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The Informativeness of Analysts' Cash Flow Forecasts: International Evidence*

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Abstract

In an international setting, this study investigates the information content of analysts' cash flow forecasts by examining the immediate market reaction to analysts' cash flow forecast revisions. Using a large sample from 57 countries or jurisdictions over the period 1994 to 2018, we find that when cash flow forecasts are revised along with earnings forecasts, there is a significant market reaction to analysts' cash flow forecast revisions incremental to the reaction to earnings forecast revisions. Using the accrual index based on the sample in the pre-IFRS period, we find that market reaction to cash flow (earnings) forecasts decreases (increases) in countries with more extensive use of accrual accounting. This suggests that cash flow forecasts are utilised by investors to a greater extent when cash flow information is key to their valuations and that earnings forecast information is valued more when accrual accounting is more widely used. Finally, using a difference-in-differences design, we document that investors react to analysts' cash flow forecast revisions more strongly after mandatory IFRS adoption, which is consistent with analysts being able to provide a higher quality of forecasts after IFRS adoption.

***Keywords*:** Analysts' Cash Flow Forecasts, Market Reaction, International Financial Reporting Standards (IFRS)

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I. Introduction

This study investigates the information content of analysts' cash flow forecasts and whether the informativeness of cash flow forecasts varies with institutional factors in an international setting. Following Call *et al.* (2013), we infer the information content of cash flow forecasts by examining the immediate market reaction to analysts' cash flow forecast revisions. We examine the information content of analysts' cash flow forecasts in an international setting for the following reasons. First, DeFond and Hung (2007) argue that investors seek analysts for information and document that analysts like to provide cash flow forecasts in code law countries where earnings quality is low. As Hail (2007) points out, DeFond and Hung's (2007) contention is only valid when investors' demand for accounting information is unsatisfied and investors look to cash flow forecasts for valuable information signals. Although Call *et al.* (2013) document significant market short-window reactions to cash flow forecast revisions in the United States and interpret this as indicating the informativeness of these forecasts to investors, we have little evidence on the market reaction to analysts' cash flow forecast revisions in an international setting. The fact that cash flow forecast issuance is more pervasive in countries other than the United States makes it important and interesting to examine the informativeness of these forecasts in an international setting.

Second, prior studies document that the accrual anomaly is lower for firm-years with at least one cash flow forecast (Mohanram, 2014; Radhkrishnan and Wu, 2014). Using an international sample of 20 countries, Gordon *et al.* (2014) find that cash flow forecasts play a role in mitigating the accrual anomaly, especially in common law countries. In their discussion paper, Ecker and Schipper (2014) comment that it is unclear how investors' estimation of accrual persistence is affected by analysts' cash flow forecasts. Direct evidence that investors do utilise cash flow forecasts in their valuations helps to shed light on the effect of cash flow forecasts on the market pricing of accounting information. Our paper aims to offer such direct evidence in an international setting.

Third and most importantly, the international setting provides us with both cross-sectional and time-series variations to examine the context of and the factors that affect the information content of cash flow forecasts to investors. In terms of the cross-sectional variation in the informativeness of cash flow forecasts, the extent of accrual accounting use varies across countries, particularly before the mandated adoption of International Financial Reporting Standards (IFRS). We use Hung's (2001) measure of the extent of accrual accounting for countries with such accrual accounting data. The country variation in the use of accrual versus cash accounting determines how relevant cash flow information is to investors and therefore explains the extent to which analysts' cash flow forecast revisions are used by investors in their valuations. In countries where accrual accounting is less widely used, earnings tend to be less value relevant for countries with strong investor protection

(Hung, 2001). We expect that cash flow forecasts will be more informative for countries where accrual accounting is less widely used. Therefore, we expect the market reaction to cash flow forecast revisions to be stronger in countries where cash accounting is more widely used and the market reaction to earnings forecast revisions to be stronger in countries where accrual accounting is more widely used.[3]

In terms of the time-series variation in the informativeness of cash flow forecasts, IFRS is a unique setting for our investigation of the change in the informativeness of cash flow forecast revisions over time.[4] We have two competing theories regarding the impact of IFRS adoption on the informativeness of cash flow forecasts. On the one hand, IFRS adoption has shifted accounting from cash based to accrual based in some countries that have adopted the standards. We therefore expect that market reaction to cash flow forecast revisions will be weaker, while market reaction to earnings forecast revisions will be stronger, in the post-IFRS era than in the pre-IFRS era. On the other hand, the improvement in the informativeness of earnings due to mandated IFRS adoption will enhance analysts' information environment (e.g. Ashbaugh and Pincus, 2001; Horton *et al.*, 2013; Byard *et al.*, 2011; Tan *et al.*, 2011; Demmer *et al.*, 2019). In fact, after IFRS adoption, analysts are more likely to provide cash flow forecasts and their forecasts are more accurate (He and Lu, 2018): that is, IFRS adoption increases the quality and usefulness of cash flow forecasts. Therefore, we should observe stronger investor reaction to analysts' cash flow forecast revisions in the post-IFRS period relative to the pre-IFRS period. Therefore, it is an empirical question whether mandatory IFRS adoption is associated with stronger or weaker market reaction to analysts' cash flow forecast revisions.

We construct a sample that consists of pairs of firm-year analyst revisions in which analysts revise cash flow forecasts along with earnings forecasts on the same day. We include both cash flow forecast revisions and earnings forecast revisions in our market reaction test, which allows us to investigate (1) whether cash flow forecasts have information content incremental to earnings forecasts and (2) the relative importance of analysts' cash flow forecasts and earnings forecasts to investors. For the immediate market reaction test, our return accumulation period starts from the day before the forecast revision date and ends on the day after the forecast revision date.

Using a large international sample from 57 countries/jurisdictions over the period 1994 to 2018, we find immediate market reaction to both analysts' cash flow forecast revisions and

[3] In Hung (2001), the author equally weighs 11 accrual-related accounting standards for each country in her sample (21 countries in total). The 11 standards selected are directly related to the timing differences between cash receipt/disbursement and revenue/expense recognition. These accounting standards involve goodwill, equity method, depreciation, purchased tangible, developed tangible, research and development expenditure, interest capitalisation, finance lease, percentage of completion, pension, and other post-retirement benefits. This accrual index has been used widely in international accounting research papers, such as Leuz *et al.* (2003) and Pincus *et al.* (2007).

[4] Prior studies document that the implementation of IFRS increases the informativeness of earnings (Landsman *et al.*, 2012).

analysts' earnings forecast revisions. In addition, the market reaction to cash flow forecast revisions is not as strong as that to earnings forecast revisions. Furthermore, using our sample during the pre-IFRS period (i.e. 1994–2004), we document that market reaction to analysts' cash flow forecast revisions decreases in countries with more extensive use of accrual accounting. In addition, market reaction to analysts' earnings forecast revisions increases in countries with more extensive use of accrual accounting. These findings are consistent with our expectation. Lastly, using a difference-in-differences design, we find that the market reaction to analysts' cash flow forecast revisions is stronger in the post-IFRS period than in the pre-IFRS period. This is consistent with IFRS enhancing the information environment of financial analysts and, therefore, their revisions of cash flow forecasts containing more information in the post-IFRS period.

