The British Accounting Review xxx (xxxx) xxx

Contents lists available at ScienceDirect

The British Accounting Review

journal homepage: www.elsevier.com/locate/bar

Discretionary reporting and analyst forecasts of operating income under IFRS☆

Wonsuk Ha [a], Seung-youb Han [b,*], Woo-Jong Lee [c], Youngdeok Lim [d]

[a] School of Business Administration, Chung-Ang University, Seoul, South Korea
[b] Ewha School of Business, Ewha Womans University, Seoul, South Korea
[c] College of Business Administration, Seoul National University, Seoul, South Korea
[d] Business School, UNSW Sydney, Sydney, Australia

ARTICLE INFO

JEL classification:
G14
M41
M48

Keywords:
IFRS
Discretionary reporting
Analyst forecast
Operating income
Earnings subtotals

ABSTRACT

Leveraging the unique institutional features of Korea's adoption of International Financial Reporting Standards (IFRS) in 2011, we examine analysts' and investors' reactions to the elimination of standardized OI reporting. We find that financial analysts are less likely to issue OI forecasts immediately after IFRS adoption. Additionally, the accuracy of OI forecasts declines compared with sales or net income forecasts. Consequently, equity investors become less responsive to analysts' OI forecast revisions. However, these adverse effects dissipate after 2012 when regulators intervened and reinstated the OI definition used prior to IFRS adoption. Our findings support the International Accounting Standards Board's recent initiative to include earnings subtotals in financial reporting (i.e., IFRS 18).

1. Introduction

"*Our technical staff looked at 60 companies in different countries and industry sectors. About 70% of those companies used an operating profit subtotal, but there were no fewer than nine different versions of that subtotal—even though each subtotal used the same name. … Moreover, many non-GAAP measures tend to paint a very rosy picture of a company's performance, almost always showing a result that is better than the official IFRS numbers*."

(An excerpt from the keynote speech by Hans Hoogervorst, Chair of the International Accounting Standards Board, at the IFRS Foundation Conference 2019 in London, U.K.)

Discretionary reporting has attracted considerable attention from researchers, practitioners, regulators, and investors. On the one hand, it can convey private information (Black et al., 2021; Hail et al., 2010), enabling accounting performance metrics to better represent the core businesses of diversified firms. On the other hand, it allows managers to adjust accounts opportunistically to serve their vested interests (Black & Christensen, 2009; Doyle et al., 2013), which can cause a loss of comparability across firms, misleading users of financial information.

Under the International Financial Reporting Standards (IFRS), managers have substantial discretion in reporting earnings subtotals.

☆ IAS: International Accounting Standards; IASB: International Accounting Standards Board; IFRS: International Financial Reporting Standards; KASB: Korea Accounting Standards Board; GAAP: Generally Accepted Accounting Principles; K-GAAP: Korean GAAP; OI: Operating Income.

* Corresponding author.
E-mail addresses: wsha@cau.ac.kr (W. Ha), goodwillhan@ewha.ac.kr (S.-y. Han), woojong@snu.ac.kr (W.-J. Lee), youngdeok.lim@unsw.edu.au (Y. Lim).

https://doi.org/10.1016/j.bar.2025.101634
Received 3 August 2022; Received in revised form 5 December 2024; Accepted 9 March 2025
Available online 10 March 2025

In this regard, the International Accounting Standards Board (IASB) recently initiated the standardization of earnings subtotals reporting, a notable departure from the earlier full-discretion practice (Hoogervorst, 2019; International Accounting Standards Board IASB, 2018; International Accounting Standards Board IASB, 2024).[1] To highlight such initiatives, we analyze a unique institution in Korea, where IFRS adoption allowed managerial discretion in reporting operating income (OI) and subsequent regulatory intervention suppressed it. Specifically, we provide evidence on the consequences of discretionary reporting by examining how IFRS-induced discretionary reporting affects analysts' behavior.

During the pre-IFRS period, the Korean Generally Accepted Accounting Principles (K-GAAP) formally defined OI, allowing little discretion in its reporting. However, the IFRS adoption in 2011 eliminated this formal definition, and firms were no longer required to report OI. Nevertheless, given its status as a key performance indicator, most firms continued to report OI at their discretion. At the end of the fiscal year 2012, the Korea Accounting Standards Board (KASB) reinstated the former OI definition owing to concerns regarding the adverse effects of discretionary OI reporting practices. Consequently, these two institutional events in Korea—the IFRS adoption in 2011 and the subsequent regulatory intervention in 2012—created three distinct periods with varying levels of managerial discretion in reporting OI. This intertemporal comparison offers a unique opportunity to examine the implications of reporting subtotals under IFRS.[2]

To assess the impact of these regulatory changes, we focus on financial analysts' coverage decisions and forecast accuracy. Discretionary reporting allows firms to provide more tailored, firm-specific information while increasing uncertainty and information-processing costs for financial statement users. Thus, analysts may reduce their OI forecast coverage and generate less accurate forecasts when target firms discretionarily report OI. In contrast, the importance of OI as a key financial performance metric and the increased market demand for credible OI figures under heightened uncertainty may motivate analysts to maintain, or even increase, their OI forecast coverage with enhanced accuracy, suggesting improved forecast accuracy following IFRS adoption (Horton & Serafeim, 2010; Bilinski et al., 2013). Therefore, how the (temporary) elimination of the OI definition affects analysts' behavior is an empirical question.

To address our research question, we analyze analysts' quarterly forecasts for listed firms in Korea from 2007 to 2014 across three distinct sub-periods: (a) the K-GAAP period, during which OI was formally defined; (b) the early IFRS period, when the formal OI definition was absent, spanning the first quarter of 2011 to the third quarter of 2012; and (c) the later IFRS period, when the OI definition was reinstated, from the fourth quarter of 2012 onward. We compare the second period with the other two. For each period, we examine analysts' behavior regarding forecast coverage and accuracy. Additionally, we compare OI forecasts with sales or net income forecasts that remained unaffected by changes in OI reporting discretion across these regime shifts. This unique cross-item comparison helps us to draw stronger causal inferences resembling a difference-in-differences design.

Our empirical analyses reveal that during the period without a formal OI definition, analysts are more likely to cease forecasting OI figures and produce less accurate OI forecasts compared to sales or net income forecasts. These results support the view that discretionary OI reporting increases analysts' information-processing costs. Additionally, these adverse effects of arbitrary OI reporting practices were mitigated by the KASB's reintroduction of the OI definition in the later IFRS period. To further validate our main findings, we examine how discretionary OI reporting influences investors' responses to analysts' OI forecast revisions. The results show that investors' responses are muted in the absence of an OI definition, consistent with investors' reduced reliance on OI forecast revisions due to the increased informational risk associated with discretionary reporting.

