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## Article

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## IFRS and Market Reactions to Analyst Stock Recommendations: Evidence from Korea

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### ABSTRACT

We examine changes in both short-term and long-term market reactions to financial analysts' stock recommendations around the time of IFRS adoption. If the adoption of IFRS improves the corporate-information environment, thereby diminishing the role of the analyst as a generator of information, investors will become less dependent on analyst recommendations; thus, market reactions to analysts' stock recommendations will decrease. However, if the corporate-information environment deteriorates after the adoption of IFRS, investors will become more dependent on information from intermediaries, such as financial analysts; thus, market reactions to analysts' stock recommendations will increase. Based on observations of South Korean companies, we find that short-term market reactions to analysts' stock recommendations diminish after the adoption of IFRS but fail to find a decrease in long-term market reactions to analysts' stock recommendations after the adoption of IFRS. Our results suggest that IFRS enhances the corporate-information environment and, therefore, that investors rely less on financial analysts' recommendations after the adoption of IFRS.

*Key words: IFRS; Analyst Stock Recommendation; Market Reaction; Corporate Information Environment*

## 1. Introduction

On July 19, 2002, the European Union (EU) Parliament approved a regulation that mandates that all companies listed in the EU adopt International Financial Reporting Standards (IFRS) no later than the fiscal year starting January 1, 2005 (Van Tendeloo & Vanstraelen, 2005). In an attempt to participate

in the global movement of unifying accounting systems and improving the transparency and comparability of accounting information, the Korean Accounting Standard Board) approved the introduction of IFRS in 2007, encouraged voluntary adoption of IFRS in 2009, and enforced mandatory adoption of IFRS in 2011. Although the widespread adoption of IFRS has triggered studies of its various economic consequences, whether it is economically beneficial is controversial.

In this study, we investigate the influence of IFRS adoption on the corporate-information environment and investors' reactions to the change in that information environment. There are two conflicting

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explanations of the effects of IFRS on the corporate-information environment. One line of literature claims that the adoption of IFRS improves the corporate-information environment. Such studies state that IFRS financial statements provide information that is more indicative of company value and more timely than that of non-IFRS financial statements. They also claim that adopting IFRS improves the comparability and transparency of accounting information and fosters disclosure. Therefore, after a company adopts IFRS, its investors may receive better information about it. However, the other line of literature argues that IFRS diminishes the quality of accounting information by allowing management more discretion and enabling opportunistic behavior. If the positive influence of IFRS, which enables investors to access information that better reflects the economic substance of companies, overrides factors that can lead to reduced quality of accounting, the information generated by financial analysts after the adoption of IFRS becomes less important to investors. Thus, market reactions to analysts' stock recommendations would weaken after adoption of IFRS. However, if the deterioration of accounting quality under IFRS overwhelms the increase in the value of the accounting information, investors become more dependent on intermediaries such as financial analysts after the adoption of IFRS. Thus, market reactions to analysts' stock recommendations would strengthen after adoption of IFRS. Therefore, whether market reactions to analysts' stock recommendations increase after the adoption of IFRS is a question worthy of empirical analysis.

In this study, we examine changes in both short-term market reactions and long-term market reactions to analysts' stock recommendations around the time of IFRS adoption. Based on observations of South Korean companies, we find that short-term market reactions to analysts' stock recommendations diminish after the adoption of IFRS, but we fail to find a decrease in long-term market reactions to analysts' stock recommendations after the adoption of IFRS. The results suggest that IFRS has enhanced the corporate-information environment in South

Korea such that investors now rely less on financial analysts than they did previously.

This study contributes to the existing literature in two ways. First, it provides empirical evidence of the effects, from an investor's perspective, of IFRS adoption. Although prior studies have explored the various economic consequences of IFRS adoption, there is little evidence of whether investors understand the implications of IFRS adoption and how they react to that regulatory change. By investigating market reactions to analysts' stock recommendations, the culmination of the information generated by those financial analysts, in this study we shed light on how investors adjust their investment decisions in response to changes in the corporate-information environment attributable to the new accounting standard. Second, this study adds to the international evidence of the positive effect of adopting IFRS. The economic consequences of IFRS are functions of the enforcement mechanisms established by the country that introduces it (Ball, 2006). Differences in legal system, culture, and business environment may affect the process by which accounting information is generated and interpreted under IFRS (Armstrong, Barth, Jagolinzer, & Riedl, 2010; Soderstrom & Sun, 2007). This study shows that South Korea's corporate-information environment has improved since the implementation of IFRS.

The remainder of this paper is organized as follows: Section II reviews the previous literature, section III describes the methods, including the sample and the research model, section IV presents the results of the analysis, and section V summarizes and discusses the conclusions.

