The Effects of Mandatory Adoption of International Financial Reporting Standards on Information Environments

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ABSTRACT

This study examines the information effects of mandatory adoption of International Financial Reporting Standards (IFRS) on listed firms in European countries. We find that both the analyst information environment (proxied by analyst forecast characteristics) and the public information environment (proxied by the information content of earnings announcements and the importance of earnings announcements relative to the total information environments of firms) improved for mandatory adopters after the IFRS regulation became effective in 2005. We also find similar information effects around 2005 for firms that voluntarily adopted IFRS before 2005. Additional analyses suggest that the improvement in the information content of earnings announcements in the post-IFRS period is primarily driven by earnings components excluded from analysts' earnings forecasts. In addition, we find that adoption effects differ across countries and across legal origins.

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I. Introduction

The European Commission passed a regulation in June 2002, which mandates that listed companies in European Union (EU) countries prepare their first consolidated financial statements using International Financial Reporting Standards (IFRS) in 2005.[1] The primary orientations of IFRS and many national accounting standards in EU countries are considerably different; while IFRS are designed to provide information for investors to make sound economic decisions, local accounting standards in EU countries are often oriented toward creditor protection or better decision making by governments. Consequently, IFRS adoption in EU countries may fundamentally change accounting practices in these countries, and this, in turn, may significantly affect the information environment of their listed firms.

The purpose of this study is to document empirical evidence related to this issue. Specifically, we examine whether mandatory IFRS adoption significantly changes the analyst information environment (captured by analysts' forecast characteristics) and public information environment (captured by the information content of annual earnings announcements and its importance relative to the total information environment of the firm) for listed firms in European countries. In comparison with many local accounting standards, IFRS require that firms provide greater disclosures, recognize more balance-sheet items, and use more fair value measurements. While these factors may enhance analysts' ability to predict firms' future cash flows and improve the information content of earnings, it is possible that they do the opposite in practice. For instance, extensive use of fair value

[1]The only exceptions are that individual member states can permit companies already reporting under full (not reconciliation) US GAAP (as a result of being listed with the US SEC or other exchanges requiring US GAAP), and those companies that have only listed debt, to postpone adoption of IFRS until 2007. However, should a company preparing full US GAAP decide to switch in 2007 to IFRS to avoid dual financial reporting systems, IFRS financial statements are required for at least three years (2007, 2006, and 2005). An additional two years of summary and selected IFRS information is recommended (2003 and 2004).

accounting may lead to more measurement errors and greater managerial discretion, which could result in less accurate earnings forecasts and less informative earnings. Therefore, the net information effect of mandatory IFRS adoption is ultimately an empirical issue.

We use financial analysts' earnings forecast errors and dispersion as the two proxies for the analyst information environment. Decreased forecast errors and dispersion after IFRS adoption suggest an improved analyst information environment. With regard to the public information environment, our first proxy is the information content of a firm's annual earnings announcement, measured by the 3-day abnormal return variance around the earnings announcement date. A higher abnormal return variance indicates a more informative earnings announcement (e.g., Warner et al. 1988; Landsman and Maydew 2002; DeFond et al. 2007). Our second proxy is the relative importance of the annual earnings announcement to the total information environment of the firm's fourth quarter, as captured by the abnormal R^2 developed by Ball and Shivakumar (2007). The abnormal R^2 is adjusted R^2 from regressing the firm's stock return in the fourth quarter on its return in the earnings announcement window less expected R^2, assuming that daily returns are identically and independently distributed over the fourth quarter. A higher abnormal R^2 indicates a more informative earnings announcement relative to the firm's total value-relevant information in the fourth quarter. Using a group of mandatory adopters from seventeen European countries, we find that analysts' earnings forecast errors decrease significantly, and the forecast dispersion decreases marginally in the post-IFRS period. We also find that the abnormal return variance and abnormal R^2 increase significantly in the post-IFRS period.

To further shed light on the information effects of the IFRS regulation, we also examine the change in the information environment around 2005 for firms that voluntarily adopted IFRS before 2005. Although these voluntary adopters did not switch accounting standards in 2005, there are reasons to suggest that the IFRS regulation may also influence

these firms' information environments. Because IFRS were coded into law in 2005, governments and auditors are likely to monitor and enforce firms' compliance with IFRS more effectively and strictly during and after 2005 than before 2005. This makes it more difficult and costly for voluntary firms to be a "label" adopter during and after 2005, which in turn may improve their information environments. Also, the IFRS regulation is likely to increase the comparability of financial information across firms, providing more information sources for analysts and investors. Consequently, the regulation may affect analysts' forecast characteristics and investors' reaction to earnings announcements of voluntary adopters. Our empirical results indicate that analysts' earnings forecast errors and dispersion are lower and the abnormal return variance is higher in the period 2005-2006 than in the period 2003-2004 for voluntary firms. There is no significant change for the abnormal R^2. Our results also indicate that the information effects of the IFRS regulation are not significantly different between mandatory and voluntary adopters in any of the four measures.

In general, our results show that the IFRS regulation is significantly associated with an improved information environment not only for firms that adopted IFRS under the mandatory requirement in 2005 but also for firms that voluntarily adopted IFRS before 2005. While these results are consistent with the assertion that IFRS rules and strong enforcement associated with the regulation together effectively improved the firm's information environment, there is an alternative interpretation to these results. That is, our findings of an improved information environment in the period after the IFRS regulation may reflect the time trend of the increased demand for transparent financial reporting rather than the effects of the regulation. To examine whether this is the case, we examine the change in information environment for mandatory firms around 2001, 2002, and 2003. If there is a time trend of improvement in the information environment regardless of the IFRS regulation, we should observe a pattern of improvement around these years similar to that around 2005. However,

our results do not support this explanation.

Another concern related to our results is that the two findings, improved analyst forecast accuracy and increased information content of earnings announcements, are inconsistent with the conventional wisdom that more accurate analyst forecasts should lead to lower rather than higher information content of earnings announcements. We argue that earnings forecasted by analysts and reported by the Institutional Brokers' Estimate System (IBES) differ from those reported by firms, and propose that the increase in the information content of earnings announcements in the post-IFRS period is primarily driven by earnings components that are not included in analysts' earnings forecasts. To test the proposition, we decompose earnings surprises into two components: unexpected IBES earnings and unexpected non-IBES earnings. We then compare the value relevance across the pre- and post-IFRS periods for these two components using an event study design. Our results show that there is no significant change in the value relevance of the unexpected IBES earnings across the pre- and post-IFRS periods, but that the value relevance of the unexpected non-IBES earnings increases marginally. We also compare the association between annual stock returns and IBES earnings and non-IBES earnings across the pre- and post-IFRS periods, and find that the increase in the value relevance is insignificant for IBES earnings, but significant for non-IBES earnings. These results are generally consistent with our proposition.

Finally, we examine the effects of mandatory IFRS adoption across different countries and legal origins. Although our sample countries are all from Europe, considerable differences exist in some institutional factors that have been identified by prior studies as significantly influencing a country's accounting practices (e.g., Ball et al. 2000; Guenther and Young 2000; Leuz et al. 2003). Consequently, the effects of mandatory IFRS adoption on firms' information environments may differ across countries. Overall, we find that for firms

in common law countries, mandatory IFRS adoption is negatively associated with analysts' earnings forecast errors and dispersion, and positively associated with the information content of a firm's annual earnings announcement. The change in the relative importance of earnings announcements to the total information environments, however, is not significant, which suggests that the total information environments of these firms have also improved in the post-IFRS years. For code law countries, while we do not find significant analyst information effects, we find a significant increase in the information content of annual earnings announcements and their importance relative to the total information environments of firms. These results suggest that the improvement in the value relevance of earnings announcements is greater than the improvement in the total information environment in the post-IFRS years.

This study makes several contributions. First, many countries adopted IFRS with the primary intention to improve information environments; hence, the effect of IFRS adoption on information environments is not only an important issue for academic research, but also has important practical implications. Our study provides empirical evidence related to this important issue. Second, as pointed out by Leuz and Wysocki (2007), the general regulatory literature focuses mostly on the product market, and little is known about the effect of mandatory changes in the setting of financial reporting and disclosure. The IFRS regulation is, arguably, one of the most important financial regulations in recent years. Thus, our findings contribute to the regulation literature.

The rest of the paper proceeds as follows. We review the related literature and discuss our research questions in section 2. In section 3, we describe our sample and data sources. We present research designs and empirical results in section 4, and perform additional tests in section 5. Finally, we conclude the paper in section 6.

2. Literature review and research questions

2.1 Related literature

The impacts of voluntary IFRS adoption have been examined in many studies. For example, Ashbaugh and Pincus (2001) use 80 firms that adopted International Accounting Standards (IAS, the name used before 2001) during the 1990-1993 period to examine the analyst information effects of IAS adoption, and find that analysts' earnings forecast errors decrease after IAS adoption. Hung and Subramanyam (2007) use 80 German voluntary adopters from 1998 to 2002 to examine whether earnings are more value relevant under IAS than under German accounting standards. They find that IAS earnings are more transitory and not more value relevant than earnings under German accounting standards. Covrig et al. (2007) find that foreign mutual funds ownership is significantly higher for IFRS adopters, which suggests that IFRS adoption may improve capital allocation efficiency.