Cross-sectional analyses corroborate our main findings. First, the lower accuracy of OI forecasts is more evident when managers exert greater discretion in OI measurements and firms provide relatively fewer voluntary disclosures. Second, when dividing forecasted net income into OI and non-OI components, our findings are primarily driven by the OI component. Collectively, these findings suggest that the absence of a formal OI definition results in substantial information-processing costs and diminishes the usefulness of accounting information. Our results remain robust to alternative definitions of test variables, sample periods, and controlling for potential selection bias.

This study makes several important contributions to the existing literature. First, it enriches the literature on discretionary reporting (Black & Christensen, 2009; Black et al., 2021; Doyle et al., 2013; Hail et al., 2010), a topic of interest for regulatory agencies (Black et al., 2018; Kolev et al., 2008). Unlike studies that primarily focus on non-GAAP disclosures, which are largely unregulated (Black & Christensen, 2009; Black et al., 2021; Doyle et al., 2013; Kolev et al., 2008), our study examines the effects of a regulatory change in the OI definition. This approach allows us to draw clearer inferences about the effects of discretionary reporting, while minimizing the impact of endogenous disclosure choices inherent in non-GAAP reporting (Bradshaw & Sloan, 2002; Bradshaw & Soliman, 2007; Choi & Young, 2015). Therefore, our findings provide new evidence supporting the IASB's recent initiative to standardize the reporting of earnings subtotals (International Accounting Standards Board IASB, 2018; International Accounting Standards

[1] The IASB has long considered defining earnings subtotals, including OI, under IFRS. OI is a key valuation parameter, reflecting the core earnings generated from a firm's main business activities (Financial Accounting Standards Board [FASB], 2009; International Accounting Standards Board IASB, 2018; Hoogervorst, 2019). In a field test conducted by the FASB (2009), analysts identified OI (31%) and EBITDA (29%) as the two primary performance metrics. The FASB notes that "analyst respondents may perceive financial statements as being less useful or more difficult to use if their definition of OI differs from that of the management." In line with this policy movement, the IASB issued IFRS 18 in 2024, titled "Presentation and Disclosure in Financial Statements" (effective in 2027), which requires firms to report core earnings separately as operating profit or loss, distinct from other earnings components related to investment or financial activities (International Accounting Standards Board IASB, 2024).

[2] All public firms continued to report OI because of the Korea Exchange's mandatory reporting requirements. Therefore, we exclusively focus on the extent, rather than whether, managerial discretion is exerted in measuring OI.

Board IASB, 2024).

Second, this study revisits the net benefits of IFRS adoption. Prior studies highlight its unilateral benefits in terms of earnings quality (Barth et al., 2008; Christensen et al., 2015; Hung & Subramanyam, 2007), information asymmetry (Leuz & Verrecchia, 2000), stock liquidity (Daske et al., 2008), and costs of equity capital (Hong et al., 2014; Li, 2010). Conversely, our study demonstrates that a high level of discretion in financial reporting under IFRS can impose significant costs on analysts and equity investors, at least during the transition period. Additionally, our study documents the unintended consequences of IFRS adoption, which the existing literature has rarely explored. Hence, our study differs from prior studies that have primarily emphasized the benefits of IFRS, directly responding to Leuz and Wysocki's (2016) call for "studies on the costs of IFRS adoption, which is obviously critical for a cost-benefit analysis" (De George et al., 2013).

Third, this study complements prior studies on analysts' behavior under uncertainty, particularly addressing the scarcity of evidence on analysts' coverage decision-making (e.g., Beyer et al., 2010). Our findings show that increased information processing and reputational costs in uncertain environments can induce analysts to cease providing forecasts to protect their reputation. This new evidence illustrates analysts' perceived value of inaction under uncertainty, which aligns with real option theory (McDonald & Siegel, 1986).

The remainder of this paper is organized as follows. Section 2 overviews the institutional background and develops the hypotheses by discussing related literature. Section 3 outlines our research design for empirical analyses. Sections 4 and 5 present the empirical results for the main and additional analyses, respectively. Finally, Section 6 concludes the paper.

2. Literature review and hypothesis development

2.1. Institutional background

Before the IFRS adoption in Korea in 2011, Korean-listed firms' financials were prepared according to the rules-based K-GAAP.[3] The former K-GAAP No. 21 (Presentation of Financial Statements) specified the mandatory line items for income statements and required OI to be measured uniformly as gross profit less selling, general, and administrative expenses. Moreover, K-GAAP defined which individual accounting items fall into operating versus non-operating activities, resulting in a consistent classification across firms. This standardized approach to OI classification enhanced the comparability of financial performance of core business activities, allowing external information users to easily identify and understand the similarities and differences among various firms and across different periods. Consequently, OI was considered a persistent component of earnings and formally used as a key index in determining a firm's listing status in the Korean capital market.[4]

However, the adoption of principles-based IFRS in 2011 brought significant changes to Korea's previously uniform OI reporting practices. The standardized presentation of operating versus non-operating items in income statements was no longer mandated, and the formal definition of OI was eliminated, granting managers full discretion in their OI reporting.[5] Thus, the sudden removal of standardized OI figures post-IFRS caused significant irregularities in OI reporting, leading to substantial confusion and complaints about "tricky operating profits" among market participants in Korea (Noh et al., 2017).[6] For instance, 41 of the 69 Korean-listed firms with operating losses for three consecutive years (2008–2010) reported operating profits in 2011—the first year of IFRS adoption when discretionary OI reporting was allowed. However, many of these firms were suspected of having incurred operating losses and appeared profitable only on paper. Several non-operating items under the former K-GAAP were arbitrarily incorporated into OI, such as gains from the disposal of assets, reversals of loan loss provisions, and gains from debt forgiveness. These practices led to equity investors' concerns and complaints about the early IFRS financial performance reporting format.[7]

In response to a strong demand from market participants for a more credible and comparable OI measure, the KASB reinstated the former OI definition within the principles-based IFRS financial reporting system, with the consent of the IASB, effective from the last quarter of 2012 (KASB, 2012). Since then, all Korean-listed firms have reverted to the same criteria for measuring and disclosing OI figures as before IFRS adoption. Fig. 1 illustrates the institutional changes in OI reporting during the IFRS adoption period in Korea.

2.2. Managerial discretion in financial reporting under IFRS

The Conceptual Framework for Financial Reporting under IFRS specifies relevance and faithful representation as the two

[3] K-GAAP stipulated that the income statement should include the following line items: sales; cost of goods sold; gross profit; selling, general, and administrative expenses; operating income (losses); non-operating income (expenses); after-tax earnings from continuing and discontinued operations; net income (losses); and earnings per share.