## II. Literature Review and Research Question

### A. Information environment: Accounting quality and analysts' forecasting accuracy

Previous research generally has used the quality

of accounting information and the characteristics of analysts' forecasts of company earnings as primary proxies for the quality of the corporate-information environment (Soderstrom & Sun, 2007; Horton, Serafeim, & Serafeim, 2013). Accounting theory argues that the improvement of the quality of financial reporting reduces information asymmetry by disclosing relevant, timely information (Frankel & Li, 2004). Thus, better-quality financial reporting enhances the corporate-information environment. In addition, prior studies have suggested that more accurate analyst forecasts reveal a firm that is followed by analysts who provide superior information. Lang and Lundholm (1996) supported this argument, finding that firms with expanded disclosure are followed by analysts who have smaller forecast errors. Hope (2003) showed that analysts who follow companies that are based in countries that have more stringent disclosure policies and enforcement of those policies publish more accurate forecasts.

## **B. IFRS and the information environment**

Studies that have investigated the influence of IFRS adoption on the corporate-information environment can be categorized into two groups. One line of literature claims that the adoption of IFRS enhances the corporate-information environment. That argument is based on the assumption that imposing a single set of high-quality accounting standards improves the function of capital markets (Quigley, 2007) by enhancing the value and timeliness of accounting reports, facilitating the comparability of accounting information, increasing transparency, and thus reducing information costs and information asymmetry (Ball, 2006; Choi & Meek, 2005). Barth, Landsman, and Lang (2008) found that firms that adopt IFRS are less likely to manipulate earnings and more timely in recognizing losses than are firms that do not adopt IFRS. They also found that the earnings of companies that adopt IFRS are likely to be more indicative of company value, which is evidence of improved earnings quality. Comprix,

Muller, and Stanford (2003) showed that favorable market reactions to the news of IFRS adoption in the EU are related to the number of new disclosures and accruals of companies under IFRS. Burgstahler, Hail, and Leuz (2006) found that Comprix, Muller, and Stanford's index of new disclosures and accruals is statistically significantly related to less earnings management.

Extant studies also have provided empirical evidence of the positive effect of IFRS adoption on the accuracy of analysts' forecasts of company earnings. Ashbaugh and Pincus (2001) found that the accuracy of analysts' forecasts improves after the adoption of International Accounting Standards, the predecessor to IFRS. They also showed that the improvement of analysts' forecast accuracy can be attributed to the harmonization of accounting policies across companies. Horton et al. (2013) found that, after mandatory IFRS adoption, analysts' forecast accuracy and other proxies for the quality of the information environment improve statistically significantly more for companies that adopt IFRS. Furthermore, they provided evidence that the enhancement of the information environment is attributable to the improvement of both the quality of the information and the comparability of the accounting.

The other line of research argues that IFRS diminishes the quality of accounting information by allowing management more discretion and enabling opportunistic behavior. Ball (2006) and Byard, Ying, and Yu (2011) pointed out that the alleged benefits of IFRS adoption are realized only when an appropriate enforcement mechanism exists, suggesting possible inconsistency in benefits from IFRS adoption in various capital markets (Chu, Heo, & Pae, 2014). Ball (2006) argued that the fair-value orientation of IFRS may increase the volatility of accounting information. Although this volatility may affect—both favorably and unfavorably—the quality of accounting information, the unfavorable outcome would result in inherent estimation error and potential managerial manipulation of accounting results (Horton et al., 2013). Ahmed, Neel, and Wang (2013) documented

Table 1. Sample selection procedure

	Number of recommendations
All analysts' stock recommendations on DataguidePro from January 1, 2000 to December 31, 2014	1,165,074
Less: Recommendations without actual earnings reporting date	(97,289)
Less: Recommendations not issued most recently for the year	(974,327)
Less: Recommendations for firms followed by less than two analysts	(2,423)
Less: Recommendations without analyst-specific information	(549)
Final sample	90,486

that accruals are made reported aggressively and losses are recognized on a less timely basis by IFRS adopters, indicating inferior quality of accounting information after mandatory IFRS adoption.

### C. Adoption of IFRS and market reactions to analysts' stock recommendations

The effects of IFRS adoption on accounting quality are significantly influenced by whether the IFRS reporting is of higher or lower quality than domestic GAAP reporting and the efficacy of enforcement mechanisms (Ahmed et al., 2013). If the mandatory adoption of IFRS in a given market improves the corporate-information environment, the information content in analysts' stock recommendations is diminished, resulting in weaker investor reactions to those recommendations. On the other hand, if the corporate-information environment deteriorates after the adoption of IFRS, investors become more dependent on information intermediaries, such as financial analysts, to understand the implications of the financial reports; in that case, market reactions to analysts' stock recommendations strengthen. Therefore, in order to obtain empirical evidence of how investors perceive the implications of IFRS adoption on the corporate-information environment, we examine changes in both short-term market reactions and long-term market reactions to analysts' stock recommendations around the time of IFRS adoption in South Korea.

## III. Research methods

### A. Sample

Our sample consists of analysts' stock recommendations from the DataGuidePro database for companies listed on the Korean Stock Exchange (KSE) and the Korean Securities Dealers Automated Quotation (KOSDAQ) for the years 2000 through 2014.<sup>1)</sup> We collected daily stock returns, daily stock trading volume, and annual market capitalization for each company, also from this database. We obtained each company's actual earnings reporting dates from the TS-2000 database.

