029	0.09	0.001	0.09
INSTITUTION	−0.001	0.00	−0.002*	0.00
LNASSET	−0.342***	0.02	−0.335***	0.02
LOSS	0.884***	0.06	0.874***	0.06
NEWS	−0.076*	0.04	−0.074*	0.04
OPTGRANT	0.286***	0.06	0.194***	0.06
SEGMENT	−0.037***	0.01	−0.039***	0.01
STKEXCH	0.089***	0.02	0.107***	0.02
EXTFIN	−0.008	0.01	−0.009	0.01
HERF	1.296***	0.14	1.126***	0.14
HITECH	0.492***	0.16	0.437***	0.16
RD	4.207***	1.29	4.637***	1.28
RULELAW	0.783***	0.07	0.593***	0.04
CAPMKT	−0.001***	0.00	−0.001***	0.00
Intercept	4.570***	0.19	4.718***	0.19
N	54,912		54,912	
Adj. R-sqr (%)	6.46		6.34	

The bolded rows include our main variable(s) of interest for each regression.

In addition to the *IFRS_ENF* variable based on Christensen et al. (2013), we estimate a continuous variable that captures the changes in rule of law (ΔRULELAW) and regulatory quality (ΔREGQUA) from the pre- to the post-IFRS adoption period to proxy for the change in enforcement with IFRS adoption. These results are reported in Panel C of Table 11 and are consistent with our main results.

5. Summary and conclusion

One of the primary reasons that the European Union and many countries have adopted IFRS and that many international organizations (e.g., IASB, IOSCO and WFE) have actively promoted IFRS adoption is to improve the information environment and financial transparency of firms. Presumably, greater financial transparency can be achieved by improving either firms' mandatory financial reporting or voluntary disclosures, or both. The main purpose of this study is to examine whether the improvements in mandatory financial reporting brought about by concurrent changes in financial reporting enforcement during IFRS adoption complement or substitute for firms' voluntary disclosure.

Our results show that following mandatory IFRS adoption, the management forecasts issued by firms from IFRS-mandating countries that are coupled with concurrent and substantive enforcement changes are associated with reduced informativeness. Further supporting this finding, our results show that the likelihood and

frequency of management forecasts tend to increase less in such countries relative to firms in countries without any concurrent enforcement changes. Additional evidence on the relationship between the informativeness of earnings announcements/analysts following and better-enforced IFRS adoption supports the conjecture that better enforcement of IFRS has distinct opposite impacts on voluntary and mandatory disclosures. Using the changes in enforcement concurrent with IFRS adoption that serve as a natural exogenous shock to firms, this study provides stronger evidence of the causal effect of changes in the legal and regulatory environments on changes in firms' voluntary disclosure.

Appendix A. Variable definition

Variable	Definition
Management forecast variables	
FOCR	Forecast occurrence – an indicator variable equal to 1 if a firm issues a forecast in a given year and 0 otherwise.
FFREQ	Forecast frequency – the total number of forecasts issued by a firm in a given year.
FCAR	Forecast informativeness – the absolute value of the two-day cumulative market-adjusted return during the [0, 1] forecast window with day 0 equal to the management forecast date.
FPREC	Forecast precision – a precision score equal to 1, 2, 3 or 4 assigned to a qualitative, min or max, closed range or point forecast, respectively. For a firm-year with multiple forecasts, *FPREC* is the mean forecast precision score for all forecasts issued by a firm in the given year.
FATTR	Forecast attribution – an indicator variable equal to 1 if a forecast issued by a firm is accompanied by an explanation and 0 otherwise. For a firm-year with multiple forecasts, *FATTR* is equal to 1 if any of the forecasts made in the given year is accompanied by an explanation and 0 otherwise.
FLOSS	Loss forecast – an indicator variable equal to 1 if a forecast predicts *negative* earnings or a *loss* and 0 otherwise. For a firm-year with multiple forecasts, *FLOSS* is equal to 1 if any of the forecasts made in the given year predicts negative earnings or a loss and 0 otherwise.
FITEM	Forecast items – the total number of accounting performance measures forecasted [e.g., *SALES* (total sales), *EBITDA* (operating income before interest, income taxes, depreciation and amortization), *OPINC* (operating income before income taxes), *IBTAX* (income before income taxes), *IBXIDO* (income before extraordinary items and discontinued operations) and *NI* (net income)]. For a firm-year with multiple forecasts, *FITEM* is the mean forecast items for all forecasts issued by a firm in the given year.
FHORI	Forecast horizon – a categorical variable equal to 0, 1 or 2 if the forecast is for the current fiscal year, for the next fiscal year or for 2 years after the current fiscal year, respectively. For a firm-year with multiple forecasts, *FHORI* is the mean forecast horizon for all forecasts issued by a firm in the given year.
FERR	Forecast error – the absolute difference between the forecasts and the actual performance of the item forecasted divided by the actual performance (in percentage). For a firm-year with multiple forecasts, *FERR* takes the mean of all forecasts issued by a firm in the given year.
FTIME	Forecast timeliness – the number of days between when a forecast is released and the earnings realization date (i.e., annual report filing date). For a firm-year with multiple forecasts, *FTIME* is the mean forecast timeliness score for all forecasts issued by a firm in the given year.