[4] According to the Korea Exchange's listing rules before the 2022 amendment, a firm's stock was placed under administrative monitoring if the firm incurred operating losses for four consecutive years, and was ultimately delisted if it incurred operating losses for five consecutive years.

[5] In Appendix A, we provide an anecdote of how financial reporting of OI changes under the IFRS adoption in Korea.

[6] The IFRS Conceptual Framework for Financial Reporting allows managers' discretion in presenting income and expense items such that the financial information is useful in economic decision-making (International Accounting Standards [IAS] 1 Presentation of Financial Statements). Conversely, Noh et al. (2017) find that Korean companies managed OI through classification shifting at the time of transition to IFRS in 2011.

[7] For more details, refer to the news article released by Hankyung on September 4, 2012, available at https://www.hankyung.com/finance/article/2012090412941.

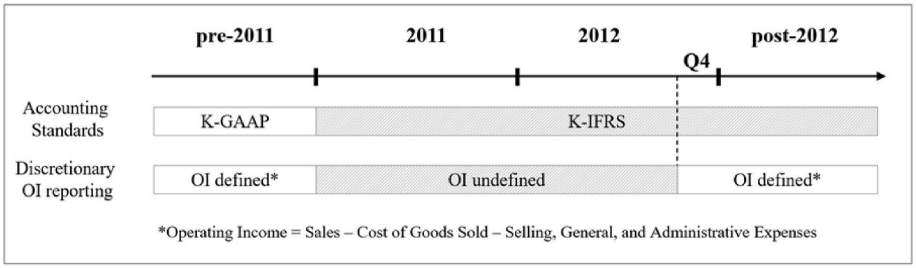

Fig. 1. Institutional Changes in OI Reporting around IFRS Adoption in Korea
Note: Fig. 1 illustrates the institutional changes in OI Reporting (i.e., elimination and restoration of the OI definition) around IFRS adoption in Korea.

fundamental qualitative characteristics that ensure useful financial information. However, achieving both qualities is challenging due to their intrinsic trade-off; one quality is enhanced often at the expense of the other.[8] Given this trade-off, managers' discretion can have two conflicting effects on financial information. On the one hand, managers may use their discretion to convey more tailored information that better represents firm-specific situations and characteristics, increasing the relevance of financial reporting. For instance, non-GAAP earnings are reportedly more value-relevant than GAAP earnings (Bradshaw & Sloan, 2002; Brown & Sivakumar, 2003). Similarly, Black et al. (2021) show that non-GAAP adjustments can enhance the informational content of earnings related to a firm's core business performance. On the other hand, managers may opportunistically use their discretion to present numbers that are more appealing to external parties, diminishing the faithful representation of financial information. For instance, non-GAAP earnings are often biased upward relative to GAAP earnings (Bradshaw & Sloan, 2002), helping firms meet or beat their earnings targets (Black & Christensen, 2009; Doyle et al., 2013).

Principles-based IFRS requires managers to exercise more discretion in financial reporting than does the rules-based local GAAP (Hamberg et al., 2011). This implies that under IFRS, managers' discretion is expected to be crucial in enhancing the relevance of financial information. However, if abused, such discretion could impair faithful representations. Therefore, the following empirical question remains: how does managers' discretion impact the usefulness of financial information, particularly under IFRS, in which a significant level of discretion is inherently allowed?

Moreover, prior studies suggest that managers' discretionary reporting practices are closely intertwined with financial information users' behavior or incentives. For instance, Verrecchia (1983) indicates that disclosure properties affect market participants' demand for disclosure, which, in turn, shapes managers' cost-benefit analysis of discretionary reporting and ultimately influences their disclosure decisions. Owing to the endogenous nature of managers' discretionary reporting, deriving clear implications regarding the properties of such reporting is empirically challenging (Black et al., 2018). Prior studies have often relied on exogenous shocks to reporting practices to address concerns about the endogenous nature of discretionary reporting (Barth et al., 2012; Kolev et al., 2008). Similarly, we analyze a unique institutional context in Korea, where the degree of managerial discretion in reporting earnings subtotals varies over time.

2.3. *Analyst forecasts under IFRS*

The introduction of IFRS remains one of the most influential regulatory changes in financial reporting for adopting countries. Regulators expect IFRS adoption to benefit investors by enhancing the comparability and transparency of financial information (EC Regulation No. 1606, 2002). Prior research has assessed such benefits by focusing on the merits of IFRS adoption rather than its potential adverse effects on capital markets (Barth et al., 2008; Covrig et al., 2007; Daske et al., 2008; Leuz & Verrecchia, 2000; Li, 2010).

One of the key objectives of IFRS adoption is to enhance comparability across borders and between firms, facilitating economic decision-making among financial information users. Previous studies have generally supported the benefits of IFRS in terms of improved comparability. For example, Bae et al. (2008) find that differences in accounting standards across countries negatively impact foreign analysts' forecast coverage and accuracy. This finding suggests that market participants incur significant costs owing to cross-country differences in accounting standards, highlighting the potential benefits of harmonized financial reporting practices.

Numerous studies have explored the direct impact of IFRS adoption on analysts. For example, Byard et al. (2011) document that analysts' forecasts become more accurate and less dispersed after IFRS adoption; however, this effect is evident only for firms domiciled in countries with strong enforcement or local accounting standards significantly different from IFRS. Bilinksi et al. (2013) find that the improved performance of analysts following IFRS adoption leads to higher accuracy in target price predictions. Tan et al.

[8] For instance, assets and liabilities measured at fair value and periodically updated to reflect current conditions may provide more value-relevant information. However, this timely information is less likely to be faithfully presented due to the subjective judgements involved in fair value estimation. By contrast, assets and liabilities measured at historical cost are more likely to be faithfully represented as their cost is fixed at the acquisition date, providing error-free and neutral information. However, this information is less value relevant as it does not reflect new information arising after the acquisition.

(2011) document that both foreign and local analysts increase their coverage post-IFRS but that only foreign analysts improve their forecast accuracy. Demmer et al. (2019) find that improvements in analysts' forecast accuracy post-IFRS adoption are pronounced only in countries that make concurrent improvements in financial reporting quality and comparability. Similarly, Horton and Serafeim (2010) report improvements in analysts' forecast accuracy among European firms following IFRS adoption. Using a sample of German firms, Glaum et al. (2013) associate IFRS adoption with improved accuracy of analysts' forecasts. Cotter et al. (2012), using a sample of Australian firms, reveal that IFRS adoption improves the accuracy of analysts' earnings forecasts.