The sample selection procedure is presented in Table 1. The total number of stock recommendations for the period is 1,165,074. To limit our analysis to the most recent stock recommendations as of each annual earnings reporting date for each company, we exclude stock recommendations for which no earnings reporting date is specified and each analyst's previous stock recommendations, retaining only the most recent recommendation by each analyst prior to the actual earnings reporting date each year.<sup>2)</sup> To ensure at least a minimal amount of investor interest in each company, we eliminate observations of companies that were followed by fewer than two analysts. Finally, we exclude observations that do not include analyst-

<sup>1)</sup> The sample period starts in 2000 because data in the DataGuidePro database begins with that year.

<sup>2)</sup> To mitigate concerns about correlations among analysts' stock recommendations, we include only each analyst's most recent recommendation for each company prior to the actual earnings reporting date each year. As a robustness test, we test our main regression model by using sample of all of the analysts' stock recommendations; those regression results are shown in Table 9.

specific information. After the use of these filters, we are left with the final sample, which is composed of 90,486 stock recommendations by analysts.

## B. Research model

To investigate the difference in investors' reactions to analysts' stock recommendations before and after companies' adoption of IFRS, we perform several analyses of stock returns. First, we examine short-term abnormal returns in relation to analysts' stock recommendations. If a company's adoption of IFRS causes investors to perceive analysts' stock recommendations of that company as less informative than before IFRS, the company's short-term abnormal stock returns in relation to analysts' recommendations decrease. On the other hand, if a company's adoption of IFRS causes investors to perceive analysts' stock recommendations as more informative than before IFRS, because they view the information environment as more difficult to interpret, the company's short-term abnormal returns in relation to analysts' recommendations increase.

Next, we examine long-term realized stock returns and the corresponding analysts' recommendations. Following the approach of Ball and Brown (1968), we examine the realized returns conditioning on the ex-post outcome of the analysts' stock recommendations. We examine the market reactions to analysts' stock recommendations by evaluating whether the relationship between the stock returns and the analysts' recommendations differs before and after the companies' adoption of IFRS. We measure the difference between the buy and hold price for each stock and the same-period buy and hold prices for a portfolio of firms matched to that company by size deciles. The short-term returns for the announcement period are measured from trading day -1 to trading day +1, in which trading day 0 is the day on which the analyst recommendation is announced (*BHAR 3 day*), and the long-term returns for the post-announcement period are measured from trading day +2 to trading day 250 or the end date

for the recommendation (*BHAR 250 day*), whichever is earlier.<sup>3)</sup> Both the announcement-period returns and the post-announcement-period returns are given in percentages. We estimate a regression model for the relationship between stock returns and analysts' recommendations as follows:<sup>4)</sup>

$$\begin{aligned} \text{Return} = & \alpha_1 \text{Strong Buy} + \alpha_2 \text{Buy} + \alpha_3 \text{Hold} \\ & + \alpha_4 \text{Underperform} + \alpha_5 \text{Sell} + \alpha_6 \text{Strong Buy} \times \text{IFRS} \\ & + \alpha_7 \text{Buy} \times \text{IFRS} + \alpha_8 \text{Hold} \times \text{IFRS} \\ & + \alpha_9 \text{Underperform} \times \text{IFRS} + \alpha_{10} \text{Sell} \times \text{IFRS} + e \end{aligned} \quad (1)$$

where *Strong Buy* is a dummy variable that equals 1 if the recommendation is Strong Buy and 0 otherwise; *Buy*, a dummy variable that equals 1 if the recommendation is Buy and 0 otherwise; *Hold*, a dummy variable that equals 1 if the recommendation is Hold and 0 otherwise; *Underperform*, a dummy variable that equals 1 if the recommendation is Underperform and 0 otherwise; *Sell*, a dummy variable that equals 1 if the recommendation is Sell and 0 otherwise; and *IFRS*, a dummy variable that equals 1 if the recommendation is issued after the company's adoption of IFRS and 0 otherwise.

Following Peterson's (2009) approach, we correct for standard errors by using firm-level clustering. The coefficients through represent the change in investors' reactions to analysts' stock recommendations after the adoption of IFRS. If investors perceive the analysts' recommendations as less informative after the company's adoption of IFRS, the announcement-period short-term reactions to the recommendations issued after IFRS will be smaller than the reactions to the recommendations issued before the adoption of IFRS; therefore, the coefficients through will have opposite signs to those of through, respectively.

<sup>3)</sup> In addition to 250 trading days (one year), we also consider other holding periods for calculating post-announcement returns: 21 trading days (one month), 63 trading days (three months), and 125 trading days (six months). The patterns of the untabulated results of the regressions for those holding periods are similar to the pattern shown in Table 6.

<sup>4)</sup> Following the approach of Lin and McNichols (1998), we also adopt an ordinary least squares regression model with zero intercept. By doing so, we avoid the full-rank problem when we include dummy variables that specify all categories of stock recommendations.