In a recent study, Daske et al. (2007a) examine the effects of voluntary IFRS adoption on a firm's cost of capital and stock liquidity. They find that the general adoption effects are modest, but that the adoption effects are greater for "serious" adopters than for "label" adopters. Some studies assess the market's perception of the net benefits or costs of IFRS adoption by examining market reactions to several IFRS events. For example, Armstrong et al. (2007) use 3,265 firms from eighteen European countries and find positive reactions to events that increase the likelihood of IFRS adoption and negative reactions to events that reduce the likelihood of IFRS adoption in general. Christensen et al. (2007) find similar reactions for U.K. firms after controlling for the willingness of firms to adopt IFRS.

With the availability of data for firms that have adopted IFRS pursuant to the IFRS regulation, some researchers have started to investigate the effects of mandatory IFRS adoption. For example, Daske et al. (2007b) examine the effects of mandatory IFRS adoption on a firm's cost of capital, market liquidity, and Tobin's Q, and compare the differences between mandatory and voluntary adoption using firms from twenty six countries subject to

mandatory IFRS adoption in recent years. They find that IFRS adoption is associated with improved market liquidity and Tobin's Q, but the results for cost of capital are mixed. They also find that the magnitude of economic consequences is greater for voluntary adopters than for mandatory adopters.

2.2 Research questions

2.2.1 Information effects of mandatory IFRS adoption. In this study, we examine both analyst and public information effects. We use analysts' earnings forecast errors and dispersion as the two proxies for the analyst information environment. Prior research demonstrates that analysts' forecast dispersion is affected only by errors in private information (Barron et al. 1998). Lang and Lundholm (1996) argue that when a firm provides greater disclosure, analysts will place more weight on firm-provided public information in making forecasts, resulting in more accurate and consensus earnings forecasts. They find empirical evidence consistent with their argument. IFRS adoption may reduce analysts' forecast errors and dispersion for the following reasons. First, IFRS require firms to disclose much more information than do many national accounting standards in Europe. As reported by Ernst & Young (2006), 2005 financial statements of sixty five EU companies that are included in its survey are generally 20% to 30% greater in length than their 2004 financial statements. Second, IFRS place greater emphasis on information useful for economic decisions than do many local accounting standards. Consequently, financial reporting under IFRS may provide more useful information for analysts' forecasts.

Nevertheless, these positive effects are not guaranteed to occur in practice. It is even possible that IFRS adoption negatively impacts the analyst information environment. Because many fair values are estimated, IFRS adoption may introduce more estimation errors and create more opportunities for managerial discretion. In addition, fair value changes are often

included in income statements, resulting in more volatile earnings. More measurement errors and earnings manipulations and increased earnings volatility may reduce analysts' forecast ability, and lead to less accurate and more dispersed earnings forecasts. Therefore, the net effects of IFRS adoption on the analyst information environment constitute an empirical question.

The proxies of the public information environment are the information content of annual earnings announcements and their importance relative to the total information environments of firms. Similar to the case of the analyst information environment, IFRS adoption may also have intended or unintended effects on the public information environment. On the one hand, greater disclosures and more fair value measurements suggest more informative earnings, and hence a better public information environment. On the other hand, IFRS earnings may contain more measurement errors, managerial discretion and transient components, and hence be less value relevant (Hung and Subramanyam 2007). In addition, complex accounting rules under IFRS may turn the preparation of financial reports into a mere technical compliance exercise rather than a mechanism for effective communication. Therefore, we also view the net public information effects of IFRS adoption as an empirical issue.

2.2.2 Information effects of the IFRS regulation on voluntary adopters. Prior research argues that the effectiveness of regulations in financial reporting is heavily affected by the incentives of local preparers and enforcers (e.g., Ball 2006; Leuz 2006). When enforcement on the firm's compliance is weak, firms may adopt IFRS only on "label" or selectively use IFRS rules to pursue reporting purposes. Daske et al. (2007a) find that the effects of voluntary IFRS adoption on the cost of capital are weaker for "label" adopters than for "serious" adopters. When IFRS were coded into law in European countries in 2005, governments were more likely to create mechanisms to monitor firms' compliance and take

enforcement actions than when a small number of firms voluntarily adopted IFRS before 2005. For example, the EU passed the Transparency Directive in 2004 to establish disclosure requirements on an ongoing basis and facilitate IFRS compliance. Therefore, voluntary adopters are likely to face more scrutiny from auditors and government agencies during and after 2005 than before 2005, which suggests that the IFRS regulation may also affect voluntary adopters' accounting practices and hence their information environments.

In addition, one of the major benefits of the IFRS regulation is improved comparability of financial information across firms in EU countries. Voluntary firms may have more comparable firms after 2005 than before 2005. Thus, analysts of a voluntary firm may have more sources of information from its comparable firms to make earnings forecasts, which may affect their forecast accuracy and dispersion. For the same reason, investors may also have more information transferred from comparable firms, which may affect the value relevance of voluntary adopters' earnings announcements.

3. Sample and data sources

Our sample includes firms from seventeen European countries: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxemburg, the Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, and the U.K. Although Norway and Switzerland are not members of the EU and hence are not subject to the IFRS regulation, we include them in our sample as they also adopted IFRS in 2005 and have close economic ties with EU members. In contrast, although some Eastern European countries are subject to the IFRS regulation, firms from these countries are excluded from our sample because of the unavailability of data (e.g., earnings announcement date).

The original sample firms are obtained from Worldscope database. We require that sample firms have information on their IFRS adoption year, and 2,585 firms satisfy this

requirement. Firms that adopted IFRS in a fiscal year beginning on or after January 1, 2005 are mandatory adopters, and the remaining firms are voluntary adopters. We also require that firms have matched observations across the pre- and post-IFRS periods. For example, if a firm adopted IFRS in year 2005, then we require that it have observations for at least 2004 and 2005, or 2003 and 2006. For mandatory firms, post-IFRS (pre-IFRS) period is 2005-2006 (2003-2004) for those with the fiscal year ending in December, and 2006 (2005) for those with the fiscal year ending from January to November. For firms that voluntarily adopted IFRS before 2005, we use the notion of pre-period and post-period for the purpose of examining the effects of the IFRS regulation on these firms, and define the post-period as 2005-2006, and pre-period as 2003-2004.

Data on the annual earnings announcement date, number of analysts following, and mean and dispersion of analysts' earnings forecasts are collected from IBES. We obtain data on daily stock return from the Datastream database, and other variables from the Worldscope database. Such data requirements significantly reduce our sample size. The actual sample size varies in different tests due to the availability of data. The composition of the largest sample is presented in Table 1. As indicated, more than half of our sample firms are from the U.K., France, and Germany. Also, about 80% of the sample firms are mandatory adopters, and nearly half of the voluntary adopters are from Germany.

[Insert Table 1 about here]

Because we also examine the information effects of the IFRS regulation on voluntary adopters and compare the effects with those of mandatory adopters, we compare some firm characteristics across these two types of firms using 2006 data. The results are reported in Table 2. As indicated, voluntary IFRS adopters are larger firms, have more analysts following,

and are more likely to issue quarterly financial statements. However, mandatory adopters have a higher leverage ratio and greater growth potential, as reflected by the larger market-to-book value of equity. For earnings per share, the difference between the two groups is not statistically significant.

[Insert Table 2 about here]

4. Research designs and empirical results

4.1 Tests of analyst information effects of the IFRS regulation

The first proxy for the analyst information environment, analyst forecast errors, is measured as the absolute value of the difference between the mean value of analysts' most recent annual earnings forecasts and actual earnings reported by IBES, scaled by the stock price at the beginning of the period. The second proxy, the dispersion of earnings forecasts, is calculated as the standard deviation of analysts' most recent annual earnings forecasts, also scaled by the stock price at the beginning of the period. We compare these two variables across the pre- and post-IFRS periods, and the results are summarized in Panel A of Table 3. We find that analysts' forecast errors and dispersion are significantly lower in the post-IFRS period than in the pre-IFRS period for mandatory firms. These two variables are also significantly lower in the period 2005-2006 than in the period 2003-2004 for firms that voluntarily adopted IFRS before 2005.

[Insert Table 3 about here]

Our regression models for multivariate tests on the analyst information effects of the IFRS regulation are as follows:

$$FE\ (Disp)_{jt} = \beta_0 + \beta_1 Post_{jt} + \beta_2 Size_{jt} + \beta_3 Loss_{jt} + \beta_4 \Delta Earn_{jt} + \beta_5 DecEarn_{jt} + \beta_6 Horizon_{jt} + \beta_7 Analyst_{jt} + \beta_8 Qreport_{jt} + \varepsilon_{jt,} \quad (1)$$

where FE and Disp are analyst earnings forecast errors and dispersion, respectively. Post is a dummy equal to one if the year t is 2005 or 2006, and zero if it is 2003 or 2004 for mandatory firms with the fiscal year ending in December and for all the voluntary firms; and one if the year t is 2006, and zero if it is 2005 for mandatory firms with the fiscal year ending from January to November. We control for several factors in our analyses. First, we control for firm size (Size), which is the natural logarithm of the market value of equity. Second, we control for a list of earnings variables. Loss is a dummy equal to one if the firm reports negative earnings, and zero otherwise. ΔEarn is the change in earnings, deflated by the stock price at the beginning of the two years; and DecEarn is a dummy equal to one if the earnings change is negative, and zero otherwise. We control for these variables because loss firms or firms with large or negative earnings changes are more difficult to forecast. Third, we include the logarithm of the number of days between the analysts' last earnings forecast and the firm's earnings release day (Horizon) and a dummy indicating whether the firm issues quarterly financial reports (Qreport) in the model. A short Horizon and the issuance of quarterly reports are likely to increase analysts' forecast accuracy and consensus. Fourth, we include the number of analysts following (Analyst) to control for the firm's general information environment.