Our paper makes the following contributions to the literature. First, we document large sample international evidence on the information content of an important type of analysts' disaggregated earnings forecasts: cash flow forecasts. The direct evidence that investors do use cash flow forecasts in their investment decisions lends support to research that documents the sophistication of cash flow forecasts internationally (He and Lu, 2018; Chen *et al.*, 2019; Wang and Yu, 2020). Our finding that investors use cash flow forecasts in their valuations also backs up Gordon *et al.* (2014), who document a less severe accrual anomaly as a result of analysts' provisions of cash flow forecasts in an international context.

Second, using a pre-IFRS subsample, we find that investors react more strongly to cash flow forecast revisions in countries/jurisdictions where there is more extensive use of cash accounting. In contrast, investors react more strongly to earnings forecast revisions in countries/jurisdictions where there is more extensive use of accrual accounting. This result supports the conjecture that cash flow forecasts are more value relevant to investors when investors need them for their valuations (Hail, 2007) and is in line with the demand theory first developed in DeFond and Hung (2003 and 2007), who document that analysts are more likely to provide cash flow forecasts to meet investors' demand when earnings quality is low.

Third, our results regarding the impact of IFRS on the informativeness of cash flow forecast revisions support the supply effect of the provisions of cash flow forecasts (Ertimur and Stubben, 2005; Hail, 2007; Bilinski, 2014; He and Lu, 2018). The evidence that immediate market reaction to cash flow forecast revisions is stronger after mandatory IFRS adoption is consistent with analysts benefiting from the improvement of disclosure quality due to IFRS adoption and, therefore, their cash flow forecasts having more information content for the capital market.

Overall, our paper enhances our understanding of how investors value the multiple products of analysts and the dynamic reactions of investors to those outputs. The findings of our research should be of interests to investors, market intermediates such as financial analysts, and managers as well as to accounting standard setters and regulators in the international

capital market.

The rest of the paper is organised as follows. Section II reviews the literature on the informativeness of analysts' cash flow forecasts and develops our testable hypotheses. We describe our research methodology in Section III and present our sample selection and the univariate statistics of our variables in Section IV. Section V provides our empirical results, and Section VI concludes the paper.

II. Literature Review and Hypotheses Development

2.1 Overall Informativeness of Cash Flow Forecasts in an International Context

As discussed in Kothari *et al.* (2016), analysts' forecasts contain both public information and the analysts' private information. They also comment that, different from quarterly earnings announcements, analysts' earnings forecast revisions provide more timely updates about cash flow information to investors because analysts revise their earnings forecasts throughout the quarter. Existing research has documented US evidence that market participants use the information in analysts' earnings forecast revisions (e.g. Griffin, 1976; Givoly and Lakonishok, 1979, 1980; Imhoff and Lobo, 1984; Frankel *et al.*, 2006) and analyst recommendation revisions (Altenkilic and Hensen, 2009). There is also evidence on immediate market response to earnings forecast revisions with an Australian sample (Hou *et al.*, 2014).

Cash flow forecasts, as one type of disaggregated forecast, contain additional information about firms' future performance (Call *et al.*, 2009, 2013). Cash flow forecasts reflect analysts' estimation of the future accrual adjustment that might be used by firms, and it could reflect that analysts confirm their earnings forecasts with their own cash flow forecasts. In addition, a firm's ability to beat analysts' cash flow and earnings forecasts signals future performance and, therefore, impacts market valuation (Brown *et al.*, 2013). When analysts revise cash flow forecasts, analysts update the capital market with their public and private information about cash flow. In the United States, Call *et al.* (2013) document market response to cash flow forecast revisions, suggesting that these forecasts serve as an important means by which analysts assimilate information into stock prices.

It is conceivable that analysts' cash flow forecasts deliver useful information to the capital market in an international setting as well. Prior studies document that the effort of providing cash flow forecasts helps analysts to provide higher quality outputs in the international setting. Chen *et al.* (2019) find evidence that analysts' target price accuracy is improved for those who provide accurate cash flow forecasts. Wang and Yu (2020) find that earnings forecasts are more accurate when accompanied by cash flow forecasts. Using a large sample from 20 countries, Gordon *et al.* (2014) document that when cash flow forecasts are provided by analysts, the market overestimation of accruals is less severe, suggesting that investors use cash flow forecasts in their valuations.

Given that cash flow forecasts convey to the capital market analysts' public and private information regarding cash flow specifically beyond their updates about earnings, we argue that investors will react to such information during the short window of revision dates. Our first hypothesis is as follows:

Hypothesis 1: In an international setting, the market responds to individual analysts' cash flow forecast revisions incremental to earnings forecast revisions during the short window.

2.2 Cross-Country Variation in the Informativeness of Cash Flow Forecasts: Accrual Accounting

We note that the need for cash flow information is not uniform across countries. DeFond and Hung (2003) propose and document that when firm-level earnings do not convey useful information, investors will need cash flow predictions for their valuations. DeFond and Hung (2007) find that analysts are more likely to provide cash flow forecasts to meet the demand in code law countries where earnings are less informative.

The extent of accrual accounting affects how market participants perceive analysts' cash flow forecasts. In countries with a lower level of accrual accounting use, earnings tend to be less informative. As such, the cash flow information is more important to investors. Therefore, we expect that the informativeness of cash flow forecasts is higher in countries with a lower level of accrual accounting use. In contrast, we argue that in countries where accrual accounting is used extensively, the earnings number is relatively more important to investors than cash flow information. Therefore, we expect that the informativeness of earnings forecasts is higher in countries with a higher level of accrual accounting use. Our next hypothesis is as follows:

Hypothesis 2: In an international setting, market reaction to analysts' cash flow forecast revisions is stronger for those firms domiciled in countries where cash accounting is used more extensively.

2.3 Time-Series Variation in the Informativeness of Cash Flow Forecasts

Frankel *et al.* (2006) argue that the informativeness of analyst research is determined by both demand and the cost of providing the information. Prior research has provided evidence on this conjecture (e.g. DeFond and Hung, 2003; Ertimur and Stubben, 2005; DeFond and Hung, 2007; Bilinski, 2014). Therefore, we have two competing theories on the impact of IFRS adoption on the informativeness of cash flow forecasts. One theory is the demand effect of IFRS adoption. As some countries changed from cash accounting to accrual accounting after the mandated adoption of IFRS, the demand for cash flow information is lower and therefore we should observe a weaker demand for analysts' cash flow forecasts. As such, the

informativeness of analysts' cash flow forecasts diminishes after the mandated IFRS adoption.