**Table 2.** Sample distribution

<b>Panel A: Distribution by year</b>						
Year	Number of recommendations		Percentage (%)			
2000	2,294		2.54			
2001	5,083		5.62			
2002	7,045		7.79			
2003	7,183		7.94			
2004	7,149		7.90			
2005	7,042		7.78			
2006	6,852		7.57			
2007	6,254		6.91			
2008	6,216		6.87			
2009	6,533		7.22			
2010	6,513		7.20			
2011	6,358		7.03			
2012	5,843		6.46			
2013	4,523		5.00			
2014	5,598		6.19			
Total	90,486		100			

  

<b>Panel B: Distribution by industry</b>						
Industry classification	Number of recommendations		Percentage (%)			
Construction	3,308		3.66			
Mining and quarrying	20		0.02			
Education	652		0.72			
Financial and insurance activities	7,043		7.78			
Agriculture, forestry and fishing	108		0.12			
Wholesale and retail trade	5,918		6.54			
Real estate activities and renting and leasing	91		0.10			
Business facilities management and business support services	903		1.00			
Accommodation and food service activities	55		0.06			
Arts, sports and recreation related services	856		0.95			
Transportation	2,017		2.23			
Electricity, gas, steam and water supply	1,583		1.75			
Professional, scientific and technical activities	9,575		10.58			
Manufacturing	48,153		53.22			
Information and communications	9,961		11.01			
Sewerage, waste management, materials recovery and remediation activities	54		0.06			
Membership organizations, repair and other personal services	189		0.21			
Total	90,486					

  

<b>Panel C: Distribution by types of recommendations</b>						
Types of recommendations	Before IFRS		After IFRS		Total	
	Frequency (#)	Percentage (%)	Frequency (#)	Percentage (%)	Frequency (#)	Percentage (%)
Strong Buy	567	0.83	133	0.60	701	0.77
Buy	45,829	67.23	19,106	85.59	65,002	71.84
Hold	20,709	30.38	3,052	13.67	23,791	26.29
Underperform	865	1.27	22	0.10	888	0.98
Sell	194	0.28	9	0.04	203	0.22
Total	68,164		22,322		90,486	

In the analysis of the post-announcement-period, if analysts' recommendations issued after the adoption of IFRS have increased long-term investment value, post-announcement long-term returns are more responsive to recommendations issued after the company's adoption of IFRS than to recommendations issued before the adoption of IFRS; therefore, the coefficients through will be statistically significant and positive.

## IV. Results

### A. Sample distribution

Table 2 reports the distribution of the sample used in this study. Panel A reports the distribution of analysts' recommendations by year. Although there are fewer recommendations in the year 2000, because of the DataGuidePro database's limitation, observations are almost evenly distributed across the remaining years. There is no sign of a systematic time-series pattern in analysts' recommendations. Panel B reports the distribution of analysts' recommendations by industry:

53.22% in manufacturing industries, followed by 11.01% in the information and communications industries, and 10.58% in professional, scientific, and technical industries. Panel C reports the distribution of analysts' recommendations by types: 71.84%, a majority, were Buy recommendations, 26.29% were Hold recommendations, and Underperform and Sell recommendations comprised the remaining very small proportion. This distribution suggests that financial analysts in South Korea issue quite biased recommendations, tending heavily toward Buy recommendations. This bias has become more severe since the adoption of IFRS: Buy recommendations have increased from 67.23% to 85.59% of the total, and Hold recommendations have decreased from 30.38% to 13.67% of the total. The strengthening of this optimistic bias creates doubt about the credibility and usefulness of analysts' stock recommendations since the adoption of IFRS in South Korea.

### B. Descriptive statistics

Descriptive statistics for the sample are presented in Table 3. First, looking at *BHAR 3 day*, we see

**Table 3.** Descriptive statistics

Variables (N=90,486)	Mean	Median	Std. Dev.	Sum	Min	Max
Buy and hold abnormal return (3days)	0.003	-0.001	0.052	245	-0.128	0.174
Buy and hold abnormal return (250 days)	0.061	-0.050	0.732	5,556	-1.115	4.080
Dummy for "Strong Buy"	0.008	0.000	0.088	700	0.000	1.000
Dummy for "Buy"	0.718	1.000	0.450	64,935	0.000	1.000
Dummy for "Hold"	0.263	0.000	0.440	23,761	0.000	1.000
Dummy for "Underperform"	0.010	0.000	0.099	887	0.000	1.000
Dummy for "Sell"	0.002	0.000	0.047	203	0.000	1.000
Firm size	13.390	13.311	1.902	1,211,624	9.599	17.638
Tenure	4.068	3.000	3.302	368,124	0.000	15.000
Firm-specific experience	2.029	1.000	2.492	183,640	0.000	15.000
Forecast horizon	1.025	1.000	0.985	92,766	0.000	7.000
Firm coverage	13.505	12.000	7.815	1,221,991	1.000	89.000
Industry coverage	2.657	2.000	1.467	240,407	1.000	10.000
Brokerage size	23.545	22.000	9.805	2,130,495	1.000	58.000
Analyst followings	18.164	18.000	10.069	1,643,619	1.000	53.000