We winsorize all the variables at the 1% and 99% levels to mitigate the effects of outliers on our inferences. The descriptive statistics for the variables are presented in panel B of Table 3. The mean unsigned forecast error and dispersion are 0.022 and 0.012, respectively. About 11% of firm-year observations report a loss, and 31% of firm-year observations report

decreased earnings. The average number of analysts following is 8.035 and the log of average number of days between the last forecast and the earnings announcement is 2.771 (about 26 days). Also, about 54% of firm-year observations issue quarterly financial statements.

We first estimate the coefficients of equation (1) for mandatory adopters. We use OLS with clustered standard errors adjusted for time series dependence and heteroskedasticity to estimate coefficients of regression models in this study. Our results for equation (1) are summarized in Panel C of Table 3. We find that forecast errors are significantly lower in the post-IFRS period (coefficient on Post is -0.003, t-value is -2.38). Firms with loss, larger earnings change, negative earnings change, and longer forecast horizon are likely to have higher forecast errors, and that firms with more analysts following are likely to have lower forecast errors. Our results also indicate that the forecast dispersion decreases marginally in the post-IFRS period (coefficient on Post is -0.001, t-value is -1.78). It is positively associated with loss, the issuance of quarterly report, earnings change, earnings decrease, and forecast horizon, and negatively associated with firm size.

We next estimate equation (1) for voluntary adopters, and the results are also summarized in Panel C of Table 3. We find that both analysts' earnings forecast errors and dispersion decreased in the period 2005-2006 (For forecast errors, the coefficient on Post is -0.011, t-value is -2.09; for forecast dispersion, the coefficient on Post is -0.004, t-value is -2.40). For control variables, loss, earnings change, negative earnings change, and forecast horizon are all positively associated with forecast errors. Loss and earnings change are also positively associated with the forecast dispersion.

We then compare the effects of the IFRS regulation on the analyst information environment between mandatory and voluntary firms. To do so, we estimate the following equation:

$$FE\ (Disp)_{jt} = \beta_0 + \beta_1 Post_{jt} + \beta_2 Mand_j + \beta_3\ Post_{jt}*Mand_j + \beta_4 Size_{jt} + \beta_5 Loss_{jt} + \beta_6 \Delta Earn_{jt}$$
$$+ \beta_7 DesEarn_{jt} + \beta_8 Horizon_{jt} + \beta_9 Analyst_{jt} + \beta_{10} Qreport_{jt} + \varepsilon_{jt}, \quad (2)$$

where Mand is a dummy variable equal to one if the firm is a mandatory adopter and zero if it is a voluntary adopter. Post*Mand is the interaction between Post and Mand, which captures the difference in IFRS adoption effects between mandatory and voluntary firms. We find that the coefficient on the interaction term is not significantly different from zero in both tests of forecast errors and dispersion, which suggests that the analyst information effects of the IFRS regulation are not significantly different between the two types of firms.

4.2 Tests of public information effects of the IFRS regulation

4.2.1 Tests of information content of earnings announcements. The information content of annual earnings announcements is measured as the abnormal return variance of the 3-day earnings announcement window. Similar to prior studies (e.g., DeFond et al. 2007), we calculate the abnormal return variance as the ratio of squared prediction errors from the market model during the days -1 to +1 earnings release window, with day 0 being the release day, to the average squared prediction errors from the market model over days -120 through -21. The market model for each firm is also estimated using data from days -120 to -21. A higher abnormal return variance indicates a greater information content of the earnings announcement (Beaver 1968; Warner et al. 1988; Landsman and Maydew 2002; DeFond et al. 2007). Information on this variable in the pre- and post-IFRS periods and a comparison of the two periods are presented in Panel A of Table 4. For mandatory firms, the mean abnormal return variance in the pre- and post-adoption periods is 2.788 and 3.853, respectively, and the difference is statistically significant. For voluntary adopters, the abnormal return variance also increased significantly, from 2.021 in the period 2003-2004 to 3.075 in the period

2005-2006.

[Insert Table 4 about here]

The model for multivariate test is as follows:

$$Rvar_{jt} = \beta_0 + \beta_1 Post_{jt} + \beta_2 Size_{jt} + \beta_3 Analyst_{jt} + \beta_4 UE_{jt} + \beta_5 Loss_{jt} + \beta_6 Qreport_{jt} + \varepsilon_{jt} \quad (3)$$

Rvar is the abnormal return variance; and UE is the absolute value of the difference between the mean of analysts' most recent annual earnings forecasts and actual earnings reported by IBES, scaled by the mean forecast value. The other variables are defined as before. The descriptive statistics for the variables used in this test are summarized in panel B of Table 4. As indicated, the mean of the abnormal return variance is 3.167, with maximum value 29.881 and minimum value 0.013.

The regression results for equation (3) are reported in Panel C of Table 4. For mandatory adopters, we find that the abnormal return variance increases significantly in the post-IFRS years. We also find that firms followed by more analysts are more likely to have informative earnings announcements, whereas firms issuing quarterly reports are likely to have less informative earnings announcements. Loss is negatively and marginally associated with the abnormal return variance. With regard to voluntary adopters, our results show that the abnormal return variance increases significantly in the period 2005-2006, and firm size is positively associated with the information content of annual earnings announcements.

We use the following model to examine whether the public information effects of the IFRS regulation as proxied by the change in the abnormal return variance differ between mandatory and voluntary adopters:

$$Rvar_{jt} = \beta_0 + \beta_1 Post_{jt} + \beta_2 Mand_j + \beta_3\ Post_{jt}*Mand_j + \beta_4 Size_{jt} + \beta_5 Analyst_{jt} + \beta_6 UE_{jt} + \beta_7 Loss_{jt} + \beta_8 Qreport_{jt} + \varepsilon_{jt} \quad (4)$$

All the variables are defined as before. The regression results are reported in Panel C of Table 4. Similar to the tests of analyst information effects, we find that the change in the information content of earnings announcements around 2005 is not significantly different between the two types of firms.

4.2.2 Tests of information content of earnings announcements relative to total information environments of firms. While the abnormal return variance captures the average daily information content within the earnings announcement window relative to that of non-announcement days, it may exaggerate the economic importance of the earnings announcement. Ball and Shivakumar (2007) point out that the 67% higher squared unexpected price change and 33% higher trading volume in the earnings release week than in non-release weeks identified by Beaver (1968) are in the order of only 5% and 2%, respectively, of total quarterly price behavior. To see whether the IFRS regulation changes the relative importance of earnings announcements in the total value-relevant information environment, we also use the abnormal R^2 as our proxy for the public information environment.

Using the methodology developed by Ball and Shivakumar (2007),[2] we regress the logarithms of buy-and-hold returns of the firm's fourth quarter (days -58 to +7) on the logarithms of buy-and-hold returns of the firm's annual earnings announcement window (days -1 to +1) to obtain the adjusted R^2. We then calculate the abnormal R^2, which is equal to

[2] Ball and Shivakumar (2007) measure the proportion of the total information incorporated in share prices over a year that is associated with the four quarterly earnings announcements during the year for US firms. Because our sample firms are non-US firms, and data on the earnings announcement day for quarterly reports are not available for many firms, we measure the proportion of the total information incorporated in share prices over the fourth quarter that is associated with the annual earnings announcement.

the adjusted R^2 less the expected R^2, to capture the economic significance of the annual earnings announcement. The expected R^2 is calculated assuming that daily returns are identically and independently distributed.[3] We require that our sample firms have the same reporting frequency across the pre- and post-IFRS periods to control for the factor that the reporting frequency may affect the economic importance of the annual earnings announcement. A higher abnormal R^2 indicates that more value-relevant information is disclosed by the annual earnings announcement relative to the total value-relevant information in the fourth quarter.