However, IFRS also affects the cost incurred by analysts in providing the forecasts. We label this as the supply effect of IFRS adoption, which is the competing theory to the demand effect of IFRS adoption discussed above. Prior research has documented that IFRS adoption increases firm's reporting quality and enhances financial statement comparability (Barth *et al.*, 2008; Yip and Young, 2012). The improvement of financial reporting quality and the increased comparability will reduce the processing costs of analysts, which will enhance the informativeness of their research (Frankel *et al.*, 2006). Consistent with these arguments, De Franco *et al.* (2011) document that increased comparability is positively associated with analysts' earnings forecast accuracy, while Demmer *et al.* (2019) find that financial statement-based forecast accuracy is significantly improved around mandatory IFRS adoption. Moreover, Demmer *et al.* (2019) document that this improvement in financial statement-based forecast accuracy is positively associated with analyst forecast accuracy. The improvement in the informativeness of earnings due to mandated IFRS adoption will enhance analysts' information environment (e.g. Byard *et al.*, 2011; Tan *et al.*, 2011; Demmer *et al.*, 2019). In fact, after IFRS adoption, analysts are more likely to provide cash flow forecasts and their forecasts are more accurate (He and Lu, 2018). To the extent that IFRS adoption has provided more useful information and facilitated fundamental analysis by analysts, we expect that the information content of cash flow forecasts should be higher after the adoption of IFRS.

Overall, it is an empirical question whether investors use cash flow forecasts to a greater extent or to a lesser extent after IFRS adoption. If the demand (supply) effect dominates, then we should observe that IFRS adoption decreases (increases) the information content of cash flow forecasts. Therefore, we have the following two competing hypotheses:

Hypothesis 3a: The market response to individual analysts' cash flow forecast revisions is weaker post-IFRS versus pre-IFRS.

Hypothesis 3b: The market response to individual analysts' cash flow forecast revisions is stronger post-IFRS versus pre-IFRS.

III. Research Methodology

Our sample is composed of firm-year-analyst-revision observations where cash flow forecast revisions are issued together with earnings forecast revisions by the same analyst on the same day. To calculate immediate market reaction to forecast revisions, we calculate three-day cumulative size-adjusted returns beginning from the day prior to forecast revisions and ending on the day after forecasts are revised. Our return calculation is based on price in US dollars converted from price in local currencies. We also convert earnings per share (EPS) and cash flow per share (CPS) forecasts into US dollars. We calculate the cash flow forecast revision of an analyst as the analyst's current forecast of one-year-ahead cash flow for the

firm-year minus the same analyst's most recent forecast of cash flow for the same firm-year. Similarly, we calculate the earnings forecast revision of an analyst as the analyst's current forecast of one-year-ahead earnings for the firm-year minus the same analyst's most recent earnings forecast for the same firm-year. We then deflate both cash flow forecast revisions and earnings forecast revisions by the price two days prior to the revision date.

3.1 Test of Hypothesis 1

To test the market's immediate response, we use size-adjusted abnormal return around the three days surrounding the forecast revision date (i.e. RET_3days_{it}) as our dependent variable. We use cash flow forecast revisions as our main explanatory variable (i.e. $CFREV_{ijt}$). As earnings forecasts are also revised on the same day, we include earnings forecast revisions (i.e. $EREV_{ijt}$) in our regression. Our model specification is based on papers that examine the short-window market reaction to analyst forecast revisions (e.g. Hui and Yeung, 2013; Keskek and Tse, 2019; Keskek and Morton, 2019). Specifically, we control for factors that correlate with market returns: market value of equity, book-to-market ratio, and momentum. We further control for country fixed effects and year fixed effects. Our model to test Hypothesis 1 is as follows:

$$RET\_3days_{ijt} = \alpha_0 + \alpha_1 CFREV_{ijt} + \alpha_2 EREV_{ijt} + \alpha_3 LNMV_{it} + \alpha_4 BM_{it} + \alpha_5 MOMENTUM_{ijt} + \sum_c Country_c + \sum_t Year_t + \varepsilon_{ijt}, \quad (1)$$

where RET_3days_{ijt} is the cumulative size-adjusted return around three days centred on the date of the forecast revision of analyst *j* for firm *i* in year *t*; $CFREV_{ijt}$ is analyst *j*'s current one-year-ahead cash flow forecast minus analyst *j*'s most recent one-year-ahead cash flow forecast of year *t* for firm *i*, denominated in US dollars; $EREV_{ijt}$ is computed as analyst *j*'s current one-year-ahead earnings forecast minus analyst *j*'s most recent forecast of earnings of year *t* for firm *i*, denominated in US dollars;

$LNMV_{it}$ is the natural log of the market value of equity for firm *i,* denominated in US dollars, at the beginning of calendar year t, computed as price in US dollars multiplied by number of shares outstanding at the beginning of calendar year *t*; BM_{it} is the book to market value for firm *i* at the beginning of calendar year *t*; and $MOMENTUM_{ijt}$ is the six-month cumulative size-adjusted return ending two days before the forecast revision of analyst *j* in year *t* for firm *i*.

We expect to have a positive coefficient on $CFREV_{ijt}$ (i.e. α_1) to support Hypothesis 1.

3.2 Test of Hypothesis 2

To test Hypothesis 2, we use the country-specific measure of accrual index ($ACCR\_INDEX_c$) developed in Hung (2001) which represents the degree to which the accounting system moves away from a cash method measure of performance, with a higher index indicating greater use of accrual accounting. Our model is as follows:

$$RET\_3days_{ijt} = \alpha_0 + \alpha_1 CFREV_{ijt} + \alpha_2 CFREV_{ijt} \times ACCR\_INDEX_c + \alpha_3 EREV_{ijt} + \alpha_4 EREV_{ijt} \times ACCR\_INDEX_c + \alpha_5 ACCR\_INDEX_c + \alpha_6 LNMV_{it} + \alpha_7 BM_{it} + \alpha_8 MOMENTUM_{ijt} + \sum_c Country_c + \sum_t Year_t + \mathcal{E}_{ijt}, \quad (2)$$

where $ACCR\_INDEX_c$ is the accrual index of the country the forecasted firm is domiciled in, as developed in Hung (2001).

We expect a negative coefficient on $CFREV_{ijt} \times ACCR\_INDEX_c$ to support Hypothesis 2.

3.3 Test of Hypothesis 3a and Hypothesis 3b

Following prior studies (e.g. DeFond *et al.*, 2007; Landsman *et al.*, 2012; Demmer *et al.*, 2019), we use a difference-in-differences research design to test Hypothesis 3a and Hypothesis 3b. Two empirical challenges of using a difference-in-differences research design involving IFRS adoption are that (1) not all countries adopted the IFRS at the same time and (2) more and more countries adopt IFRS over time, leaving fewer firms that have not adopted IFRS as the control sample (Leuz and Wysocki, 2016). Due to the different IFRS adoption years among countries, the standard difference-in-differences model based on a single adoption period is not applicable. Therefore, we follow prior economic research studies (e.g. Bertrand *et al.*, 2003; Wolfers, 2006) and use the fixed effects regression model. Specifically, we use the following two-way fixed effects model:

$$Y_{ict} = \alpha + \gamma IFRS_{ct} + \sum_c Country_c + \sum_t Year_t + \epsilon_{ict},$$

where $IFRS_{ct}$ is a dummy variable that equals 1 when the country is under an IFRS regime and 0 when the country is under a non-IFRS regime.