that approximately 0.3% of abnormal returns are generated around the time of the announcement of analysts' recommendations. Investors react to the analysts' recommendations because they perceive those recommendations as informative, at least in the short term. The mean of *BHAR 250 day* is the mean value of the abnormal returns in relation to analysts' recommendations over a long-term period, for which we have assumed one year. This mean long-term abnormal return is approximately 6.1%, meaning that an investor earns a return 6.1 percentage points higher when following analysts' recommendations than when not following analysts' recommends; thus, analysts' recommendations provide information. The independent variables are the following: the dummy variables for each type of analyst recommendation, already described; *Firm size*, the log of company j's market capitalization at the end of the year; *Tenure*, analyst i's number of years of experience since his or her first stock recommendation appeared in the DataGuidePro database; *FirmEXP*, or firm-specific experience, analyst i's number of years of experience covering company j; *Forecast horizon*, the period between the analyst's recommendation announcement date t and company j's corresponding earnings reporting date; *Firm coverage*, the number of

companies that analyst i covered during year t; *Industry coverage*, the number of industries that analyst i covered during year t; *Brokerage size*, the number of analysts who worked, during year t, for the securities firm for which analyst i worked; and *Analyst following*, the number of analysts that covered company j during year t. The descriptive statistics for these variables are similar to those obtained by Lim and Jung (2012).

Table 4 shows the Pearson correlations among the variables of interest. *BHAR 3 day* and *BHAR 250 day* are statistically significantly and positively correlated. We have confirmed that in the short term investors react to analysts' recommendations and that those short-term reactions persist, generating long-term abnormal returns; thus, the South Korean market is efficient. Both Strong Buy and Buy recommendations are statistically significantly and positively correlated with *BHAR 3 day* and *BHAR 250 day*. On the other hand, Hold, Underperform, and Sell recommendations are statistically significantly and negatively correlated with both types of returns. These results show that the South Korean market is generally efficient and that our sample is well composed. As shown by *BHAR 3 day* and *BHAR 250 day* being positively correlated with *IFRS*,

**Table 4.** Correlation

#	Variables	1	2	3	4	5	6	7	8
1	BHAR (3days)	1.000	0.054 (0.000)	-0.011 (0.002)	0.033 (0.000)	0.096 (0.000)	-0.097 (0.000)	-0.021 (0.000)	-0.027 (0.000)
2	BHAR (250 days)		1.000	0.012 (0.001)	0.000 (0.991)	0.035 (0.000)	-0.028 (0.000)	-0.025 (0.000)	-0.019 (0.000)
3	IFRS			1.000	-0.012 (0.001)	0.176 (0.000)	-0.164 (0.000)	-0.051 (0.000)	-0.022 (0.000)
4	Strong Buy				1.000	-0.141 (0.000)	-0.053 (0.000)	-0.009 (0.008)	-0.004 (0.208)
5	Buy					1.000	-0.951 (0.000)	-0.159 (0.000)	-0.076 (0.000)
6	Hold						1.000	-0.059 (0.000)	-0.028 (0.000)
7	Underperform							1.000	-0.005 (0.156)
8	Sell								1.000

Notes: This table presents the Pearson correlations among the variables of our interests. p-values are in parentheses.

**Table 5.** Univariate tests

<b>Panel A: Buy and hold abnormal return (3 days)</b>						
Variables	Before IFRS		After IFRS		t-tests	
	Mean	N	Mean	N	Change	(t-value)
Strong Buy	0.026	567	0.006	133	-0.019	(-3.30) ***
Buy	0.007	45,829	0.003	19,106	-0.004	(-8.53) ***
Hold	-0.005	20,709	-0.007	3,052	-0.002	(-1.88) *
Underperform	-0.008	865	-0.006	22	0.002	(0.14)
Sell	-0.027	194	-0.011	9	0.016	(0.68)
<b>Panel B: Buy and hold abnormal return (250 days)</b>						
Variables	Before IFRS		After IFRS		t-tests	
	Mean	N	Mean	N	Change	(t-value)
Strong Buy	0.064	567	0.051	133	-0.013	(-0.19)
Buy	0.079	45,829	0.074	19,106	-0.005	(-0.73)
Hold	0.018	20,709	0.092	3,052	0.074	(5.16) ***
Underperform	-0.129	865	0.018	22	0.147	(1.09)
Sell	-0.246	194	-0.093	9	0.153	(0.84)

Notes: The t-statistics and the z-statistics in parentheses are obtained from t-test and Wilcoxon rank sum test respectively. The superscript asterisks indicate the explanatory variable coefficient significance at p-values less than 0.10 (\*), 0.05 (\*\*), and 0.01 (\*\*\*).

investors are more likely to react to analysts' recommendations, in the both short-term and long-term, after the adoption of IFRS.

### C. Univariate tests

We perform two types of univariate t-tests in this study. First, as presented in Panel A, we examine the difference in short-term investor reactions to analysts' recommendations, by recommendation type, before the adoption of IFRS and after the adoption of IFRS. After the adoption of IFRS, the short-term reactions to Strong Buy, Buy, and Hold recommendations decreased, and the decreases are statistically significant. These results prove that investors recognize those three types of recommendations as less informative after the adoption of IFRS than before the adoption of IFRS. Second, Panel B is focused on whether long-term reactions to analyst recommendations are changed after the adoption of IFRS or not. The long-term investor reactions to Strong Buy and Buy recommendations diminished after the adoption of

IFRS, but the difference is not statistically significant. The long-term reactions to Hold recommendations, however, increased statistically significantly. These results suggest that the South Korean stock market rationally discounted Strong Buy and Buy recommendations in the short term, because investors knew that such companies' stocks would generate lower returns in the long term. However, this discounting behavior also was applied to Hold recommendations even though such companies' stocks generated higher returns in the long term.