Despite extensive evidence of the favorable effects of IFRS adoption, only a few studies suggest that a drastic shift from a rules-based local accounting system to a principles-based IFRS system may hinder analysts' ability to produce reliable forecasts, at least during the transitional period. For example, Cuijpers and Buijink (2005) argue that the expected benefits of IFRS adoption take time to materialize, reporting no clear benefits of adopting non-local GAAP (i.e., IAS and U.S. GAAP) for firms listed and domiciled in the European Union. Jones and Higgins (2006) highlight managers' unpreparedness for—and skepticism regarding—IFRS adoption through a survey of 60 managers from the top 200 Australian corporations. Additionally, surveyed buy- and sell-side analysts expressed doubts about their ability to distinguish between the effects of accounting changes due to IFRS adoption and those resulting from changes in underlying business performance (e.g., mergers and acquisitions).

In summary, the potential costs associated with IFRS adoption have received relatively little attention in academia. The literature has primarily focused on the comparative benefits of IFRS adoption, such as the increased coverage and accuracy of analyst forecasts post-IFRS. In this context, exclusively focusing on a specific item (i.e., OI) allows us to identify the potential costs more effectively and, thus, differentiate our study from previous studies.

2.4. Hypothesis development

2.4.1. Analysts' coverage decisions (H1)

In our first hypothesis, we examine the impact of IFRS-induced OI reporting on analysts' coverage decisions. On the one hand, analysts may reduce or even halt their OI forecasts post-IFRS owing to increased information processing costs. Principles-based IFRS, which grants managers greater discretion, aims to ensure more value-relevant information by better reflecting firm-specific characteristics and situations. However, the removal of uniform OI reporting practices under the rules-based local GAAP forces analysts to estimate a "moving target" that can easily deviate from an initial benchmark of core earnings due to varying definitions used by managers. This shift complicates the forecasting process, as new reporting practices lack standardization and are subject to discretionary adjustments by management. Consequently, analysts face greater uncertainty in managers' OI reporting and must invest more efforts in identifying and incorporating sustainable and repeatable earnings components into their forecasts (Brown et al., 2015; Gu & Chen, 2004), efforts that were not required pre-IFRS. These challenges are compounded by reputational concerns (Ertimur et al., 2011; Stickel, 1992), making such efforts unavoidable. Given the heightened information processing costs (e.g., O'Brien & Bhushan, 1990), analysts may temporarily discontinue OI forecasts during the early stages of IFRS adoption. Moreover, real option theory suggests that the value of waiting increases with uncertainty (McDonald & Siegel, 1986), making it rational for analysts to defer their forecasts until the uncertainty surrounding OI reporting is sufficiently resolved.

On the other hand, analysts may continue or even increase their OI forecasts post-IFRS due to increased market demand for OI estimates. OI remains a critical input for formulating forecasts and decision-making (Barker & Imam, 2008; Brown et al., 2015; FASB, 2009, pp. 10–35), and market participants may continuously demand OI estimates despite the absence of a formal OI definition. If IFRS-induced discretionary OI figures are perceived as more value-relevant, the demand for analysts' OI estimates could increase with investors' growing reliance on OI, as observed with non-GAAP earnings (Black et al., 2021; Bradshaw & Sloan, 2002; Brown & Sivakumar, 2003). Additionally, market participants might heavily rely on analysts' OI forecasts even if they view managers' discretionary OI figures as arbitrary or unreliable. Studies on cognitive heuristics suggest that users rely on credible information sources in uncertain environments (Metzger & Flanagin, 2013; Sparks & Rapp, 2011; Sundar, 2008). Accordingly, analysts may be motivated to provide OI forecasts as a credible financial performance indicator in a highly uncertain reporting environment.

Give these opposing predictions, we present H1 in null form:

H1. Analysts' forecast coverage of operating income is not associated with changes in the availability of a formal definition of operating income around IFRS adoption.

2.4.2. Analysts' forecast accuracy (H2)

Two conflicting predictions can be made regarding the accuracy of analysts' OI forecasts. On the one hand, post-IFRS, analysts' OI forecast accuracy may deteriorate due to the increased uncertainty and costs of forecasting without a formal OI definition. This compels analysts to estimate a "moving target," making it more difficult to identify and forecast a repeatable and sustainable component of earnings. Increased information processing and reputational costs may further constrain analysts' resources, leading to decreased forecast accuracy (Gu & Wang, 2005; Jennings et al., 2017; Lehavy et al., 2011).

On the other hand, OI forecast accuracy may not decline if analysts managing heightened information-processing costs continue to provide earnings estimates. Analysts who are confident in their ability to handle uncertainty may be incentivized to continue or even expand their OI forecasting activities in response to increased market demand for credible OI figures. In this case, analysts may invest additional efforts in demonstrating their forecasting superiority, resulting in improved accuracy of their OI estimates. Prior research shows improvements in analysts' forecast accuracy post-IFRS in countries with strong enforcement regimes and local GAAP that significantly differs from IFRS (Byard et al., 2011) or those with high accounting disclosure quality (Bilinksi et al., 2013). Therefore,

without a formal OI definition, OI forecast accuracy may not necessarily deteriorate.

Therefore, we present H2 in null form:

H2. Analysts' forecast accuracy for operating income is not associated with changes in the availability of a formal definition of operating income around IFRS adoption.

3. Research materials and methods

3.1. Absence of an operating income definition under IFRS

To capture the temporary absence of the OI definition, we first identify the pre- and post-IFRS periods and further divide the post-IFRS period into two sub-periods: one with the OI definition and the other without. This approach allows us to analyze three distinct periods: the K-GAAP period before IFRS adoption (*IFRS* = 0); IFRS period when a common OI definition was unavailable (*IFRS_UNDEF* = 1); and IFRS period when the OI definition was reinstated (*IFRS_DEF* = 1). The last two variables represent mutually exclusive phases within the IFRS regime (*IFRS* = 1).

We define *IFRS_UNDEF* as one for observations from the first quarter of the IFRS regime to the third quarter of 2012 during which managers were allowed to measure OI at their discretion.[9] As hypothesized, during the period of *IFRS_UNDEF* = 1, market participants faced unprecedented challenges in producing and interpreting IFRS-based information regarding a firm's core performance. We define *IFRS_DEF* as one for observations from the fourth quarter of 2012 onward during which managers were required to present OI according to the formal definition previously used during the K-GAAP period. To identify the economic consequences of the temporary removal of the OI definition, we compare the OI-undefined period (*IFRS_UNDEF* = 1) with the other two periods (*IFRS* = 0 and *IFRS_DEF* = 1) during which OI was officially defined.