IFRS & POST variables

IFRS	An indicator variable equal to 1 if a country has mandated IFRS adoption and 0 otherwise.
IFRS_ENF	An indicator variable that takes the value of one if the IFRS-mandating country in which a firm is domiciled also experiences a concurrent and substantive change in enforcement during the IFRS adoption period, and zero otherwise, provided by Christensen et al. (2013).
POST	An indicator variable equal to 1 for fiscal years ending on or after December 2015.

Other firm- and industry-level variables

ACCRUAL	A measure of firm-level financial opacity measured by country-, industry- and year-adjusted total scaled accruals based on Bhattacharya et al. (2003). Scaled accruals are computed using balance sheet and income statement information: $ACCRUAL = (\Delta CA - \Delta CL - \Delta CASH + \Delta STD - DEP + \Delta TP)/lag(TA)$, where ΔCA is the change in total current assets; ΔCL is the change in total current liabilities; $\Delta CASH$ is the change in cash; ΔSTD is the change in the current portion of long-term debt included in total current liabilities; DEP is depreciation and amortization expense; ΔTP is the change in income taxes payable; and $lag(TA)$ is total assets at the end of the previous year.
ANALYST	The total number of analysts following obtained from IBES.
BIG4	An indicator variable equal to 1 if a firm's auditor is a Big 4 auditor and 0 otherwise.
BM	The ratio of the book value of equity to the market value of equity at the beginning of the fiscal year.
EARNVOL	The standard deviation of annual EPS over the sample period divided by the average total assets for the sample period.
INSIDER	The percentage of the firm's common stock held by insiders.
INSTITUTION	Percentage of shares (end-of-year) held by all types of institutional investors obtained from FactSet Ownership Data in WRDS.
LNASSET	The natural logarithm of total assets in millions of U.S. dollars.
LOSS	An indicator variable equal to 1 if a firm reports a loss in the current period and 0 otherwise.
NEWS	An indicator variable equal to 1 if the current-period EPS is greater than or equal to the EPS in the previous period and 0 otherwise.
OPTGRANT	An indicator variable equal to 1 if a firm grants stock options to its directors in a given year and 0 otherwise.
SEGMENT	The total number of business segments reported by a firm.
STKEXCH	The total number of actively traded stock exchanges on which a firm is listed.
EXTFIN	A measure of the dependence on external finance for firms in each two-digit SIC industry, calculated as the industry-level median of the ratio of capital expenditures minus cash flow from operations over capital expenditure for each country. Following Rajan and Zingales (1998), the numerator and denominator are summed over all years for each firm before dividing.
HERF	A measure of competition defined as the Herfindahl index $\times (-1)$, where the Herfindahl index is calculated as the sum of the squares of fractional market shares of firms within each two-digit SIC industry for each country year.
HITECH	An indicator variable equal to 1 if a firm is in a high-tech industry (SIC 2833–2836, 8731–8734, 7371–7379, 3570–3577 and 3600–3674) and 0 otherwise.

RD	A measures of firms' dependence on research and development, calculated as the industry-level median of the ratio of R&D expense to total sales. The numerator and denominator are summed over all years for each firm before dividing. We compute this measure for each two-digit SIC industry using U.S. data for the period of 2004–2009.

Country-level variables

CAPMKT	Total stock market capitalization of listed companies as a percentage of GDP for each country-year, obtained from the World Bank.
RULELAW (ΔRULELAW)	A country-year measure of the rule of law index (change in rule of law) obtained from "Economic Freedom of the World" by the Fraser Institute available at http://www. freetheworld.com/datasets_efw.html. The index measures the "Legal Structure and Property Rights" including judicial independence, impartial courts, protection of property rights, military interference in rule of law and politics, integrity of the legal system, legal enforcement of contracts, regulatory restrictions on the sale of real property, reliability of police and business costs of crime. The data sources include the World Bank's "Worldwide Governance Indicators" and "Doing Business," and the World Economic Forum's "Global Competiveness Report."
REGQUA (ΔREGQUA)	A country-year measure of regulatory quality (change in regulatory quality) obtained from the World Bank "Worldwide Governance Indicators," available at http:// info.worldbank.org/governance/wgi/index.aspx#reports. This index captures perceptions of the ability of the government to formulate and implement sound policies and regulations that permit and promote private sector development.

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