### D. Multivariate tests

In addition to the univariate tests, we investigate multivariate tests to determine how IFRS influences market reactions to analysts' recommendations. Table 6 presents the results of ordinary least squares regressions of announcement and post-announcement returns on analysts' recommendations.<sup>5)</sup> The results

<sup>5)</sup> We also perform an analysis using propensity score matching to eliminate influences of other factors. In addition, we perform analyses of the subsamples 2001-2014 (eliminating the year

**Table 6.** Market reaction to analysts' recommendations

Variables	Dependent variables:			
	(i) BHAR (3 days)		(ii) BHAR (250 days)	
	Coeff. Est.	(t-value)	Coeff. Est.	(t-value)
Strong Buy	0.026	(11.95) ***	0.064	(2.09) **
Buy	0.007	(28.83) ***	0.079	(23.03) ***
Hold	-0.005	(-15.38) ***	0.018	(3.54) ***
Underperform	-0.008	(-4.63) ***	-0.129	(-5.19) ***
Sell	-0.027	(-7.39) ***	-0.246	(-4.69) ***
Strong Buy*IFRS	-0.019	(-3.93) ***	-0.013	(-0.18)
Buy*IFRS	-0.004	(-8.41) ***	-0.005	(-0.73)
Hold*IFRS	-0.002	(-1.92) *	0.074	(5.19) ***
Underperform*IFRS	0.002	(0.17)	0.147	(0.93)
Sell*IFRS	0.016	(0.94)	0.153	(0.62)
F-value	[142.68]***		[84.08]***	
R <sup>2</sup>	0.013		0.002	
N	90,486		90,486	

Notes: The t-statistics are in parentheses. Standard errors are corrected for firm-level clustering. \*, \*\*, and \*\*\* denote significance levels (two-sided) of 10%, 5%, and 1%, respectively.

are similar to those of univariate tests. The first column shows that the short-term market reactions to the analysts' Strong Buy, Buy, and Hold recommendation decreased after the adoption of IFRS, and the decreases are statistically significant. This is the evidence that investors recognize those three kinds of recommendations as less informative information in the short term. In the second column, the long-term market reactions to the analysts' Strong Buy and Buy recommendations decreased, but the decreases are not statistically significant. However, the result is statistically significant when we use all of the recommendations rather than only the most recent recommendations prior to each annual earnings announcement (see additional analysis section). Meanwhile, the long-term market reactions to the Hold recommendation increased after the adoption of IFRS, and the increase was statistically significant. Overall, the results shown in Table 6 confirm that

in the announcement period, investors correctly perceive that Strong Buy and Buy recommendations are associated with lower long-term stock returns but incorrectly perceive that Hold recommendations are associated with lower long-term stock returns.

## V. Additional analyses and Robustness test

### A. Additional analyses

We also test the effect of analyst experience on investors' reactions to the analysts' recommendations after the adoption of IFRS. As we have already shown, investors' dependency on analysts decreased after the adoption of IFRS, because the corporate-information environment improved; therefore, investors' reactions to recommendations weakened. We hypothesize that investors' reactions to more informative recommendations (i.e., those issued by highly experienced analysts) weakened less than reactions to other recommendations.

In this analysis, we measure analyst experience

2000, for which there were much fewer analyst stock recommendations) and 2007-2014 (which is composed of an equal number of years before IFRS adoption period and after IFRS adoption). The untabulated results of those analyses are similar to the main results presented here.

based on tenure and firm-specific experience. Specifically, we calculate *Tenure* as analyst i's number of years of experience since his or her first forecast appeared in the DataGuidePro database and *FirmEXP*, or firm-specific experience, as analyst i's number of years of experience covering company j. We include each of these two variables, in turn, in equation (1) and interact them with the other independent variables.

Table 7 shows the results of the regressions that include the analysts' firm-specific experience variable, *FirmEXP*. As shown in the first column, for the short term, the coefficient of *Buy\*IFRS* is statistically significant and negative but the coefficient of *Buy\*IFRS\*FirmEXP* is statistically

significant and positive. This means that investors' discounting of analysts' recommendations is mitigated when the recommendations are made by highly experienced analysts. However, the coefficients of the types of recommendation other than Buy are not statistically significant. As shown in the second column, for the long term, Strong Buy, Buy, and Underperform recommendations issued by highly experienced analysts generate high returns; however, those returns do not change after the adoption of IFRS. Thus, both before and after the adoption of IFRS highly experienced analysts issue more useful recommendations than do other analysts, so investors discount recommendations issued by highly experienced analysts after the adoption of IFRS.