3.2. Empirical models

3.2.1. Analysts' coverage decisions (H1)

To examine the effect of removing the OI definition on analysts' coverage decisions, we estimate Equation (1) using an ordinary least squares (OLS) regression:

$$NAF\_X_{i,f,t} = \alpha + \beta_1 IFRS\_UNDEF_{i,t} + \beta_2 IFRS\_DEF_{i,t} + \boldsymbol{Z}'_{firm}\,\gamma + \boldsymbol{Z}'_{analyst}\,\delta + Firm\ fixed\ effects + Analyst\ fixed\ effects + e_{i,f,t} \quad (1)$$

where *i*, *f*, and *t* denote analyst, firm, and quarter, respectively. The dependent variable (*NAF_X*) is the natural logarithm of the number of forecasts issued by analyst *i* for firm *f* during quarter *t*, with variants for sales (*NAF_SALE*), operating income (*NAF_OI*), and net income (*NAF_NI*). Further, *IFRS_UNDEF* and *IFRS_DEF* capture changes in analyst coverage from the K-GAAP period to the OI-undefined and OI-defined periods, respectively, under the IFRS regime. These variables allow us to separate the impact of removing the OI definition from that of the overall regime shift from K-GAAP to IFRS.

In testing H1 with *NAF_OI* as the dependent variable, we predict that β_1 and $(\beta_2 - \beta_1)$ are not significantly different from zero; the former (latter) captures the change in analyst coverage due to the elimination (restoration) of the OI definition under IFRS. The results for *NAF_SALE* and *NAF_NI* serve as benchmarks against which the result for *NAF_OI* is compared. As the removal and revival of an OI definition are relevant to OI forecasts but not to other types of forecasts, the cross-type comparison helps identify the effect of removing the OI definition orthogonal to that of IFRS adoption in general.[10]

Control variables $\boldsymbol{Z}'_{firm}$ and $\boldsymbol{Z}'_{analyst}$ are included following previous studies (Chang et al., 2016; Irani & Karamanou, 2003). $\boldsymbol{Z}'_{firm}$ is a vector of firm-specific characteristics, including the following: firm size (*SIZE*), loss indicator (*LOSS*), book-to-market ratio (*BTM*), intangible assets (*INTANG*), quarterly earnings (*EARN*), change in quarterly earnings (*EARNCHG*), percentage change in sales (*SALECHG*), market-adjusted stock returns (*ABRET*), earnings volatility (*EARNVOL*), return volatility (*RETVOL*), number of analysts (*ANAL*), share turnover (*TURNOVER*), and external financing indicator (*ISSUE*). $\boldsymbol{Z}'_{analyst}$ is a vector of analyst-specific characteristics, including brokerage house size (*BROKER*), analyst's general (*GENEXP*) and firm-specific (*FIRMEXP*) experiences, and number of industries (*NIND*) and firms (*NFIRM*) covered by an analyst. Finally, we include firm fixed effects to exploit within-firm variation and analyst fixed effects to control for unobservable characteristics of individual analysts. We cluster standard errors by firm and quarter in all analyses to address potential correlations among observations within firm and quarter. Appendix B presents the detailed definitions of the variables.

[9] From 2009, non-financial firms were allowed to adopt IFRS voluntarily before its mandatory adoption in 2011. As the Financial Supervisory Service announced on September 28, 2012 its decision to mandate the presentation of operating income under a common definition from fiscal year 2012 onward, we identify the third quarter of 2012 as the final quarter during which managers could report OI figures at their own discretion.

[10] We compare OI forecasts with other types of forecasts during the period when the OI definition was temporarily removed. Thus, we attempt to rule out an alternative interpretation that our results merely reflect analysts' and investors' unfamiliarity with the new standards. We find that our results are salient only for OI, not for other accounting items. We attribute this result to the absence of an OI definition rather than to a general unfamiliarity with IFRS among market participants.

3.2.2. Analysts' forecast accuracy (H2)

To examine how analysts' forecast accuracy changes when the common definition of OI is temporarily removed, we estimate Equation (2) using the following OLS regression:

$$FE\_X_{i,f,t} = \alpha + \beta_1 IFRS\_UNDEF_{i,t} + \beta_2 IFRS\_DEF_{i,t} + \boldsymbol{Z}'_{firm}\,\gamma + \boldsymbol{Z}'_{analyst}\,\delta + Firm\ fixed\ effects + analyst\ fixed\ effects + \varepsilon_{i,f,t} \quad (2)$$

where i, f, and t denote analyst, firm, and quarter, respectively. The dependent variable is the analyst's forecast error, calculated as the absolute difference between the actual and forecast values scaled by lagged total assets, with three variants: forecast of sales (*FE_SALE*), OI (*FE_OI*), and net income (*FE_NI*) in Equation (2).[11] *IFRS_UNDEF* and *IFRS_DEF* capture how analysts' forecast errors vary depending on the availability of the OI definition. As hypothesized in H2, we predict that β_1 and $(\beta_2 - \beta_1)$ are not significantly different from zero, with the former (latter) capturing the change in analyst forecast errors due to the elimination (restoration) of the OI definition under IFRS. $\boldsymbol{Z}'_{firm}$ and $\boldsymbol{Z}'_{analyst}$, adopted from previous studies, are vectors of firm- and analyst-specific control variables, respectively (Keung, 2010).[12] In testing the forecasts of items below sales (i.e., OI and net income), we additionally control for *FE_SALE* to isolate the forecast error of OI or net income that is not attributable to sales forecasts. Finally, we control for firm and analyst fixed effects to minimize the potential impact of unobservable, time-invariant firm and analyst characteristics.

3.3. Sample selection

We obtain data on analysts' forecasts and financial information from Dataguide. Our initial sample comprises 748,589 analyst forecast-level observations of *quarterly* forecasts for listed firms in Korea from 2007 to 2014. We remove 76,846 analysts' forecasts for financial firms and 3,930 forecasts for public firms with fiscal years that do not end in December. Additionally, we exclude 468,101 forecasts issued before the beginning of a fiscal quarter or during the ten days preceding the earnings announcement date. This process yields a pooled sample of 199,712 analyst forecast-level observations. We use this sample to match each firm-quarter to all analysts who followed the firm in the previous year to remove the confounding effect of new analysts' initial coverage and capture existing analysts' coverage decisions (i.e., continue versus cease), resulting in 110,669 firm-quarter-analyst observations. After removing observations with insufficient data for testing using Equation (1), our final sample for investigating analysts' coverage decisions (H1) comprises 105,514 firm-quarter-analyst observations.

From this sample, we further exclude analysts who did not provide any sales, OI, or net income forecasts, as well as observations without sufficient data for our analyses. This yields 28,338 firm-quarter-analyst observations for the analysis of forecast errors (H2). To prevent over-representation of the results, our calculation of forecast errors is based on the last forecast made by each analyst for a given firm-quarter pair when multiple forecasts were issued (Keung, 2010). All continuous variables are winsorized at the top and bottom 1% levels to minimize the impact of outliers. The sample selection procedure is summarized in Table 1.