The results for the abnormal R^2 tests are presented in Table 5. For mandatory firms, the abnormal R^2 is 0.034 in the pre-IFRS period and 0.076 in the post-IFRS period. We employ the randomization method discussed in Noreen (1989) to test the difference in the abnormal R^2 across the two periods. First, we put all the pre-IFRS observations at the top of the columns and all the post-IFRS observations at the bottom of the columns. The difference between the abnormal R^2 using the bottom half of the observations (0.076) and that using the top half of the observations (0.034) is 0.042. Next, we assign a random number to each pair of observations, and sort the sample based on random numbers. We estimate the abnormal R^2 using the top half of the observations and the bottom half of the observations separately, and calculate their difference (the abnormal R^2 from the bottom half of the observations minus that from the top half of the observations). We repeat this randomization process 1,000 times, and keep track of whether the difference in the randomized abnormal R^2 is greater than 0.042. We find that the case in which the difference in the randomized abnormal R^2 is greater than 0.042 occurs 42 times. According to Noreen (1989), the p-value in this test is equal to one plus 42 divided by 1,001, which equals 0.043 (one-tailed). Therefore, the abnormal R^2 in the post-IFRS period is significantly higher than that in the pre-IFRS period, suggesting that the

[3] Expected R^2 is 0.045 (3/66).

firm's annual earnings announcement becomes more important for its total information environment of the fourth quarter in the post-IFRS period.

[Insert Table 5 about here]

For voluntary adopters, the abnormal R^2 is 0.018 in the period 2003-2004 and 0.052 in the period 2005-2006. Using the same randomization procedure, we find that these two abnormal R^2s are not significantly different. We next examine whether the change in the abnormal R^2 across the pre- and post-IFRS period for mandatory firms (0.042) significantly differs from that across 2003-2004 and 2005-2006 for voluntary firms (0.034). The result based on the randomization test shows that they are not statistically different.

To summarize, our results indicate that there are significant improvements in the analyst information environment for both mandatory and voluntary adopters after the IFRS regulation became effective in 2005. With regard to the public information environment, the information content of annual earnings announcements also improves for both types of firms, but the relative importance of earnings announcements to the total information environment improves only for mandatory adopters. In addition, none of the four measures of information effect of the IFRS regulation are statistically different between mandatory and voluntary samples. Such results are consistent with those from Daske et al. (2007b), who also document economic consequences of the IFRS regulation for voluntary adopters.

5. Additional Tests

5.1 Issue of time trend

There are alternative explanations to the finding that the information effects of the IFRS regulation are similar for mandatory and voluntary adopters. One possible explanation

is that enforcement of IFRS compliance became stronger during and after 2005, and this resulted in a significant improvement in the information environment for voluntary adopters. Another possible explanation is that our results reflect the increased market demand for more transparent financial reporting over time rather than IFRS adoption. To address this issue, we compare analyst forecast errors, forecast dispersion, abnormal return variance, and abnormal R^2 around 2001 (1999-2000 vs. 2001-2002), 2002 (2000-2001 vs. 2002-2003) and 2003 (2001-2002 vs. 2003-2004) for mandatory adopters. If our results around 2005 are driven by a time trend regardless of the IFRS regulation, then we should observe a similar pattern of improvement in the information environment around 2001, 2002, and 2003. The results are presented in Table 6. For simplicity, we report only the estimated coefficients on the variable Post and their p-values.

[Insert Table 6 about here]

Our results indicate that forecast errors, forecast dispersion and the abnormal return variance decreased, and the abnormal R^2 was statistically unchanged around 2001. When comparisons are made around 2002, forecast errors and dispersion increased; the abnormal return variance was not significantly changed; and the abnormal R^2 decreased. Finally, forecast errors and the abnormal return variance increased, and forecast dispersion and the abnormal R^2 were not significantly changed around 2003. In general, the above patterns around 2001, 2002 and 2003 are not consistent with those around 2005. Therefore, our results do not support the time trend explanation.

5.2 Reconciliation of results of improved analyst forecast accuracy and increased information content of earnings announcements

Our two important findings, decreased earnings forecast errors and improved information content of annual earnings announcements in the post-IFRS period, at first glance, seem inconsistent with each other. More accurate earnings forecasts by analysts should reduce rather than increase the information content of earnings announcements. We argue that earnings forecasted by analysts and reported by IBES are not the same as those reported by firms. In general, analysts include earnings components that are useful for stock valuation in their earnings forecasts. However, analysts may not be able to include all the useful items in their reports. For some items, such as impairment losses on goodwill and fair value of stock options, analysts may not have enough information to make predictions. Therefore, it is possible that analysts may exclude some earnings items that are useful for valuation but unpredictable by outsiders from their earnings forecasts. Consequently, it is possible that IFRS adoption improves analysts' forecast accuracy, and also improves the value relevance of earnings components that are excluded from analysts' forecasts.

To test whether this is the case, we decompose reported earnings into two components: IBES earnings, which include all of the earnings items that are in analysts' earnings forecasts, and non-IBES earnings, which constitute the remaining portion of the reported earnings. We calculate the proportion of non-IBES earnings to firm-reported earnings, and report the results in panel A of Table 7. We find that firm-reported earnings are smaller on average than IBES earnings. We also find that the non-IBES earnings decrease in the post-IFRS period.

[Insert Table 7 about here]

We use an event study methodology to examine whether IFRS adoption changes the value relevance of the two earnings components. Our regression model is as follows:

$$CAR_{jt} = \beta_0 + \beta_1 Post_{jt} + \beta_2 UIE_{jt} + \beta_3 UNIE_{jt} + \beta_4 Post_{jt}*UIE_{jt} + \beta_5 Post_{jt}*UNIE_{jt} + \beta_6 Loss_{jt}$$

$$+ \beta_7 Size_{jt} + \beta_8 Qreport_{jt} + \varepsilon_{jt}, \quad (5)$$

where, CAR is the cumulative abnormal stock returns in the days -1 to +1 earnings announcement window. UIE is the unexpected IBES earnings, calculated as the actual earnings per share reported by IBES less the mean value of the forecasts scaled by the stock price at the beginning of the period. UNIE is the unexpected non-IBES earnings, calculated as the change in the difference between firm-reported earnings and IBES-reported earnings per share across the two years. This variable is also scaled by the stock price at the beginning of the period. The other variables are defined as before.

The regression results for equation (5) are presented in panel B of Table 7. We find that the coefficient on the interaction between Post and the unexpected change in non-IBES earnings is positive and marginally significant, which suggests that the unexpected non-IBES earnings became more value relevant in the post-IFRS years. However, we do not find such results for the unexpected IBES earnings.

We also examine the association between IBES earnings and non-IBES earnings and the annual stock returns. Our model is as follows:

$$RET_{jt} = \beta_0 + \beta_1 Post_{jt} + \beta_2 IE_{jt} + \beta_3 NIE_{jt} + \beta_4 Post_{jt} * IE_{jt} + \beta_5 Post*NIE_{jt} + \beta_6 Loss_{jt}$$
$$+\beta_7 Size_{jt} + \varepsilon_{jt}, \quad (6)$$

where, RET is the firm's annual stock return. IE is the earnings per share reported by IBES scaled by the stock price at the beginning of the period, and NIE is the difference between firm-reported earnings per share and IBES earnings per share, also scaled by the stock price at the beginning of the period. The other variables are defined as before.

We find that the firm's stock returns are significantly associated with IBES earnings, but not with non-IBES earnings, in the pre-IFRS period, which is consistent with the assertion

that analysts' earnings reports are focused on items that affect share prices. However, the association between stock returns and non-IBES earnings improves significantly in the post-IFRS period. These results are consistent with the proposition that IFRS adoption increases the value relevance of earnings components that are not included in analysts' earnings forecasts.

5.3 IFRS adoption effects for different countries and legal origins

There are considerable differences in some institutional factors across our sample countries, such as legal origin, financial system, and the degree of financial-tax accounting alignment. For example, the U.K. is a common law country with English legal origin, a market-oriented financial system and separated financial and tax accounting, and Germany is a code law country with German legal origin, a bank-oriented financial system and highly aligned financial and tax accounting. Prior studies have found that these factors can significantly influence a country's financial reporting features (e.g., Ball et al. 2000; Guenther and Young 2000; Leuz et al. 2003). Thus, it is possible that differences in these institutional factors may also affect the implementation of IFRS and hence the effects of IFRS adoption.

In addition, national accounting standards vary across our sample countries. Bae et al. (2007) compare twenty one accounting items between national accounting standards and IFRS in 2001, and assign a score to each country, which equals the number of accounting items that are different from IFRS rules. For our sample countries, the U.K. and Ireland have the lowest score, 1, and Luxembourg has the highest score, 18. The average score is 1 for English legal origin countries, 10.75 for Scandinavian legal origin countries, 11.67 for German legal origin countries, and 13.13 for French legal origin countries. Such differences in national accounting standards before IFRS adoption are likely to impact IFRS adoption effects.

The results on the information effects for each sample country are summarized in panel A of Table 8. Because Austria has only one and Luxemburg has no mandatory adopter in our sample, we exclude these two countries from the country-level test. For simplicity, we report only the estimated coefficient on the variable Post for each regression, which indicates the change in the information environment across the pre- and post-IFRS periods, and its two-tailed p-value for tests related to forecast errors, forecast dispersion, and the abnormal return variance. For tests related to the abnormal R^2, we report the difference in the abnormal R^2 across the pre- and post-IFRS periods and the one-tailed p-value, obtained from randomization tests.