**Table 7.** Firm-specific experience

Variables	Dependent variables:			
	(i) BHAR (3 day)		(ii) BHAR (250 day)	
Strong Buy	0.029	(11.52) ***	0.002	(0.06)
Buy	0.009	(28.90) ***	0.068	(15.83) ***
Hold	-0.005	(-11.28) ***	0.013	(1.90) *
Underperform	-0.007	(-3.57) ***	-0.196	(-6.83) ***
Sell	-0.026	(-5.76) ***	-0.267	(-4.10) ***
Strong Buy*IFRS	-0.019	(-2.94) ***	0.043	(0.47)
Buy*IFRS	-0.004	(-7.17) ***	0.000	(0.03)
Hold*IFRS	-0.004	(-2.56) **	0.078	(3.24) ***
Underperform*IFRS	0.006	(0.26)	0.332	(1.11)
Sell*IFRS	0.011	(0.41)	0.056	(0.15)
Strong Buy*FirmEXP	-0.011	(-2.26) **	0.257	(3.58) ***
Buy*FirmEXP	-0.005	(-9.83) ***	0.029	(4.12) ***
Hold*FirmEXP	-0.001	(-0.86)	0.013	(1.29)
Underperform*FirmEXP	-0.003	(-0.87)	0.266	(4.65) ***
Sell*FirmEXP	-0.003	(-0.34)	0.059	(0.54)
Strong Buy*IFRS*FirmEXP	0.004	(0.40)	-0.242	(-1.66) *
Buy*IFRS*FirmEXP	0.003	(3.19) ***	-0.018	(-1.43)
Hold*IFRS*FirmEXP	0.004	(1.82) *	-0.012	(-0.40)
Underperform*IFRS*FirmEXP	-0.003	(-0.11)	-0.429	(-1.21)
Sell*IFRS*FirmEXP	0.011	(0.32)	0.154	(0.31)
F-value	[77.13]***		[44.8]***	
R <sup>2</sup>	0.014		0.003	
N	90,486		90,486	

Notes: The t-statistics are in parentheses. Standard errors are corrected for firm-level clustering. \*, \*\*, and \*\*\* denote significance levels (two-sided) of 10%, 5%, and 1%, respectively.

Table 8 presents the results of the regressions using the analyst tenure variable, *Tenure*, instead of firm-specific experience. As shown in the first column, for the short term, the coefficient of *Buy\*IFRS* is statistically significant and negative and the coefficient of *Buy\*IFRS\*Tenure* is statistically significant and positive. This means that the negative influence of the adoption of IFRS on investor reactions to Buy recommendations is mitigated when the Buy recommendations are made by highly experienced analysts. However, the coefficients of the types of recommendation other than Buy are not statistically significant. As shown in the second column, for the long term, the reaction of stock returns to Hold recommendations are statistically significant and high after the adoption of IFRS. The effects of Hold and

Underperform recommendations issued by highly experienced analysts on long-term returns are also high before the adoption of IFRS. However, the results for the other kinds of recommendations are not statistically significant. Overall, highly experienced analysts issue recommendations that tend to generate abnormal returns, and investors know that well; therefore, investors discount the recommendations issued by such analysts less than recommendations made by other analysts after the adoption of IFRS.

## B. Robustness test

As a robustness test, we repeat the regressions, this time using all of the analyst recommendations

**Table 8.** Analysts' tenure

Variables	Dependent variables:			
	(i) BHAR (3 day)		(ii) BHAR (250 day)	
Strong Buy	0.027	(10.89) ***	0.061	(1.70) *
Buy	0.008	(26.02) ***	0.083	(18.31) ***
Hold	-0.005	(-10.69) ***	0.007	(1.02)
Underperform	-0.005	(-2.75) ***	-0.167	(-6.27) ***
Sell	-0.029	(-6.86) ***	-0.283	(-4.63) ***
Strong Buy*IFRS	-0.018	(-2.59) ***	-0.025	(-0.25)
Buy*IFRS	-0.005	(-6.66) ***	-0.007	(-0.64)
Hold*IFRS	-0.002	(-1.30)	0.053	(2.05) **
Underperform*IFRS	-0.013	(-0.55)	0.267	(0.81)
Sell*IFRS	0.010	(0.55)	0.049	(0.19)
Strong Buy*Tenure	-0.006	(-1.19)	0.014	(0.19)
Buy*Tenure	-0.003	(-6.38) ***	-0.009	(-1.30)
Hold*Tenure	-0.002	(-2.30) **	0.030	(2.87) ***
Underperform*Tenure	-0.022	(-4.30) ***	0.288	(3.93) ***
Sell*Tenure	0.008	(1.00)	0.141	(1.18)
Strong Buy*IFRS*Tenure	0.001	(0.11)	0.016	(0.11)
Buy*IFRS*Tenure	0.003	(2.91) ***	0.006	(0.46)
Hold*IFRS*Tenure	0.001	(0.66)	0.013	(0.42)
Underperform*IFRS*Tenure	0.037	(1.39)	-0.394	(-1.04)
F-value	[78.71]***		[45.8]***	
R <sup>2</sup>	0.014		0.003	
N	90,486		90,486	

Notes: The t-statistics are in parentheses. The F-statistics from the Wald tests are in square bracket. Standard errors are corrected for firm-level clustering. \*, \*\*, and \*\*\* denote significance levels (two-sided) of 10%, 5%, and 1%, respectively.

rather than only each analyst's most recent recommendation for each company prior to the earnings announcement date each year. The results are presented in Table 9. The coefficients have similar signs to those shown in Table 6 and are more statistically significant than those. Therefore, we do not provide detailed interpretations of them in this paper.