4. Empirical results

4.1. Descriptive statistics

Panel A of Table 2 presents the descriptive statistics of the test sample. The mean values of *NAF_SALE*, *NAF_OI*, and *NAF_NI* indicate that the frequency of OI or net income forecasts is lower than that of sales forecasts, suggesting that analysts' coverage decisions vary across different forecasted items. Additionally, the sum of the mean values of *IFRS_UNDEF* and *IFRS_DEF* is 0.5, indicating that our sample is reasonably balanced between the K-GAAP and IFRS regimes. Furthermore, a brokerage house has on average 20.9 analysts (*BROKER*), and an analyst with on average 13.0 quarters of experience (*GENEXP*) provides forecasts for a given firm for 9.4 quarters (*FIRMEXP*), and follows 6.7 firms (*NFIRM*) from 2.8 industries (*NIND*) for a given quarter. Forecast errors for sales (*FE_SALE*), OI (*FE_OI*), and net income (*FE_NI*) are, on average, 1.35%, 0.43%, and 0.56% of lagged total assets, respectively, indicating that they are larger for top-line sales than for bottom-line earnings. The mean forecast revisions for sales (*REV_SALE*) and OI (*REV_OI*) are −0.145 and −0.116, respectively. These negative mean values show that analysts tend to revise their estimates downward, consistent with analysts' walk-down behavior (Matsumoto, 2002; Richardson et al., 2004).

[11] To prevent the forecast error variable from being inflated post-IFRS, we scale the numerator by lagged total assets, rather than by the beginning-of-period market value of equity. The adoption of IFRS shifts financial reporting from a separate-financial-statement basis to a consolidated-financial-statement basis, which could bias forecast errors upward if the market value of equity is used as the scaler. For the first quarter of the IFRS regime, we scale with lagged total assets obtained from the beginning-of-period comparative financial statements prepared on a consolidated-financial-statement basis under IFRS.

[12] In Equation (2), Z_{firm} contains all firm-specific controls of Equation (1), except for performance-related variables including annual earnings (*EARN*), change in annual earnings (*CHGEARN*), change in sales (*SALECHG*), and annual abnormal returns (*ABRET*). These variables are directly associated with the realized values of analysts' *ex-ante* expectations of firm performance. Hence, we exclude the four variables from Equation (2) to maintain the simplicity of our model. Nevertheless, our inferences remain unchanged when all these variables are included in the model. Additionally, $Z_{analyst}$ contains all analyst-specific controls from Equation (1) and additional analyst forecast characteristics, such as the number of forecasts made by an analyst (*FREQ*), number of days between the forecast and earnings announcement dates (*HORIZON*), number of days elapsed since the most recent preceding forecast made by any analyst following the firm f (*DAYS*), and lagged forecast error of operating income (*FE_OI_LAG*) in Equation (3).

Table 1
Sample selection.

Panel A. Pooled sample of forecast observations	
Quarterly forecasts for public firms during 2007–2014	748,589
(−) if forecasts are made for firms in financial industries	(76,846)
(−) if forecasts are made for firms whose fiscal year does not end in December	(3,930)
(−) if forecasts are issued earlier than the beginning of a fiscal quarter or later than 10 days before the earnings announcement date	(468,101)
Pooled sample of forecasts available for empirical analyses	199,712
Panel A. Test samples	
Firm-quarter-analyst level observations extracted from Panel A	110,669
(−) observations without sufficient data for tests using Equation (1)	(5,155)
Sample for the analysis of analyst coverage (H1)	105,514
(−) analysts who do not provide any estimates of accounting items for a given firm-quarter	(59,319)
(−) observations without sufficient data for tests using Equation (2)	(17,857)
Sample for the analysis of forecast errors and revisions (H2)	28,338

Note: This table presents the detailed procedures for sample selection.

Panel B of Table 2 compares the mean values of the main variables across the three subperiods: K-GAAP, OI-undefined, and OI-defined periods. When comparing *NAF_SALE*, *NAF_OI*, and *NAF_NI* (the dependent variables for H1), the number of analysts' OI forecasts drops significantly during the OI-undefined period compared to that of sales and net income forecasts. This trend is further illustrated in Fig. 2. For *FE_SALE*, *FE_OI*, and *FE_NI* (the dependent variables for H2), forecast errors generally decrease following IFRS adoption, but the reduction in the OI forecast error is less pronounced compared to that in the sales or net income forecast error.

Panel C of Table 2 presents the correlation coefficients of the selected variables. *FE_OI* is uncorrelated with *IFRS_UNDEF* but negatively correlated with *IFRS_DEF*, implying a positive long-term effect of IFRS adoption on forecast accuracy. The correlations of *IFRS_UNDEF* with other explanatory variables are reasonably low, ranging from −0.15 to 0.07, suggesting that multi-collinearity is unlikely to be a critical issue in our analyses.

Table 3 presents the descriptive statistics of OI figures during *IFRS_UNDEF* = 1, when an official OI definition is temporarily absent. Among the 11,579 firm-quarters with OI data available during this period, approximately 23.2% do not exercise any discretion in reporting OI numbers, as shown in Column (1). Thus, the firms' reported OI numbers are identical to those adjusted according to the K-GAAP definition. However, in Columns (2) and (3), approximately 76.8% of firms report discretionary OI, with 48.5% reporting OI numbers greater than those under the K-GAAP definition and 28.3% reporting smaller numbers. This result supports the possibility that firms tend to use discretion to report more favorable OI numbers. In terms of OI magnitudes, reported OI numbers differ significantly from those under the K-GAAP definition, regardless of whether they deviate positively or negatively. This result demonstrates that the temporary elimination of the formal OI definition leads managers to exercise discretion in reporting OI numbers.

4.2. Analysis of H1: Analysts' coverage decisions

To provide preliminary evidence for H1, we observe quarterly trends in analysts' forecast coverage, as illustrated in Fig. 2. This analysis focuses on analysts who followed a firm in the previous year and provided any type of forecast for the firm during a given quarter (N = 46,195). The shaded bar shows the proportion of firms allowed to report OI at their discretion during each quarter (*IFRS_UNDEF* = 1).[13] The solid line represents an analyst's propensity to issue a given type of forecast for a firm during the quarter. The propensity for sales forecasts remains close to one in all quarters, and analysts' coverage decisions show little variation across forecast types before 2010. However, in 2010 when fewer than 10% of the sample firms voluntarily adopt IFRS, the propensity for OI forecasts begins to decline. It drops sharply to 0.194 in the first quarter of 2011 when IFRS becomes mandatory for all firms. Although this reduced propensity recovers slightly, it remains between 0.419 and 0.597 through the third quarter of 2012. However, from the fourth quarter of 2012 onward, the propensity for OI forecasts reverts to its previous level under the K-GAAP regime. While the propensity for net income forecasts also declines, it consistently remains over 0.8, distinguishable from that for OI forecasts. Overall, the exceptional drop and immediate recovery of analysts' coverage of OI forecasts imply that, without a formal definition of OI under IFRS, analysts may incur substantial information processing and reputational costs related to OI forecasts.