The coefficient γ can be interpreted as the average change in the outcome attributable to the adoption of IFRS. Since we are interested in whether the relation between the market reaction and analysts' cash flow forecasts revisions and analyst earnings forecast revisions changes after the adoption of IFRS, the model is specified as follows:

$$RET\_3days_{ijt} = \alpha_0 + \alpha_1 CFREV_{ijt} + \alpha_2 CFREV_{ijt} \times IFRS_{ct} + \alpha_3 EREV_{ijt} + \alpha_4 EREV_{ijt} \times IFRS_{ct} + \alpha_5 IFRS_{ct} + \alpha_6 LNMV_{it} + \alpha_7 BM_{it} + \alpha_8 MOMENTUM_{ijt} + \sum_c Country_c + \sum_t Year_t + \mathcal{E}_{ijt} \quad (3)$$

In Model (3), a positive sign on $CFREV_{ijt} \times IFRS_{ct}$ will support Hypothesis 3a, whereas a negative sign on $CFREV_{ijt} \times IFRS_{ct}$ will support Hypothesis 3b.

IV. Data and Sample

Our data set is developed from the I/B/E/S Academic Detail History file for international firms over the 1994–2018 period merged with the Security Daily file and the Fundamentals

Annual file from the Compustat Global database. Our sample period starts from 1994, the year analysts' cash flow forecasts first became available in I/B/E/S. In computing cash flow forecast and earnings forecast revisions, we collect CPS and EPS forecasts from I/B/E/S Academic and convert them from their reporting currencies (in the I/B/E/S database) into US dollars using the Daily Exchange Rate file from I/B/E/S Academic. This conversion is to ensure comparability of forecast revisions across countries as well as over time as some European countries changed to the Euro during our sample period, as reflected in their reporting currencies.

We calculate cumulative abnormal returns (including RET_3days_{ijt} and $MOMENTUM_{ijt}$) using the following steps. First, we collect the daily closing price from Compustat Global Security Daily file and adjust price with the daily adjustment factor as well as the daily total return factor.[5] Second, we convert the price in local currencies into US dollars using the Daily Exchange Rate file from I/B/E/S Academic before calculating daily return. Converting price into a common currency is necessary as some firms (including those in European countries) changed from their local currencies to the Euro during our sample period. Third, we screen the daily return data following Griffin *et al.* (2010).[6] Fourth, we rank our observations by the market value of equity in US dollars of their respective years and calculate size-portfolio daily returns. To calculate market value of equity in US dollars, we merge our observations with the Fundamentals Annual file in the Compustat Global database to obtain number of shares outstanding. Lastly, we compute cumulative size-adjusted returns (i.e. RET_3days_{ijt} and $MOMENTUM_{ijt}$) relative to the corresponding time frames. We also collect variables such as total assets and total liabilities (to compute book value of equity), country/jurisdiction in which firms are domiciled, and accounting standard. In order to match the currency of book value of equity to that of market value of equity to calculate the book-to-market ratio, we also translate book value of equity into US dollars on the basis of the reported currencies in the Fundamentals Annual file. We translate both book value of equity and market value of equity into US dollars on the basis of the Daily Exchange Rate file from I/B/E/S Academic.

Table 1 provides our sample selection criteria. We start with an initial sample from the I/B/E/S Detail File for international firms that includes all individual EPS or CPS forecasts whose forecast announcement dates range from 1 January 1994 to 31 December 2018. We retrieve 8,488,153 individual EPS and CPS forecasts during our sample period. We delete observations that are missing CPS values. Since our analysis concerns the forecasts of

[5] The daily total return factor includes cash equivalent distributions as well as reinvestment of dividends and the compounding effect of dividends paid on reinvested dividends. We do this adjustment following the accounting and finance papers that have used international price data from Compustat Global, such as Bushman and Piotroski (2006) and Chattopadhyay *et al.* (2016).

[6] Griffin *et al.* (2010) screen daily return data using the following rule: If the daily return (r_t) or previous day return (r_{t-1}) exceeds 100% and $(1+ r_{t-1})\ (1+ r_t)-1 < 20\%$, then both r_t and r_{t-1} are set to missing. Besides, if $r_t > 200\%$, then r_t is set to missing. As mentioned in Bartram *et al.* (2012), this rule is a commonly used filter for reversal in the data that could be caused by incorrect stock prices. It has been used in accounting and finance studies, such as Gassen *et al.* (2020).

individual analysts, we also remove observations in which the analyst code is zero, which means that the analyst's name is not available. This process results in 2,432,061 CPS forecasts. To calculate earnings forecast revisions and cash flow forecast revisions, we only keep those forecasts where at least one revision is made for the forecasted year. As such, we identify 1,138,814 forecast revisions in which analysts revise earnings and cash flow forecasts on the same day.

Table 1 Sample Selection

	No. of observations
Initial sample: All individual EPS and CPS forecasts, the forecast announcement dates of which fall between 1 January 1994 and 31 December 2018, from the I/B/E/S Detail File for international firms	8,488,153
Keeping all CPS forecasts after deleting observations that are missing CPS or an analyst code or have the analyst code '000000'	2,432,061
Keeping all individual CPS forecasts that have same-day EPS forecasts	1,937,150
After deleting observations that have no cash flow forecast revision(s) or earnings forecast revision(s) in the forecasted year	1,138,814
After deleting observations that cannot be matched with the Compustat Global/Security Daily file and the Fundamentals Annual file or for which data are unavailable to calculate variables	796,270
Final sample to test hypotheses 1, 3a, and 3b: after deleting countries/jurisdictions with fewer than 100 observations	**795,550**
No. of firm-years	93,517
No. of firms	15,420
No. of analysts	20,114
No. of brokerages	782
No. of countries/jurisdictions	57
Final sample to test Hypothesis 2: after deleting countries/jurisdictions that have no $ACCR\_INDEX_c$ variable (pre-IFRS period: 1994–2004)	197,980
No. of firm-years	21,818
No. of firms	5,583
No. of analysts	8,335
No. of brokerages	325
No. of countries/jurisdictions	19

We next merge this sample with both the Security Daily file and the Fundamentals Annual file in the Compustat Global database. We use the linking table to attach Compustat Global SEDOL to our I/B/E/S sample. After this merger, we are left with 796,270 observations from 92 countries. After dropping the countries/jurisdictions with fewer than 100 observations,

we are left with a sample from 57 countries/jurisdictions. Our final sample to test hypotheses 1, 3a, and 3b consists of 795,550 observations representing 93,517 firm-years, 15,420 distinct firms, and 20,114 distinct analysts from 782 brokerage houses.