## VI. Conclusion

In this paper, we have investigated the influence of the adoption of IFRS in South Korea on the corporate-information environment and investors' reactions to the change in that environment. We have examined market reactions to analysts' stock recommendations around the time of adoption of IFRS and found that after the adoption of IFRS, short-term market reactions to analysts' recommendations weaken but long-term market reactions to analysts' recommendations do not weaken. Investors decrease their reliance on financial analysts because IFRS enhances the corporate-information environment. We have found that this weakening of market reactions

to analysts' recommendations is mitigated when the recommendations are issued by highly experienced analysts, where experience is measured as firm-specific or based on tenure. These results are robust, as evidenced by the performance of regressions of all recommendations rather than only each analyst's most recent recommendation for each company prior to the earnings announcement date each year.

This study presents several implications for researchers, practitioners, and regulators. From an academic perspective, we have tried to compromise the two conflicting arguments regarding the effect of IFRS on the corporate-information environment. In South Korea, empirical evidence of how the adoption of IFRS has affected the quality of the information generated by financial analysts is mixed. Previous research documented that the accuracy of analysts' earnings forecasts has improved since the adoption of IFRS, which suggests improvement of the corporate-information environment (Nam, 2015). On the other hand, Yoon and Mo (2016) found that analysts' stock recommendations are more optimistically biased after the adoption of IFRS. Our findings are consistent with those of Nam (2015), which supports an enhanced corporate-information environment as a result of the adoption of IFRS. Simultaneously,

**Table 9.** All recommendations

Variables	Dependent variables:			
	(i) BHAR (3 day)		(ii) BHAR (250 day)	
Strong Buy	0.019	(21.14) ***	0.036	(7.62) ***
Buy	0.005	(57.30) ***	0.020	(41.14) ***
Hold	-0.003	(-20.73) ***	-0.001	(-0.97)
Underperform	-0.008	(-9.72) ***	-0.032	(-7.71) ***
Sell	-0.013	(-5.93) ***	-0.074	(-6.34) ***
Strong Buy*IFRS	-0.008	(-4.12) ***	-0.032	(-3.11) ***
Buy*IFRS	-0.002	(-11.37) ***	-0.007	(-7.44) ***
Hold*IFRS	-0.002	(-4.84) ***	0.011	(4.07) ***
Underperform*IFRS	-0.021	(-2.63) ***	0.013	(0.32)
Sell*IFRS	-0.012	(-1.05)	0.032	(0.53)
R <sup>2</sup>	0.007		0.002	
N	446,718		446,718	

Notes: The t-statistics are in parentheses. Standard errors are corrected for firm-level clustering. \*, \*\*, and \*\*\* denote significance levels (two-sided) of 10%, 5%, and 1%, respectively.

our findings are also consistent with those of Yoon and Mo (2015), in that increased optimism in analysts' stock recommendations after the adoption of IFRS is likely to weaken market reactions to those recommendations, because investors tend to perceive more optimistic stock ratings as less credible.

Such differential effects of IFRS adoption on analysts' forecasts of company earnings and stock recommendations may be regarded as contradictory. However, Malmendier and Shanthikumar (2014) raised the possibility of the two-track approach of analysts' strategic behavior. Simultaneously forecasting earnings more accurately and issuing more optimistic stock recommendations enables an analyst to maintain his or her reputation while still currying favor with the management of the target company. In addition, because the economic consequences of new regulation are functions of the legal system, culture, and business environment (Ball, 2006; Armstrong et al., 2010; Soderstrom & Sun, 2007), the differential effects of the adoption of IFRS on the information generated by analysts may be, in part, the outcome of South Korea's relatively limited legal enforcement and unethical business culture. In this context, this study satisfies the request from Ball (2006) and Byard et al. (2011) to perform country-level research examining the economic consequences of IFRS adoption.

Our findings are closely related to the current criticism of financial analysts' optimistically biased reports. According to the Financial Supervisory Service, South Korea's finance regulator, Strong Buy and Buy recommendations comprised 90% of stock recommendations issued by domestic securities firms during 2011 to 2015 in South Korea. That proportion compares to 62% for stock recommendations made by foreign securities firms. Investors no longer rely on analyst reports in making their investment decisions, and the importance of the research department in brokerages and investment banks is diminishing. Foreign investors are likely to leave the South Korean capital market, suspicions about its reliability. We call for additional efforts from practitioners and regulators to regain investors'

confidence in analyst research.

In this study, we have reported the sample distribution by industry, but have not performed further analysis of the influence of industry on the effect of IFRS adoption. An investigation of whether the specific industry differentially affects the relationship between IFRS adoption and market reaction would be an interesting contribution to the literature.

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