We perform multivariate analysis using Equation (1). Table 4 presents the results. In Columns (1) and (3), the coefficient on *IFRS_UNDEF* is statistically insignificant when the dependent variable is *NAF_SALE* or *NAF_NI*. These results indicate that analysts' coverage of sales or net income forecasts remains unaffected by the temporary removal of the OI definition. However, in Column (2), the coefficient on *IFRS_UNDEF* is negative (coefficient = −0.314) and statistically significant at the 1% level (t-statistic = −3.32) when

[13] Before 2011, *IFRS_UNDEF* is coded as one if firms *voluntarily* adopted IFRS. From the first quarter of 2011 to the third quarter of 2012, *IFRS_UNDEF* equals one for all sample firms, which were *mandated* to adopt IFRS without an official OI definition. For the remaining periods, *IFRS_UNDEF* equals zero.

Table 2
Descriptive statistics.

Panel A. Summary statistics of the sample

Variable	N	Mean	Std.	P10	P25	P50	P75	P90
NAF_SALE	105,514	0.559	0.710	0.000	0.000	0.000	1.099	1.609
NAF_OI	105,514	0.500	0.685	0.000	0.000	0.000	1.099	1.609
NAF_NI	105,514	0.508	0.683	0.000	0.000	0.000	1.099	1.609
IFRS_UNDEF	105,514	0.214	0.410	0.000	0.000	0.000	0.000	1.000
IFRS_DEF	105,514	0.286	0.452	0.000	0.000	0.000	1.000	1.000
SIZE	105,514	20.995	1.774	18.570	19.581	21.082	22.392	23.215
LOSS	105,514	0.161	0.367	0.000	0.000	0.000	0.000	1.000
BTM	105,514	0.826	0.542	0.274	0.452	0.711	1.057	1.491
INTANG	105,514	0.003	0.006	0.000	0.000	0.001	0.003	0.011
EARN	105,514	0.014	0.038	−0.013	0.005	0.015	0.028	0.045
EARNCHG	105,514	−0.002	0.040	−0.035	−0.012	−0.001	0.009	0.028
SALECHG	105,514	0.013	0.265	−0.202	−0.071	0.016	0.113	0.249
ABRET	105,514	0.013	0.181	−0.194	−0.108	−0.007	0.112	0.248
EARNVOL	105,514	0.022	0.030	0.003	0.006	0.012	0.024	0.049
RETVOL	105,514	0.027	0.011	0.016	0.019	0.024	0.032	0.041
ANAL	105,514	2.150	1.004	0.693	1.386	2.485	2.944	3.178
TURNOVER	105,514	0.544	0.515	0.142	0.223	0.387	0.657	1.104
ISSUE	105,514	0.315	0.464	0.000	0.000	0.000	1.000	1.000
BROKER	105,514	20.873	6.863	13.000	17.000	20.000	26.000	30.000
GENEXP	105,514	13.033	8.986	4.000	6.000	11.000	18.000	26.000
FIRMEXP	105,514	9.392	7.986	2.000	4.000	7.000	12.000	21.000
NIND	105,514	2.828	1.933	0.000	1.000	3.000	4.000	5.000
NFIRM	105,514	6.718	4.852	0.000	3.000	7.000	10.000	13.000
FE_SALE	28,338	1.351	2.797	0.000	0.002	0.280	1.441	3.700
FE_OI	28,338	0.434	0.760	0.000	0.003	0.119	0.520	1.238
FE_NI	28,338	0.558	0.993	0.000	0.005	0.172	0.653	1.531
DAYS	28,338	0.127	0.120	0.008	0.036	0.088	0.192	0.274
FREQ	28,338	11.192	7.935	3.000	5.000	9.000	15.000	22.000
HORIZON	28,338	0.138	0.101	0.041	0.055	0.104	0.195	0.299

Panel B. Mean values of the main variables by each subperiod

	Subperiods			Entire period
	K-GAAP period	OI-undefined period	OI-defined period	
Sample for H1				
NAF_SALE	0.550	0.483	0.631	0.559
NAF_OI	0.557	0.247	0.589	0.500
NAF_NI	0.534	0.406	0.539	0.508
# of observations	52,740	22,546	30,228	105,514
Sample for H2				
FE_SALE	1.467	1.055	1.138	1.351
FE_OI	0.465	0.433	0.365	0.434
FE_NI	0.622	0.414	0.439	0.558
# of observations	18,703	1411	8224	28,338

Panel C. Correlations ($N = 28{,}338$)