To construct our sample to test Hypothesis 2, we further delete countries that do not have the accrual index developed in Hung (2001); we also only keep observations from the pre-IFRS period (i.e. 1994–2004). Our final sample has 197,980 observations representing 21,828 firm-years and 5,583 distinct firms domiciled in 19 countries and forecasted by 8,335 distinct analysts employed by 325 brokerages.

Table 2 Univariate Analyses (No. of observations = 795,550)

Panel A Descriptive statistics

	Mean	Std	1%	25%	Median	75%	99%
RET_3days_{ijt}	-0.0005	0.061	-0.171	-0.027	-0.0007	0.060	0.164
$CFREV_{ijt}$	-0.001	0.033	-0.165	-0.006	-0.00001	0.005	0.138
$EREV_{ijt}$	-0.002	0.033	-0.117	-0.004	-0.0004	0.003	0.085
$LNMV_{it}$	7.988	2.002	2.928	6.634	8.022	9.389	12.43
BM_{it}	1.101	2.494	0.001	0.255	0.495	0.924	20.35
$MOMENTUM_{ijt}$	0.009	0.328	-0.628	-0.170	-0.017	0.146	1.060

Panel B Pairwise correlations

	RET_3days_{ijt}	$CFREV_{ijt}$	$EREV_{ijt}$	$LNMV_{it}$	BM_{it}	$MOMENTUM_{ijt}$
RET_3days_{ijt}		0.064*** (<0.0001)	0.088*** (<0.0001)	-0.07*** (<0.0001)	0.013*** (<0.0001)	0.028*** (<0.0001)
$CFREV_{ijt}$	0.100*** (<0.0001)		0.568*** (<0.0001)	0.009*** (<0.0001)	0.012*** (<0.0001)	0.130*** (<0.0001)
$EREV_{ijt}$	0.137*** (<0.0001)	0.624*** (<0.0001)		0.024*** (<0.0001)	0.014*** (<0.0001)	0.183*** (<0.0001)
$LNMV_{it}$	0.004*** (<0.0001)	-0.004*** (0.0006)	0.002** (0.056)		-0.355*** (<0.0001)	-0.021*** (<0.0001)
BM_{it}	0.025*** (<0.0001)	0.036*** (<0.0001)	0.039*** (<0.0001)	-0.389*** (<0.0001)		0.012*** (<0.0001)
$MOMENTUM_{ijt}$	0.031*** (<0.0001)	0.185*** (<0.0001)	0.248*** (<0.0001)	0.025*** (<0.0001)	0.059*** (<0.0001)	

Pearson correlations are above the diagonal and Spearman correlations are below the diagonal. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively, all based on two-tailed tests. Variable definitions: RET_3days_{ijt} = cumulative size-adjusted return around three days centred on the date of the forecast revision of analyst *j* for firm *i* in year *t*; $CFREV_{ijt}$ = analyst *j*'s current one-year-ahead cash flow forecast minus analyst *j*'s most recent one-year-ahead cash flow forecast of year *t* for firm *i,* denominated in US dollars; $EREV_{ijt}$ = analyst *j*'s current one-year-ahead earnings forecast minus analyst *j*'s most recent forecast of one-year-ahead earnings of year *t* for firm *i,* denominated in US dollars; $LNMV_{it}$ = the natural log of the market value of equity for firm *i,* denominated in US dollars, at the beginning of the calendar year when the current forecast is made, computed as price in US dollars multiplied by number of shares outstanding at the beginning of calendar year *t*; BM_{it} = book to market value for firm *i* at the beginning of calendar year *t*; $MOMENTUM_{ijt}$ = six-month cumulative size-adjusted return ending two days before the forecast revision of analyst *j* in year *t* for firm *i*. To reduce the impact of outlying observations, $CFREV_{ijt}$, $EREV_{ijt}$, $LNMV_{it}$, and BM_{it} are winsorised at the 1% and 99% levels.

Table 2 provides summary statistics of all the variables as well as the correlations among the variables in the sample for testing hypotheses 1, 3a, and 3b. To alleviate the effect of outlying observations, we winsorise $EREV_{ijt}$, $CFREV_{ijt}$, $LNMV_{it}$, and BV_{it} at the 1% and 99% levels. As shown in Panel A, our mean RET_3days_{it} is -0.0005, ranging from -0.171 at the 1st percentile to 0.164 at the 99th percentile. We observe that the means and medians of $CFREV_{ijt}$ are both smaller than those of $EREV_{ijt}$. The means (medians) of $CFREV_{ijt}$ and $EREV_{ijt}$ are -0.001 (-0.00001) and -0.002 (-0.0004), respectively. However, the range of $CFREV_{ijt}$ is wider than that of $EREV_{ijt}$. $CFREV_{ijt}$ ($EREV_{ijt}$) ranges from -0.165 (-0.117) at the 1st percentile to 0.138 (0.085) at the 99th percentile.

Panel B presents the Pearson correlations (above the diagonal) and Spearman correlations (below the diagonal) among the variables. There is a significantly positive correlation between $CFREV_{ijt}$ and RET_3days_{ijt}, in that the Pearson (Spearman) correlation is 0.064 (0.100) and significant at the 1% level. $EREV_{ijt}$ is also positively correlated with RET_3days_{ijt}, in that the Pearson (Spearman) correlation is 0.088 (0.137) and significant at the 1% level. Furthermore, the correlation coefficient between $EREV_{ijt}$ and RET_3days_{ijt} is larger than that between $EREV_{ijt}$ and RET_3days_{ijt}. These preliminary results suggest (1) the existence of immediate market reaction to both cash flow forecast revisions and earnings forecast revisions and (2) that the market reaction to earnings forecast revisions is stronger than that to cash flow forecast revisions. We also find that $EREV_{ijt}$ and $CFREV_{ijt}$ are positively correlated, with a Pearson correlation coefficient of 0.568 and a Spearman correlation coefficient of 0.624, both significant at the 1% level.

In Table 3, we provide the sample distribution by country/jurisdiction, the means of key variables along with key country-level variables, and IFRS adoption status by country/jurisdiction. As shown in the first two columns, our sample is not heavily concentrated in certain countries/jurisdictions. France and the United Kingdom each provide slightly more than 10% of observations in the sample, with 11.75% of the sample coming from France and 10.92% coming from the United Kingdom. Australia, Germany, Japan, and Sweden each provide more than 5% but less than 10% of the sample. Therefore, it is not likely that our results will be driven by a subset of the countries/jurisdictions. Within our sample, 19 countries have $ACCR\_INDEX_c$ data available from Hung (2001).