[Insert Table 8 about here]

Our country-specific results show that the U.K. is the only country that experienced a significant reduction in forecast errors and dispersion in the post-IFRS period. The results also show that Denmark, France, Italy, the Netherlands, Sweden, and the U.K. had at least a marginal increase in the abnormal return variance, and Denmark, Finland, France, Greece, Italy, the Netherlands, and Sweden had at least a marginal improvement in the relative importance of annual earnings announcements to the total information environment in the post-IFRS period.

We then classify our sample countries into four groups based on legal origin. The U.K. and Ireland have an English legal origin, and Belgium, France, Greece, Italy, the Netherlands, Portugal, and Spain have a French legal origin. Countries with German legal origin include Germany and Switzerland, and countries with Scandinavian legal origin include Denmark, Finland, Norway, and Sweden. The information effects of mandatory IFRS adoption based on each legal origin are reported in panel B of Table 8. Interestingly, we find that our sample

countries with English legal origin have lower forecast errors and dispersion, and higher abnormal return variance, but an unchanged abnormal R^2 in the post-IFRS period. Sample countries with French legal origin have lower forecast errors, and higher abnormal return variance and abnormal R^2. There are no significant changes for any of the four measures of information effect for sample countries with German legal origin. Finally, countries with Scandinavian legal origin show increases in the two measures of public information effect and a marginal decrease in the dispersion of analysts' earnings forecasts.

Finally, we divide our sample based on common law and code law. The common law sample includes the U.K. and Ireland, and the code law sample includes countries with French, German, and Scandinavian legal origins. The results are reported in panel C of Table 8. The results for the common law sample are the same as those for countries with English legal origin. The results for code law countries show significantly higher abnormal return variance and abnormal R^2 in the post-IFRS period, but no change in forecast errors or dispersion.

To summarize, our results suggest that mandatory IFRS adoption by firms in common law countries is significantly associated with an improved analyst information environment, reflected by lower earnings forecast errors and dispersion, and an improved public information environment, reflected by the greater information content of annual earnings announcements. The lack of change in the importance of the earnings announcement relative to the total information environment suggests that the total information environments of these firms also improved in the post-IFRS period. Because analysts' forecast characteristics are an important part of the total information environment, our results for the lack of significant change in the abnormal R^2 are consistent with the results of improved performance in analysts' forecasts.

For firms from code law countries, our results indicate that mandatory IFRS adoption is

significantly associated with an improved public information environment in terms of the information content of annual earnings releases. The increase in the abnormal R^2 suggests that the total information environments of firms did not improve to the same degree as the information content of earnings announcements. Similar to the argument made for firms in common law countries, this result is consistent with the findings that the analyst information environment did not improve significantly after IFRS adoption in code law countries.

6. Conclusion

We examine whether mandatory IFRS adoption in 2005 by European countries significantly affects their listed firms' analyst and public information environments. Similar to prior studies, we also examine the information effects of the IFRS regulation for firms that voluntarily adopted IFRS before 2005, and compare the results between mandatory and voluntary adopters. In addition, we investigate the adoption effects across countries and legal origins. We use financial analysts' earnings forecast errors and dispersion as the two proxies for the analyst information environment, and the abnormal return variance and abnormal R^2 as the two proxies for the public information environment.

Our results generate several important findings. First, we find that mandatory IFRS adoption is significantly associated with decreased analysts' earnings forecast errors and dispersion and increased abnormal return variance and abnormal R^2, which suggests that the analyst and public information environments improved for mandatory firms in the post-IFRS period. Second, we find that voluntary adopters experienced similar changes in forecast errors, forecast dispersion, and the abnormal return variance around 2005. Third, there is no significant difference in any of the four measures of information effect of the IFRS regulation between mandatory and voluntary adopters. Additional analyses suggest that the similar effects of the IFRS regulation for mandatory and voluntary adopters around 2005 are unlikely

driven by a time trend. Also, we show that the improvement in the information content of earnings announcements in the post-IFRS period is primarily driven by the improvement in the value relevance of earnings components that are excluded from analysts' earnings forecasts. Finally, we find different adoption effects across countries and legal origins. In particular, common law countries show significant improvements in both analyst and public information environments, and code law countries show significant improvements only in the public information environment.

References

ASHBAUGH, H. AND M. PINCUS. "Domestic Accounting Standards, International Accounting Standards, and the Predictability of Earnings." *Journal of Accounting Research* 39 (2001): 417-434.

ARMSTRONG, C.; M. E. BARTH; A. JAGOLINZER; AND E. J. RIEDL. "Market Reaction to Events Surrounding the Adoption of IFRS in Europe." Working paper, Harvard Business School and Stanford University, 2007.

BAE, K. H.; H. TAN; AND M. WELKER. "International GAAP Differences: The Impact on Foreign Analysts." Working paper, Queen's University and University of Northern British Columbia, 2007.

BALL, R. "International Financial Reporting Standards (IFRS): Pros and Cons for Investors." *Accounting and Business Research,* Special Issue: International Accounting Policy Forum (2006): 5-29.

BALL, R.; S. P. KOTHARI; AND A. ROBIN. "The Effect of International Institutional Factors on Properties of Accounting Earnings." *Journal of Accounting and Economics* 29 (2000): 1-51.

BALL, R. AND L. SHIVAKUMAR. "How Much New Information is there in Earnings?" Working paper, University of Chicago and London Business School, 2007.

BARRON, O.; O. KIM; S. C. LIM; AND D. E. STEVENS. "Using Analysts' Forecasts to Measure Properties of Analysts' Information Environment." *The Accounting Review* 73 (1998): 421-433.

BEAVER, W. "The Information Content of Annual Earnings Announcements." *Journal of Accounting Research* 6 (1968): 67-92.

CHRISTENSEN, H. B.; E. LEE; AND M. WALKER. "Cross-sectional Variation in the Economic Consequences of International Accounting Harmonization: the Case of Mandatory IFRS Adoption in the UK." Working paper, Manchester Business School, 2007

COVRIG, V.; M. DEFOND; AND M. HUNG. "Home Bias, Foreign Mutual Fund Holdings, and Voluntary Adoption of International Accounting Standards." *Journal of Accounting Research* 45 (2007): 41-70.

DASKE, H.; L. HAIL; C. LEUZ; AND R. S. VERDI. "Adopting a Label: Heterogeneity in the Economic Consequences of IFRS Adoption." Working paper, University of Mannheim, University of Pennsylvania, University of Chicago, and MIT, 2007a.

DASKE, H.; L. HAIL; C. LEUZ; AND R. S. VERDI. "Mandatory IFRS Reporting around the World: Early Evidence on the Economic Consequences." Working paper, University of Mannheim, University of Pennsylvania, University of Chicago, and MIT, 2007b.

DEFOND, M.; M. HUNG; AND R. H. TREZEVANT. "Investor Protection and the Information Content of Annual Earnings Announcements: International Evidence." *Journal of Accounting and Economics* 43 (2007): 37-67.

ERNST & YOUNG L.L.P. "IFRS: Observations on the Implementation of IFRS." 2006.

GUENTHER, D. A., AND D. YOUNG. "The Association Between Financial Accounting Measures and Real Economic Activity: a Multinational Study." *Journal of Accounting and Economics* 29 (2000): 53-72.

HUNG, M., AND K. R. SUBRAMANYAM. "Financial Statement Effects of Adopting International Accounting Standards: The Case of Germany." *Review of Accounting Studies* 12 (2007): 623-657.

LANDSMAN, W. R. AND E. L. MAYDEW. "Has the Information Content of Quarterly Earnings Announcements Declined in the Past Three Decades?" *Journal of Accounting Research* 40 (2002): 797-808.

LANG, M. AND R. LUNDHOLM. "Corporate Disclosure Policy and Analyst Behavior." *The Accounting Review* 71 (1996): 467-492.

LEUZ, C. "Cross Listing, Bonding and Firms' Reporting Incentives: A Discussion of Lang, Raedy and Wilson." *Journal of Accounting and Economics* 42 (2006): 285-299.

LEUZ, C.; D. NANDA; AND P. D. WYSOCKI. "Earnings Management and Investor Protection: an International Comparison." *Journal of Financial Economics* 69 (2003): 505-527.

LEUZ, C. AND P. D. WYSOCKI. "Economic Consequences of Financial Reporting and Disclosure Regulation: What Have We Learned?" Working paper, University of Chicago and Massachusetts Institute of Technology, 2007

NOREEN, E. *Computer intensive methods for testing hypotheses: an introduction.* New York: John Wiley & Sons, Inc, 1989.

WARNER, J.; R. WATTS; AND K. WRUCK. "Stock Prices and Top Management Changes." *Journal of Financial Economics* 20 (1988): 461-492.

Table 1

Distribution of sample observations [a]

	Firms		Mandatory Adopters		Voluntary Adopters		Firm-year observations	
Country	Frequency	Percent	Frequency	Percent	Frequency	Percent	Frequency	Percent
Austria	17	1.3%	1	0.1%	16	6.0%	58	1.3%
Belgium	46	3.1%	29	2.5%	17	6.4%	156	3.4%
Denmark	43	2.9%	34	2.9%	9	3.4%	136	3.0%
Finland	62	4.2%	56	4.8%	6	2.3%	232	5.0%
France	193	13.0%	190	16.2%	3	1.1%	600	13.0%
Germany	153	13.0%	21	1.8%	132	49.8%	510	11.1%
Greece	32	2.2%	28	2.4%	4	1.5%	106	2.3%
Ireland	13	0.9%	13	1.1%	0	0.0%	42	0.9%
Italy	91	6.1%	90	7.7%	1	0.4%	308	6.7%
Luxemburg	5	0.3%	0	0.0%	5	1.9%	18	0.4%
Netherlands	53	3.6%	48	4.1%	5	1.9%	204	4.4%
Norway	52	3.5%	48	4.1%	4	1.5%	178	3.9%
Portugal	15	1.0%	12	1.0%	3	1.1%	50	1.1%
Spain	55	3.7%	55	4.7%	0	0.0%	208	4.5%
Sweden	100	6.8%	99	8.4%	1	0.4%	356	7.7%
Switzerland	73	5.1%	17	1.4%	56	21.1%	260	5.7%
UK	435	29.4%	432	36.8%	3	1.1%	1,178	25.6%
Total	1,438	100%	1,173	100%	265	100%	4,600	100%

[a] Mandatory adopters are firms that adopted IFRS in a fiscal year beginning on or after January 1, 2005. Voluntary adopters are firms that adopted IFRS voluntarily before 2005.

Table 2

Firm Characteristics for Mandatory and Voluntary IFRS Adopters in Year 2006

Variables	Mandatory sample	Voluntary sample	Difference	p-value (two-tailed)
Naturual logrithm of market value of equity	6.973	7.630	-0.657	0.000
Earnings per share/stock price	0.030	0.027	0.003	0.737
Leverage (total liability/total assets)	0.573	0.524	0.049	0.001
Market to book value of equity	3.370	2.907	0.033	0.015
# of analysts following	8.717	11.067	-2.350	0.004
% of firms issuing quarterly reports	43.6%	78.3%	-34.7%	0.000

Table 3

The Effects of Mandatory IFRS Adoption on Analysts' Forecasting Performance [a]

Panel A: Univariate Test

Mandatory sample[b]	Pre-IFRS	Post-IFRS	Difference	p-value
Forecast errors	0.030	0.022	-0.008	0.000
Forecast dispersion	0.016	0.013	-0.003	0.012
Voluntary sample	**2003-2004**	**2005-2006**	**Difference**	**p-value**
Forecast errors	0.036	0.020	-0.016	0.009
Forecast dispersion	0.017	0.012	-0.005	0.003

Panel B: Descriptive Statistics of the Variables for the Multivariate Test[c]

Variables	Mean	Median	Min.	Max.	Std.Dev.
FE	0.022	0.007	0.000	0.348	0.049
Disp	0.012	0.006	0.000	0.152	0.022
Size	6.748	6.580	3.511	11.088	1.691
Loss	0.106	0.000	0.000	1.000	0.308
Earncha	0.038	0.013	-0.458	1.107	0.162
Decearn	0.310	0.000	0.000	1.000	0.463
Horizon	2.771	2.890	0.000	5.598	0.903
Analyst	8.035	6.000	2.000	30.000	6.499
Qreport	0.536	1.000	0.000	1.000	0.499

Panel C: Multivariate Test for the Effect of Mandatory IFRS Adoption on Analyst Forecasts[d]

$$FE\ (Disp)_{jt} = \beta_0 + \beta_1 Post_{jt} + \beta_2 Size_{jt} + \beta_3 Loss_{jt} + \beta_4 \Delta Earn_{jt} + \beta_5 DecEarn_{jt} + \beta_6 Horizon_{jt} \quad (1)$$
$$+ \beta_7 Analyst_{jt} + \beta_8 Qreport_{jt} + \varepsilon_{jt}$$

$$FE\ (Disp)_{jt} = \beta_0 + \beta_1 Post_{jt} + \beta_2 Mand_j + \beta_3\ Post_{jt}*Mand_j + \beta_4 Size_{jt} + \beta_5 Loss_{jt} + \beta_6 \Delta Earn_{jt} \quad (2)$$
$$+ \beta_7 DesEarn_{jt} + \beta_8 Horizon_{jt} + \beta_9 Analyst_{jt} + \beta_{10} Qreport_{jt} + \varepsilon_{jt}$$

	FE			Disp		
	Mandatory	Voluntary	Mandatory vs. Voluntary	Mandatory	Voluntary	Mandatory vs. Voluntary
Post	-0.003	-0.011	-0.010	-0.001	-0.004	-0.004
	(-2.38)**	(-2.09)**	(-1.86)*	(-1.78)*	(-2.40)**	(-1.84)*
Mand	--	--	-0.004	--	--	-0.001
	--	--	(-0.79)	--	--	(-0.40)
Mand*Post	--	--	0.006	--	--	0.002
	--	--	(1.15)	--	--	(1.13)

Size	0.001	-0.001	0.001	-0.001	-0.001	-0.001
	(0.76)	(-0.097)	(0.58)	(-2.38)**	(-1.00)	(-2.55)**
Loss	0.051	0.064	0.053	0.021	0.034	0.023
	(9.10)***	(5.15)***	(10.4)***	(8.54)***	(4.88)***	(9.79)***
Analyst	-0.001	-0.0004	-0.0007	0.000	0.0002	0.0001
	(-3.92)***	(-0.73)	(-3.81)***	(0.65)	(0.62)	(0.83)
Qreport	0.002	-0.001	0.002	0.003	0.002	0.003
	(0.88)	(-0.14)	(0.81)	(3.48)**	(0.68)	(3.58)***
Earncha	0.090	0.063	0.080	0.038	0.017	0.031
	(4.06)***	(2.10)**	(4.47)***	(3.87)***	(1.76)*	(4.09)***
Decearn	0.008	0.015	0.009	0.003	0.003	0.003
	(3.59)**	(2.34)**	(4.15)***	(3.26)***	(0.99)	(3.31)***
Horizon	0.007	0.008	0.007	0.002	-0.000	0.001
	(5.58)***	(2.47)**	(6.18)***	(2.74)***	(-0.06)	(2.44)**
Adj-R^2	0.233	0.214	0.227	0.192	0.233	0.193
F-value	25.22	6.04	24.62	19.01	5.71	19.00
Sample size	2,352	434	2,786	2,352	434	2,786

[a]The pre-IFRS (post-IFRS) period is two years prior to (after) IFRS adoption. If only one pre-IFRS (post-IFRS) year is available, then only one post-IFRS (pre-IFRS) year is used to make the pre and post match symmetrically. The mandatory sample includes firms that adopted IFRS in a fiscal year beginning on or after January 1, 2005. The voluntary sample includes firms that adopted IFRS voluntarily before 2005.

[b]*Forecast errors* are calculated as the absolute value of the difference between the most recent mean forecast and actual earnings; *Forecast dispersion* is the standard deviation of the most recent forecasts before the earnings announcement. Both are deflated by the stock price at the beginning of the year. The p-values are two-tailed.

[c]*FE* stands for forecast errors; *Disp* is forecast dispersion; *Size* is the natural log of the market value of equity; *Loss* is equal to 1 if earnings are negative, and 0 otherwise; *Earncha* is the year-to-year change of earnings deflated by the stock price at the beginning of the two years; *Decearn* is a dummy equal to 1 if the current year earnings are lower than the last year's earnings, and 0 otherwise; *Horizon* is the log of the number of days between the date of the earnings forecast and earnings announcement; *Qreport* is a dummy equal to 1 if the firm issues quarterly financial reports, and 0 otherwise; and *Analyst* is the number of analysts following.

[d] *Post* is a dummy equal to 1 if the observation is in the post-IFRS period, and 0 otherwise for mandatory firms; 1 if the observation is year 2005-2006, and 0 otherwise for voluntary firms. *Mand* is a dummy equal to 1 if the firm is in the mandatory sample, and 0 otherwise. *significant at 10%; ** significant at 5%; *** significant at 1%; all are two-tailed. The t-values in parentheses are based on the clustered standard errors adjusted for time series dependence and heteroskedasticity.