Table 3 Means of Key Variables by Country/Jurisdiction and Institutional Variables

Country /jurisdiction	No.	Percentage	RET_3days_{ijt}	$CFREV_{ijt}$	$EREV_{ijt}$	$ACCR\_INDEX_c$	IFRS Adoption
Argentina	288	0.04%	-0.0035	-0.0080	-0.0065		2012
Australia	75,421	9.48%	-0.0021	-0.0010	-0.0013	0.82	2005
Austria	6,525	0.82%	-0.0007	-0.0020	-0.002		2005
Belgium	12,589	1.58%	-0.003	-0.0010	-0.0018	0.68	2005
Bermuda	937	0.12%	0.0005	-0.0050	-0.0071		No
Cayman Islands	368	0.05%	0.0122	-0.0070	-0.0086		No

China	26,955	3.39%	0.0038	-0.0009	-0.0011		No
Columbia	165	0.02%	-0.0044	-0.0010	0.0009		2015
Croatia	113	0.01%	0.0013	-0.0009	-0.0019		No
Cyprus	214	0.03%	-0.0084	-0.0050	-0.006		No
Czechia	688	0.09%	0.0003	-0.0005	-0.0019		2005
Denmark	14,966	1.88%	-0.0002	-0.0008	-0.001	0.55	2005
Egypt	221	0.03%	-0.0048	-0.0110	-0.0055		No
Estonia	116	0.01%	-0.0037	-0.0060	0.0004		No
Finland	24,103	3.03%	-0.0007	-0.0030	-0.0026	0.55	2005
France	93,443	11.75%	-0.0007	-0.0010	-0.0015	0.64	2005
Germany	68,673	8.63%	-0.0025	-0.0020	-0.0024	0.41	2005
Gibraltar	106	0.01%	-0.0001	-0.0100	-0.0058		No
Greece	3,733	0.47%	-0.0005	-0.0020	-0.0022		2005
Hong Kong	15,407	1.94%	0.0015	-0.0007	-0.0012	0.64	2005
Hungary	1,705	0.21%	-0.0005	-0.0020	-0.002		No
India	14,427	1.81%	-0.0016	0.0000	-0.001		No
Indonesia	5,421	0.68%	0.0014	-0.0010	-0.0011		No
Ireland	3,228	0.41%	0.0024	-0.0005	-0.001	0.82	2005
Israel	451	0.06%	-0.0073	-0.0002	-0.001		2008
Italy	18,992	2.39%	-0.0021	-0.0020	-0.0017	0.45	2005
Japan	66,032	8.30%	0.0004	0.0008	0.0001	0.55	No
Jersey	121	0.02%	0.0014	-0.0040	-0.0033		No
Korea	32,765	4.12%	0.0032	-0.0010	-0.0019		2011
Luxembourg	3,953	0.50%	0.0016	-0.0030	-0.0021		2005
Malaysia	9,874	1.24%	-0.0029	-0.0030	-0.0033		2012
Mexico	5,153	0.65%	-0.001	-0.0010	-0.0019		2012
Morocco	556	0.07%	0.0002	0.0004	-0.0001		No
Netherlands	30,340	3.81%	-0.0007	-0.0030	-0.0024	0.73	2005
New Zealand	7,592	0.95%	-0.003	-0.0002	-0.0005	0.73	2007
Nigeria	282	0.04%	-0.0083	-0.0090	-0.0085		2012
Norway	27,919	3.51%	-0.0006	-0.0020	-0.0025	0.82	2005
Pakistan	322	0.04%	-0.002	-0.0030	-0.0022		2007
Papua New Guinea	1,283	0.16%	-0.0011	0.0003	-0.0004		1998
Peru	100	0.01%	-0.004	0.0000	-0.0079		2012
Philippines	2,244	0.28%	-0.0002	-0.0040	-0.0032		2005
Poland	2,572	0.32%	0.00004	-0.0040	-0.0042		2005
Portugal	3,201	0.40%	0.0009	-0.0010	-0.0013		2005
Qatar	124	0.02%	0.0088	0.0004	-0.0013		2002
Russian Federation (the)	3,759	0.47%	-0.0005	-0.0030	-0.0021		2012
Saudi Arabia	814	0.10%	-0.0014	-0.0010	-0.0024		No
Singapore	7,620	0.96%	-0.0015	-0.0020	-0.0021	0.64	2003
South Africa	6,649	0.84%	0.00004	-0.0010	-0.0015	0.68	2005
Spain	24,658	3.10%	-0.0005		-0.0013	0.77	2005
Sweden	51,095	6.42%	0.0011	-0.0010	-0.0013	0.59	2005
Switzerland	3,204	0.40%	0.0002	-0.0010	-0.0008	0.32	2005
Taiwan	15,839	1.99%	0.0002	-0.0010	-0.0015		2013
Thailand	7,920	1.00%	0.0004	-0.0010	-0.002		No

Turkey	2,870	0.36%	-0.0006	-0.0020	-0.0032		No
UK	86,909	10.92%	-0.0009	-0.0030	-0.001	0.82	2005
United Arab Emirates (the)	525	0.07%	-0.0002	-0.0010	-0.0063		2015

Variable definitions: RET_3days_{ijt} = cumulative size-adjusted return around three days centred on the date of the forecast revision of analyst *j* for firm *i* in year *t*; $CFREV_{ijt}$ = analyst *j*'s current one-year-ahead cash flow forecast minus analyst *j*'s most recent one-year-ahead cash flow forecast of year *t* for firm *i,* denominated in US dollars; $EREV_{ijt}$ = analyst *j*'s current one-year-ahead earnings forecast minus analyst *j*'s most recent forecast of one-year-ahead earnings of year *t* for firm *i,* denominated in US dollars. To reduce the impact of outlying observations, $CFREV_{ijt}$ and $EREV_{ijt}$ are winsorised at the 1% and 99% levels. $ACCR\_INDEX_c$ = the accrual index of the country the forecasted firm is domiciled in, developed by Hung (2001); and IFRS_Adoption indicates whether and when the country in which the forecasted firm is domiciled adopted IFRS.

V. Empirical Results

The results of testing Hypothesis 1 are reported in Table 4. Given that our sample is composed of firm-year-analyst-revision observations where cash flow forecast revisions are issued together with earnings forecast revisions by the same analyst on the same day, our model (1) includes both analysts' cash flow forecast revisions and earnings forecast revisions. There is a positive and significant three-day stock price reaction to analysts' earnings forecast revisions (α_2 = 0.2101, with analyst clustered t-statistic = 30.80). More importantly, there is a positive and significant three-day stock price reaction to analysts' cash flow forecast revisions (α_1 = 0.0353, with analyst clustered t-statistic = 9.32). Furthermore, investors seem to react more strongly to analysts' earnings forecast revisions than to their cash flow forecast revisions. This result is consistent with that from a study using US firms (Call *et al.*, 2013). Overall, these findings in Table 4 are consistent with Hypothesis 1 and suggest that market participants perceive analysts' cash flow forecasts to have information content incremental to earnings forecasts to help predict future cash flow realisations.