Table 4

The Effects of Mandatory IFRS Adoption on the Information Content of Earnings Announcements [a]

Panel A: Univariate Test

Mandatory sample[b]	Pre-IFRS	Post-IFRS	Difference	p-value
Abnormal return variance	2.788	3.853	1.065	0.000
Voluntary sample	**2003-2004**	**2005-2006**	**Difference**	**p-value**
Abnormal return variance	2.021	3.075	1.054	0.000

Panel B: Descriptive Statistics of the Variables for the Multivariate Test[c]

Variables	Mean	Median	Min.	Max.	Std.Dev.
Rvar	3.167	1.281	0.013	29.881	5.157
Size	6.315	6.156	2.354	10.816	1.756
Analyst	9.015	6.000	1.000	55.000	8.437
UE	0.564	0.115	0.000	13.000	1.678
Loss	0.126	0.000	0.000	1.000	0.333
Qreport	0.511	1.000	0.000	1.000	0.499

Panel C: Multivariate Test for the Effect of Mandatory IFRS Adoption on the Information Content of Earnings Announcements[d]

$$Rvar_{jt} = \beta_0 + \beta_1 Post_{jt} + \beta_2 Size_{jt} + \beta_3 Analyst_{jt} + \beta_4 UE_{jt} + \beta_5 Loss_{jt} + \beta_6 Qreport_{jt} + \varepsilon_{jt} \quad (3)$$

$$Rvar_{jt} = \beta_0 + \beta_1 Post_{jt} + \beta_2 Mand_j + \beta_3 Post_{jt}*Mand_j + \beta_4 Size_{jt} + \beta_5 Analyst_{jt} + \beta_6 UE_{jt} + \beta_7 Loss_{jt} + \beta_8 Qreport_{jt} + \varepsilon_{jt} \quad (4)$$

	Rvar		
	Mandatory	Voluntary	Mandatory vs. Voluntary
Post	1.024 (5.86)***	0.099 (4.06)***	1.104 (4.62)***
Mand	-- --	-- --	0.836 (4.58)***
Mand*Post	-- --	-- --	-0.093 (-0.31)
Size	-0.002 (-0.019)	0.278 (2.42)**	0.059 (0.76)

Loss	-0.409 (-1.65)*	-0.198 (-0.74)	-0.394 (-1.96)**
Analyst	0.057 (2.97)**	0.034 (1.56)	0.052 (3.46)***
Qreport	-0.422 (-2.25)**	-0.137 (-0.51)	-0.382 (-2.38)**
UE	0.007 (0.15)	0.133 (1.42)	0.032 (0.76)
Adj-R^2	0.02	0.06	0.03
F-value	12.27	11.68	18.72
Sample size	3,680	912	4,592

[a] The pre-IFRS (post-IFRS) period is two years prior to (after) IFRS adoption. If only one pre-IFRS (post-IFRS) year is available, then only one post-IFRS (pre-IFRS) year is used to make the pre and post match symmetrically. The mandatory sample includes firms that adopted IFRS in a fiscal year beginning on or after January 1, 2005. The voluntary sample includes firms that adopted IFRS voluntarily before 2005.

[b] *Abnormal Return Variance* is the abnormal return variance, calculated as the ratio of the average of squared daily abnormal returns of the 3-day earnings announcement window to the average squared daily abnormal returns of the 100-day (days -120 to -21) pre-earnings announcement window. The p-values are two-tailed.

[c] *Rvar* is abnormal return variance. *UE* is the absolute value of the difference between the most recent consensus mean forecast and actual earnings deflated by the unsigned mean forecast value. *Size* is the natural log of the market value of equity; *Loss* is equal to 1 if earnings are negative, and 0 otherwise; *Qreport* is a dummy equal to 1 if the firm issues quarterly financial reports, and 0 otherwise; and *Analyst* is the number of analyst following.

[d] *Post* is a dummy equal to 1 if the observation is in the post-IFRS period, and 0 otherwise for mandatory firms; 1 if the observation is year 2005-2006, and 0 otherwise for voluntary firms. *significant at 10%; ** significant at 5%; *** significant at 1%; all are two-tailed. The t-values in parentheses are based on the clustered standard errors adjusted for time series dependence and heteroskedasticity.

Table 5

The Effect of Mandatory IFRS Adoption on the Relative Informativeness of Annual Earnings Announcements to the Total Information Environment of the Fourth Quarter [a]

$$RET_{(-58,+7)} = \alpha + \beta * RET_{(-1,+1)} + \varepsilon$$

	Mandatory Sample[b]		Voluntary Sample	
	Pre-IFRS	Post-IFRS	2003-2004	2005-2006
$RET_{(-1,+1)}$	0.911 (12.72)***	0.990 (16.03)***	0.870 (5.65)***	1.094 (7.10)***
Sample size	1,840	1,840	456	456
Adj-R^2	0.079	0.121	0.063	0.096
Abnormal R^2	0.034	0.076	0.018	0.052
Post-Pre Diff. in Abnormal R^2	0.042		0.034	
p-value for Diff.	(0.043)		(0.211)	
Diff. in the Diff. between Mandatory and Voluntary Samples	0.008			
p-value	(0.531)			

[a] We obtain the adj-R^2 from the regression of the logarithms of buy-and-hold returns of the firm's fourth quarter (days -58 to +7) ($RET_{(-58, +7)}$) on the logarithms of buy-and-hold returns of the firm's annual earnings announcement window (days -1 to +1)($RET_{(-1,+1)}$). We also report the estimated coefficients on the $RET_{(-1,+1)}$. The *abnormal* R^2 is equal to the adj-R^2 less the expected R^2, and the expected R^2 is calculated assuming that daily returns are identically and independently distributed over the fourth quarter (i.e., expected R^2 is 0.045 [= 3/66]). We employ the randomization method (as described in Section 4.2.2 in the paper) to test whether the change in the abnormal R^2 is significantly different from zero and report one-tailed p-values in the parentheses.

[b] The pre-IFRS (post-IFRS) period is two years prior to (after) IFRS adoption. If only one pre-IFRS (post-IFRS) year is available, then only one post-IFRS (pre-IFRS) year is used to make the pre and post match symmetrically. The mandatory sample includes firms that adopted IFRS in a fiscal year beginning on or after January 2005. The voluntary sample includes firms that adopted IFRS voluntarily before 2005.

*significant at 10%; ** significant at 5%; *** significant at 1%; all are two-tailed.

Table 6

Trend Analysis: the Changes of Information Environment around Different Years for the Mandatory Sample [a]

$$FE\ (Disp)_{jt} = \beta_0 + \beta_1 Post_{jt} + \beta_2 Size_{jt} + \beta_3 Loss_{jt} + \beta_4 \Delta Earn_{jt} + \beta_5 DecEarn_{jt} + \beta_6 Horizon_{jt} \quad (1)$$
$$+ \beta_7 Analyst_{jt} + \beta_8 Qreport_{jt} + \varepsilon_{jt}$$

$$Rvar_{jt} = \beta_0 + \beta_1 Post_{jt} + \beta_2 Size_{jt} + \beta_3 Analyst_{jt} + \beta_4 UE_{jt} + \beta_5 Loss_{jt} + \beta_6 Qreport_{jt} + \varepsilon_{jt} \quad (3)$$

	Estimated Coefficient on *POST* and p-value[b]			
Periods	FE	Disp	Rvar	Abnormal R^2
Around 2001	-0.0073	-0.0029	-0.457	-0.0226
	(0.004)	(0.047)	(0.035)	(0.250)
Around 2002	0.0072	0.0030	0.248	-0.0930
	(0.006)	(0.021)	(0.161)	(0.000)
Around 2003	0.0058	0.0011	0.470	0.0075
	(0.005)	(0.343)	(0.004)	(0.382)

[a] For the periods around 2001, the pre period is 1999-2000 and the post period is 2001-2002; For the periods around 2002, the pre period is 2000-2001 and the post period is 2002-2003; For the periods around 2003, the pre period is 2001-2002 and the post period is 2003-2004. In the equations (1) and (3), *Post* is a dummy equal to 1 for post periods, and 0 otherwise. Other variables in the equations are as defined in table 3 and table 4.

[b] For the tests related to forecast errors (FE), forecast dispersion (Disp), and the abnormal return variance (Rvar), the table reports the estimated coefficient on the variable *Post* and its p-value, which indicate the difference between the pre and post periods. For tests related to the abnormal R^2, we obtain the adj-R^2 from the regression of the logarithms of buy-and-hold returns of the firm's fourth quarter (days -58 to +7) ($RET_{(-58,+7)}$) on the logarithms of buy-and-hold returns of the firm's annual earnings announcement window (days -1 to +1)($RET_{(-1,+1)}$):

$$RET_{(-58,+7)} = \alpha + \beta * RET_{(-1,+1)} + \varepsilon$$

The *abnormal* R^2 is equal to the adj-R^2 less the expected R^2, and the expected R^2 is calculated assuming that daily returns are identically and independently distributed over the fourth quarter (i.e., expected R^2 is 0.045 [= 3/66]). We employ the randomization method (as described in Section 4.2.2 in the paper) to test whether the change in the abnormal R^2 is significantly different from zero and report one-tailed p-value in the parentheses.