The results of testing Hypothesis 2 regarding whether investors' reaction to analysts' cash flow forecast revisions and analysts' earnings forecast revisions vary with the extent of accrual accounting are reported in Table 5. The extent of accrual accounting data are taken from Hung (2001). The accrual index ($ACCR\_INDEX_c$) represents the degree to which the accounting system moves away from a cash method measure of performance, with a higher index indicating higher use of accrual accounting. There is a positive and significant three-day stock price reaction to analysts' cash flow forecast revisions (α_1 = 0.0810, with analyst clustered t-statistic = 2.75). The coefficient of $CFREV_{ijt} \times ACCR\_INDEX_c$, which captures the impact of the extent of accrual accounting on market reaction, is negative (-0.0891) and significant at the 5% level. In support of Hypothesis 2, this negative coefficient indicates that investors' reaction to cash flow forecasts decreases when there is a greater extent of use of accrual accounting.

Taken together, the results from Table 5 suggest that in countries with a lower level of accrual accounting use, investors perceive analysts' cash flow forecasts to be more

Table 4 Market Reaction to Analysts' Cash Flow Forecast Revisions and Earnings Forecast Revisions (Test of Hypothesis 1)

$$RET\_3days_{ijt} = \alpha_0 + \alpha_1 CFREV_{ijt} + \alpha_2 EREV_{ijt} + \alpha_3 LNMV_{it} + \alpha_4 BM_{it} + \alpha_5 MOMENTUM_{ijt} + \Sigma_c Country_c + \Sigma_t Year_t + \varepsilon_{ijt} \quad (1)$$

Variable	Coefficient	t-statistic	Coefficient	t-statistic	Coefficient	t-statistic
Intercept	-0.0006	-0.16	0.0007	0.17	0.0007	0.18
$CFREV_{ijt}$	0.1106***	28.19			0.0353***	9.32
$EREV_{ijt}$			0.2404***	35.92	0.2101***	30.80
$LNMV_{it}$	-0.0000	-0.69	-0.0001**	-1.98	-0.0001**	-1.98
BM_{it}	0.0002***	6.80	0.0002***	5.96	0.0002***	5.93
$MOMENTUM_{it}$	0.0030***	9.07	0.0015***	4.54	0.0014***	4.25
Country-fixed effect	Yes		Yes		Yes	
Year-fixed effect	Yes		Yes		Yes	
R^2	0.61%		0.96%		0.99%	
No. of observations	795,550					

Reported *t*-statistics are based on White's (1980) heteroskedasticity-adjusted robust variance estimates, further clustered at the analyst level. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively. Variable definitions: RET_3days_{ijt} = cumulative size-adjusted return around three days centred on the date of the forecast revision for analyst *j* of firm *i* in year *t*; $CFREV_{ijt}$ = analyst *j*'s current one-year-ahead cash flow forecast minus analyst *j*'s most recent one-year-ahead cash flow forecast of year *t* for firm *i,* denominated in US dollars; $EREV_{ijt}$ = analyst *j*'s current one-year-ahead earnings forecast minus analyst *j*'s most recent forecast of one-year-ahead earnings of year *t* for firm *i,* denominated in US dollars; $LNMV_{it}$ = the natural log of the market value of equity for firm *i,* denominated in US dollars, at the beginning of the calendar year when the current forecast is made, computed as price in US dollars multiplied by number of shares outstanding at the beginning of calendar year *t*; BM_{it} = book to market value for firm *i* at the beginning of calendar year *t*; $MOMENTUM_{ijt}$ = six-month cumulative size-adjusted return ending two days before the forecast revision of analyst *j* in year *t* for firm *i*.

informative. However, as the use of accrual accounting increases, investors react more to analysts' earnings forecasts and less to analysts' cash flow forecasts. Note that this does not mean that cash flow forecasts become less useful for countries with a higher level of accrual accounting use. Our result showing that investors perceive analysts' earnings forecasts for countries with a higher level of accrual accounting use to be more informative can be attributed to the fact that earnings are more predictive of future cash flow realisation and cash flow forecasts help investors to use earnings forecasts to predict future cash flows.

The results of testing hypotheses 3a and 3b, which examine whether and how investors' reaction to analysts' cash flow forecast revisions changes upon the mandatory adoption of IFRS, are reported in Table 6. The variable $IFRS_{ct}$ is a dummy variable set equal to 1 when the country is under an IFRS regime and 0 when the country is under a non-IFRS regime. The coefficient on $IFRS_{ct}$ captures the average change in the outcome attributable to the adoption of IFRS.

The coefficient on $CFREV_{ijt}$ in model (3) is positive and significant ($\alpha_1 = 0.0117$, with analyst clustered t-statistic = 2.38), indicating a significant three-day stock price reaction to analysts' cash flow forecast revisions in the pre-IFRS period. The coefficient on $EREV_{ijt}$ is positive (0.1416) and significant at the 1% level, and the coefficient on $EREV_{ijt} \times IFRS_{ct}$ is

positive (0.1317) and significant at the 1% level. This result suggests that investors' reaction to earnings forecast revisions is stronger after the adoption of IFRS. More importantly, the coefficient of $CFREV_{ijt}\times IFRS_{ct}$, which captures the impact of IFRS adoption on market reaction, is positive (0.0452) and significant at the 1% level. In support of Hypothesis 3a, this positive coefficient indicates that investors' reaction to cash flow forecasts is more pronounced after the adoption of IFRS.

Table 5 The Impact of Extent of Accrual Accounting on Market Reaction to Analysts' Cash Flow Forecast Revisions (Test of Hypothesis 2)

$$RET\_3days_{ijt} = \alpha_0 + \alpha_1 CFREV_{ijt} + \alpha_2 CFREV_{ijt}\times ACCR\_INDEX_c + \alpha_3 EREV_{ijt} + \alpha_4 EREV_{ijt}\times ACCR\_INDEX_c + \alpha_5 ACCR\_INDEX_c + \alpha_6 LNMV_{it} + \alpha_7 BM_{it} + \alpha_8 MOMENTUM_{ijt} + \Sigma_c Country_c + \Sigma_t Year_t + \varepsilon_{ijt} \quad (2)$$

Variable	Coefficient	t-statistic	Coefficient	t-statistic	Coefficient	t-statistic
Intercept	0.0222***	2.59	0.0220***	2.58	0.0222***	2.60
$CFREV_{ijt}$	0.0568*	1.94			0.0810***	2.75
$CFREV_{ijt}\times ACCR\_INDEX_c$	0.0097	0.22			-0.0891**	-1.98
$EREV_{ijt}$			0.0001	0.00	-0.0752	-1.62
$EREV_{ijt}\times ACCR\_INDEX_c$			0.1750**	2.51	0.2586***	3.59
$ACCR\_INDEX_c$	-0.0282***	-2.69	-0.0279***	-2.67	-0.0281***	-2.68
$LNMV_{it}$	-0.0001	-0.83	-0.0001	-1.10	-0.0001	-1.09
BM_{it}	0.0001**	2.05	0.0001*	1.79	0.0001*	1.76
$MOMENTUM_{ijt}$	0.0005	0.96	0.0001	0.15	0.0000	0.08
Year-fixed effect	Yes		Yes		Yes	
Country-fixed effect	Yes		Yes		Yes	
R^2	0.21%		0.29%		0.30%	
No. of observations	197,980					

Reported *t*-statistics are based on White's (1980) heteroskedasticity-adjusted robust variance estimates, further clustered at the analyst level. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively. Variable definitions: RET_3days_{ijt} = cumulative size-adjusted return around three days centred on the date of the forecast revision of analyst j for firm *i* in year *t*; $CFREV_{ijt}$ = analyst *j*'s current one-year-ahead cash flow forecast minus analyst *j*'s most recent one-year-ahead cash flow forecast of year *t* for firm *i,* denominated in US dollars; $ACCR\_INDEX_c$ = the accrual index of the country the forecasted firm is domiciled in, as developed by Hung (2001); $EREV_{ijt}$ = analyst *j*'s current one-year-ahead earnings forecast minus analyst *j*'s most recent forecast of one-year-ahead earnings of year *t* for firm *i,* denominated in US dollars; $LNMV_{it}$ = the natural log of the market value of equity for firm *i,* denominated in US dollars, at the beginning of the calendar year when the current forecast is made, computed as price in US dollars multiplied by number of shares outstanding at the beginning of calendar year *t*; BM_{it} = book to market value for firm *i* at the beginning of calendar year *t*; $MOMENTUM_{ijt}$ = six-month cumulative size-adjusted return ending two days before the forecast revision of analyst *j* in year *t* for firm *i*.

Taken together, the results in Table 6 suggest that after the adoption of IFRS, investors perceive both analysts' cash flow forecasts and analysts' earnings forecasts to be more informative than in the pre-adoption period. This result is consistent with prior research that suggests IFRS adoption increases the quality of analysts' earnings forecasts (e.g. Byard *et al.*, 2011; Demmer *et al.*, 2019). Thus, investors perceive them to be more informative. Although

prior research regarding the adoption of IFRS mainly focuses on its impact on the quality of analysts' earnings forecasts, our results focus on how IFRS adoption impacts the usefulness of analysts' forecasts to investors. After the adoption of IFRS, cash flow forecasts are of higher quality and help investors to predict future cash flow realisations; thus, investors react more to cash flow forecast revisions.

Table 6 The Impact of IFRS Adoption on Market Reaction to Analysts' Cash Flow Forecast Revisions (Test of Hypothesis 3a and Hypothesis 3b)

$$RET\_3days_{ijt} = \alpha_0 + \alpha_1 CFREV_{ijt} + \alpha_2 CFREV_{ijt} \times IFRS_{ct} + \alpha_3 EREV_{ijt} + \alpha_4 EREV_{ijt} \times IFRS_{ct} + \alpha_5 IFRS_{ct} + \alpha_6 LNMV_{it} + \alpha_7 BM_{it} + \alpha_8 MOMENTUM_{ijt} + \Sigma_c Country_c + \Sigma_t Year_t + \varepsilon_{ijt} \quad (3)$$

Variable	Coefficient	t-statistic	Coefficient	t-statistic	Coefficient	t-statistic
Intercept	-0.0001	-0.02	0.0012	0.29	0.0012	0.29
$CFREV_{ijt}$	0.0665***	13.65			0.0117**	2.38
$CFREV_{ijt} \times IFRS_{ct}$	0.0811***	10.72			0.0452***	6.16
$EREV_{ijt}$			0.1519***	18.69	0.1416***	16.20
$EREV_{ijt} \times IFRS_{ct}$			0.1677***	13.01	0.1317***	9.92
$IFRS_{ct}$	-0.0025***	-5.45	-0.0025***	-5.29	-0.0024***	-5.26
$LNMV_{it}$	-0.0000	-0.81	-0.0001**	-2.18	-0.0001**	-2.19
BM_{it}	0.0002***	7.03	0.0002***	6.25	0.0002***	6.25
$MOMENTUM_{ijt}$	0.0030***	9.04	0.0015***	4.48	0.0013***	4.11
Country-fixed effect	Yes		Yes		Yes	
Year-fixed effect	Yes		Yes		Yes	
R^2	0.67%		1.06%		1.10%	
No. of observations	795,550					

Reported *t*-statistics are based on White's (1980) heteroskedasticity-adjusted robust variance estimates, further clustered at the analyst level. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively. Variable definitions: RET_3days_{ijt} = cumulative size-adjusted return around three days centred on the date of the forecast revision of analyst *j* for firm *i* in year *t*; $CFREV_{ijt}$ = analyst *j*'s current one-year-ahead cash flow forecast minus analyst *j*'s most recent one-year-ahead cash flow forecast of year *t* for firm *i,* denominated in US dollars; $IFRS_{ct}$ = a dummy variable which equals 1 when the country is under an IFRS regime in year *t* and 0 when the country is under a non-IFRS regime; $EREV_{ijt}$ = analyst *j*'s current one-year-ahead earnings forecast minus analyst *j*'s most recent forecast of one-year-ahead earnings of year *t* for firm *i,* denominated in US dollars; $LNMV_{it}$ = the natural log of the market value of equity for firm *i,* denominated in US dollars, at the beginning of the calendar year when the current forecast is made, computed as price in US dollars multiplied by number of shares outstanding at the beginning of calendar year *t*; BM_{it} = book to market value for firm *i* at the beginning of calendar year *t*; $MOMENTUM_{ijt}$ = six-month cumulative size-adjusted return ending two days before the forecast revision of analyst *j* in year *t* for firm *i*.

VI. Conclusions

In this paper, we test the information content of analysts' cash flow forecasts and earnings forecasts by testing the immediate market response to their revisions. Using a large international sample with cash flow forecasts and earnings forecasts by the same analyst on the same day, we find that investors react to both analysts' cash flow forecast revisions and analysts' earnings forecast revisions, although they react less strongly to the former.

Our cross-country analyses find that in countries with more cash-based (accrual-based)

accounting, investors' reaction to cash flow forecast revisions is stronger (weaker) whereas investors' reaction to earnings forecast revisions is weaker (stronger). Note that these results do not mean that cash flow forecasts become less useful for countries with a higher level of accrual accounting use. Our result showing that investors perceive analysts' earnings forecasts for countries with a higher level of accrual accounting use to be more informative can be attributed to the fact that earnings are more predictive of future cash flow realisation and cash flow forecasts help investors to use earnings forecasts to predict future cash flows. Exploring the mandatory adoption of IFRS, we find that investors react more strongly to analysts' cash flow forecast revisions in the post-IFRS period relative to the pre-IFRS period.

This study is the first to document that investors do use cash flow forecasts in their valuations in the international setting. It would be interesting to test whether the market underreacts or overreacts to analysts' cash flow forecast revisions. Furthermore, future research can identify the factors that explain the degree of underreaction or overreaction to these revisions in an international setting.

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