Table 7
Results for Additional Tests on Mandatory Adopters[a]

Panel A: Difference between IBES earnings and reported earnings

	Pre-IFRS	Post-IFRS	Difference	p-value
Mean $(EPS_r - EPS_{IBES})/\|EPS_r\|$	-0.688	-0.306	0.382	0.000
Median $(EPS_r - EPS_{IBES})/\|EPS_r\|$	-0.054	0.000	0.036	0.000
Mean $\|(EPS_r - EPS_{IBES})/EPS_r\|$	0.871	0.428	-0.443	0.000
Median $\|(EPS_r - EPS_{IBES})/EPS_r\|$	0.134	0.004	-0.045	0.000

Panel B: Regression results for Model 1 and Model 2[b]

Model 1: $CAR_{jt} = \beta_0 + \beta_1 Post_{jt} + \beta_2 UIE_{jt} + \beta_3 UNIE_{jt} + \beta_4 Post_{jt}*UIE_{jt} + \beta_5 Post_{jt}*UNIE_{jt} + \beta_6 Loss_{jt} + \beta_7 Size_{jt} + \beta_8 Qreport_{jt} + \varepsilon_{jt}$ (5)

Model 2: $RET_{jt} = \beta_0 + \beta_1 Post_{jt} + \beta_2 IE_{jt} + \beta_3 NIE_{jt} + \beta_4 Post_{jt}* IE_{jt} + \beta_5 Post_{jt}*NIE_{jt} + \beta_6 Loss_{jt} + \beta_7 Size_{jt} + \varepsilon_{jt}$ (6)

	Model 1			Model 2	
	Est. coeff.	t-value		Est. coeff.	t-value
Post	0.005	2.62***	Post	-0.144	-7.53***
UIE	0.002	1.38	IE	0.910	4.56***
UNIE	0.002	0.15	NIE	0.224	1.28
Post*UIE	-0.001	-0.34	Post*IE	0.002	0.008
Post*UNIE	0.042	1.90*	Post*NIE	0.419	2.24**
Loss	-0.008	-2.17***	Loss	-0.018	-0.52
Size	-0.000	-0.84	Size	0.008	1.52
Qreport	-0.005	-2.93***			
Adj-R^2	0.010			0.073	
F-value	4.22			41.81	
Sample size	3,292			4,424	

[a] EPS_r is the earnings number as reported by the company; EPS_{IBES} is the earnings number as reported in IBES.

[b] *CAR* is the cumulative abnormal stock returns over the three days around earnings announcements; *RET* is the cumulative stock returns over the whole year; *UIE* is the unexpected IBES earnings calculated as the difference between EPS_{IBES} and the mean of analysts' earnings forecasts; *UNIE* is the unexpected non-IBES earnings calculated as the change in the $EPS_r - EPS_{IBES}$ for two consecutive years. *IE* and *NIE* are EPS_{IBES} and $EPS_r - EPS_{IBES}$, respectively. All these earnings measures are scaled by the stock price at the beginning of the period. *Post* is equal to 1 for post-IFRS periods, and 0 otherwise. *Size* is the natural log of the market value; *Loss* is equal to 1 for loss firms, and 0 otherwise; *Qreport* is equal to 1 if the firm issues quarterly financial reports, and 0 otherwise. The t-values in parentheses are based on the clustered standard errors adjusted for time series dependence and heteroskedasticity. *significant at 10%; ** significant at 5%; *** significant at 1%.

Table 8

The Information Effects of IFRS across Countries and Legal Origins [a]

$$FE\ (Disp)_{jt} = \beta_0 + \beta_1 Post_{jt} + \beta_2 Size_{jt} + \beta_3 Loss_{jt} + \beta_4 \Delta Earn_{jt} + \beta_5 DecEarn_{jt} + \beta_6 Horizon_{jt} \quad (1)$$
$$+ \beta_7 Analyst_{jt} + \beta_8 Qreport_{jt} + \varepsilon_{jt}$$

$$Rvar_{jt} = \beta_0 + \beta_1 Post_{jt} + \beta_2 Size_{jt} + \beta_3 Analyst_{jt} + \beta_4 UE_{jt} + \beta_5 Loss_{jt} + \beta_6 Qreport_{jt} + \varepsilon_{jt} \quad (3)$$

Panel A: Results for information effects for each country [b]

Country	FE	Disp	Rvar	Abnormal R^2
Belgium	-0.008	0.009	-0.753	-0.353
	(0.310)	(0.094)	(0.458)	(0.975)
Denmark	0.004	-0.012	3.222	0.264
	(0.720)	(0.008)	(0.007)	(0.025)
Finland	-0.006	-0.002	1.06	0.295
	(0.230)	(0.600)	(0.184)	(0.002)
France	-0.01	0.001	0.816	0.111
	(0.022)	(0.730)	(0.065)	(0.039)
Germany	0.018	0.005	-0.026	0.012
	(0.300)	(0.550)	(0.985)	(0.173)
Greece	0.022	0.003	0.844	0.251
	(0.003)	(0.300)	(0.124)	(0.054)
Ireland	-0.026	-0.007	-1.166	0.178
	(0.410)	(0.780)	(0.662)	(0.265)
Italy	0.003	0.001	0.701	0.219
	(0.627)	(0.619)	(0.091)	(0.016)
Netherlands	-0.01	-0.000	2.371	0.179
	(0.140)	(0.990)	(0.018)	(0.094)
Norway	0.016	-0.004	-1.17	-0.051
	(0.197)	(0.440)	(0.112)	(0.625)
Portugal	-0.001	0.002	2.028	0.002
	(0.950)	(0.620)	(0.197)	(0.401)
Spain	-0.008	-0.003	-0.114	-0.004
	(0.180)	(0.170)	(0.765)	(0.656)
Sweden	-0.006	-0.000	2.721	0.168
	(0.027)	(1.000)	(0.000)	(0.029)
Switzerland	-0.014	-0.001	0.636	0.071
	(0.440)	(0.890)	(0.498)	(0.368)
UK	-0.005	-0.003	1.018	-0.046
	(0.021)	(0.001)	(0.003)	(0.883)

Table 8 (Continued)

Panel B: Results for Information Effects for Each Legal Origin[c]

Legal origin	FE	Disp	Rvar	Abnormal R^2
English	-0.005	-0.003	0.922	-0.047
	(0.030)	(0.014)	(0.007)	(0.882)
French	-0.005	0.001	0.853	0.103
	(0.043)	(0.490)	(0.000)	(0.007)
German	0.003	0.005	0.149	-0.002
	(0.810)	(0.330)	(0.860)	(0.636)
Scandivavian	-0.0004	-0.003	1.547	0.117
	(0.900)	(0.067)	(0.000)	(0.019)

Panel C: Results for Information Effects for Common Law and Code Law Origins[d]

	FE	Disp	Rvar	Abnormal R^2
Common law	-0.005	-0.003	0.922	-0.047
	(0.030)	(0.014)	(0.007)	(0.882)
Code law	-0.003	-0.001	1.085	0.102
	(0.105)	(0.503)	(0.000)	(0.001)

[a] In the equations (1) and (3), *Post* is a dummy equal to 1 for post-IFRS periods, and 0 otherwise. Other variables in the equations are as defined in table 3 and table 4. For the tests related to forecast errors (FE), forecast dispersion (DISP), and the abnormal return variance (Rvar), the table reports the estimated coefficient on the variable *Post* and its p-value for each country or legal origin, which indicate the difference between the pre and post periods. For tests related to the abnormal R^2, we obtain the adj-R^2 from the regression of the logarithms of buy-and-hold returns of the firm's fourth quarter (days -58 to +7) ($RET_{(-58,+7)}$) on the logarithms of buy-and-hold returns of the firm's annual earnings announcement window (days -1 to +1)($RET_{(-1,+1)}$):

$$RET_{(-58,+7)} = \alpha + \beta * RET_{(-1,+1)} + \varepsilon$$

The *abnormal* R^2 is equal to the adj-R^2 less the expected R^2, and the expected R^2 is calculated assuming that daily returns are identically and independently distributed over the fourth quarter (i.e., expected R^2 is 0.045 [= 3/66]). We employ the randomization method (as described in Section 4.2.2 in the paper) to test whether the change in the abnormal R^2 is significantly different from zero and report one-tailed p-value in the parentheses.

[b] Luxemburg and Austria are excluded from these tests because they have no and one mandatory adopter, respectively.

[c] English legal origin countries are the U.K. and Ireland. French legal origin countries are Belgium, France, Greece, Italy, the Netherlands, Portugal, and Spain. German legal origin countries are Germany and Switzerland. Scandinavian legal origin countries are Denmark, Finland, Norway, and Sweden.

[d] Common law origin countries include the U.K. and Ireland. The other countries have code law origins.

formulate, issue and promote the adoption of International Financial Reporting standards (IFRS). IFRSs are principle based set of standards that establishes broad rules as well as dictating treatments (NASB, 2009). In the past few years, many developed and developing countries have adopted IFRSs as their basis for the preparation of financial reports. Presently, over 130 countries are reported to have adopted or converged with IFRS.Â Therefore this study is set out to address the economic effects of the mandatory adoption on financial statements, through a comparison of economic performances before and after the introduction of IFRS in the Nigerian accounting system. 1.2 Statement of Problem. International Financial Reporting Standards, commonly called IFRS, are accounting standards issued by the IFRS Foundation and the International Accounting Standards Board (IASB). They constitute a standardised way of describing the companyâ€™s financial performance and position so that company financial statements are understandable and comparable across international boundaries. They are particularly relevant for companies with shares or securities listed on a public stock exchange. This study examines the effect of the mandatory adoption of International Financial Reporting Standards (IFRS) on voluntary disclosure. Using a difference-in-difference analysis, we document a significant increase in the likelihood and frequency of management earnings forecasts following mandatory IFRS adoption, consistent with the notion that IFRS adoption alters firmsâ€™ disclosure incentives in response to increased capital-market demand.Â (2011) find that mandatory IFRS adoption attracts more analysts and improves the usefulness of accounting information to financial analysts. Landsman et al. (2012) and Daske et al.