		[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]	[13]	[14]	[15]	[16]
[1]	*FE_OI*	1.00															
[2]	*IFRS_UNDEF*	−0.00	1.00														
[3]	*IFRS_DEF*	**−0.06**	**−0.15**	1.00													
[4]	*SIZE*	**−0.30**	**0.07**	**0.19**	1.00												
[5]	*LOSS*	**0.14**	**−0.02**	**0.05**	**−0.10**	1.00											
[6]	*BTM*	**−0.05**	0.01	**0.11**	**−0.11**	**0.27**	1.00										
[7]	*INTANG*	**0.03**	**−0.04**	−0.01	**−0.07**	0.01	**−0.17**	1.00									
[8]	*EARNVOL*	**0.15**	**−0.04**	**−0.02**	**−0.13**	**0.32**	**0.33**	**−0.08**	1.00								
[9]	*RETVOL*	**0.16**	**−0.03**	**−0.32**	**−0.28**	**0.15**	−0.01	**0.07**	**0.16**	1.00							
[10]	*ANAL*	**−0.28**	0.00	**0.07**	**0.69**	**−0.07**	**−0.12**	**0.01**	**−0.09**	**−0.14**	1.00						
[11]	*TURNOVER*	**0.21**	**−0.04**	**−0.18**	**−0.30**	**0.09**	**−0.11**	**0.16**	**0.16**	**0.59**	**−0.13**	1.00					
[12]	*ISSUE*	**0.02**	**0.02**	**0.01**	**−0.14**	**0.09**	**0.15**	**−0.05**	**0.16**	**0.08**	**−0.10**	**0.10**	1.00				
[13]	*BROKER*	0.00	**0.05**	**−0.04**	**−0.04**	0.01	**−0.01**	**−0.03**	0.00	0.01	**−0.07**	**−0.04**	−0.00	1.00			
[14]	*GENEXP*	**−0.05**	**0.06**	**0.24**	**0.07**	**0.04**	**0.05**	**−0.04**	0.01	**−0.10**	**0.04**	**−0.07**	**−0.01**	**0.10**	1.00		
[15]	*FIRMEXP*	**−0.08**	**0.02**	**0.14**	**0.13**	**0.05**	**0.09**	**−0.05**	**0.03**	**−0.09**	**0.09**	**−0.10**	**−0.01**	**0.08**	**0.77**	1.00	
[16]	*NIND*	**0.05**	**−0.07**	**−0.07**	**−0.14**	**0.04**	**−0.07**	**−0.06**	**0.01**	**0.06**	**−0.16**	0.01	**−0.05**	**0.06**	**0.15**	**0.12**	1.00
[17]	*NFIRM*	**0.06**	**−0.10**	**−0.14**	**−0.18**	**0.03**	**0.02**	**−0.01**	0.00	**0.12**	**−0.15**	**0.06**	0.01	**−0.03**	**0.17**	**0.15**	**0.63**
[18]	*FREQ*	**−0.11**	**−0.07**	**0.04**	**0.19**	**0.02**	−0.01	**0.04**	0.01	**−0.02**	**0.20**	**−0.01**	**−0.04**	0.00	**0.21**	**0.27**	**0.05**
[19]	*HORIZON*	**0.37**	**−0.05**	−0.01	**−0.17**	**0.08**	**0.04**	−0.00	**0.07**	**0.08**	**−0.18**	**0.06**	**0.02**	**−0.03**	**0.01**	−0.01	**0.05**
[20]	*DAYS*	**0.11**	**−0.03**	−0.01	**−0.15**	**0.03**	**0.04**	**−0.02**	**0.05**	**0.03**	**−0.14**	**0.02**	**0.02**	**−0.07**	**−0.02**	**−0.04**	0.01

		[17]	[18]	[19]
[17]	*NFIRM*	1.00		
[18]	*FREQ*	**0.15**	1.00	
[19]	*HORIZON*	**0.07**	**−0.13**	1.00
[20]	*DAYS*	**0.01**	**−0.30**	**0.18**

Note: Panel A presents the descriptive statistics for the sample; Panel B presents the mean values of the main variables for each subperiod; Panel C presents the correlation among selected variables in the sample used for H1 and H2 tests, where the figures in bold indicate statistical significance at the 5 % level. In Panels A, B, and C, all continuous variables are winsorized at the top and bottom 1 % levels.

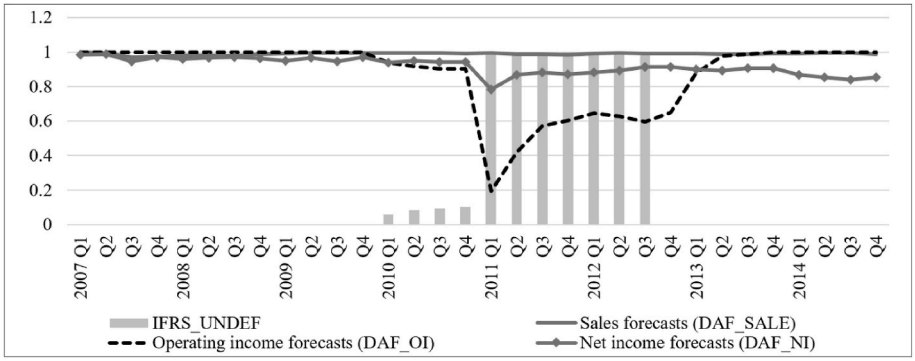

Fig. 2. Trends in analyst coverage by forecast items

Note: Fig. 2 presents the propensity of an analyst to provide a given forecast type in each quarter, as well as the proportion of firms that are allowed to report operating income at their own discretion (*IFRS_UNDEF* = 1), among the sample of 46,195 analysts who provided any type of forecast in the quarter. *DAF_SALE*, *DAF_OI*, and *DAF_NI* are indicator variables that equal one if an analyst provides at least one forecast of sales, OI, and net income, respectively, for a given firm-quarter. Forecast propensity is calculated as the mean value of *DAF_SALE*, *DAF_OI*, or *DAF_NI* in the quarter, and the proportion is calculated as the mean value of *IFRS_UNDEF* in the quarter.

Table 3

Discretionary reporting of operating income during the period *IFRS_UNDEF* = 1.

Subsample =	Non-discretionary OI	Discretionary OI	
Deviation from K-GAAP definition =	Zero	Positive	Negative
	(1)	(2)	(3)
OI as reported (=A)	0.005	0.014	0.000
OI under K-GAAP definition (=B)	0.005	0.010	0.008
Mean diff. (=A–B)	0.000	0.004	−0.008
p-value	n/a	<0.001	<0.001
# of firm-quarters	2,681	5,619	3,279
Percent (%) out of the sample	23.2%	48.5%	28.3%

Note: This table presents the extent to which discretionary OI deviates from OI prepared under the K-GAAP definition during the period, *IFRS_UNDEF* = 1, when discretionary OI reporting is temporarily allowed following the absence of the OI definition set by K-IFRS. OI as reported (A) indicates the OI figures reported by firms, and OI under the K-GAAP definition (B) indicates OI figures adjusted in compliance with the K-GAAP definition (as per the dataset obtained from Dataguide). Column (1) presents the results for the subsample in which no discretion was exercised in reporting OI, and Column (2) [(3)] presents the results for the subsample in which the reported OI numbers are greater [smaller] than those adjusted under the K-GAAP definition. The entire sample consists of 11,579 firm-quarters with OI data available during the period, *IFRS_UNDEF* = 1.

the dependent variable is *NAF_OI*,[14] suggesting that analysts significantly reduce their coverage of OI forecasts in the absence of a formal definition. Furthermore, the difference in coefficients between *IFRS_DEF* and *IFRS_UNDEF* (0.381) is significantly positive, implying a prompt recovery of analysts' coverage after the OI definition is reinstated. Collectively, these results suggest that a formal OI definition facilitates analysts' forecasts of a firm's core performance metrics.

4.3. Analysis of H2: Analysts' forecast accuracy

Table 5 presents the results of estimating Equation (2) to test H2. The coefficient on *IFRS_UNDEF* is significantly positive (coefficient = 0.122; *t*-statistic = 2.97) in Column (2) but not significantly different from zero in Columns (1) and (3). These results suggest that analysts' OI forecasts deviate more from the reported OI numbers when an OI definition is temporarily removed, a trend not observed for sales and net income forecasts, which are least dependent on the OI definition. Moreover, the coefficient difference between *IFRS_DEF* and *IFRS_UNDEF* (−0.086) is significantly negative, indicating that the increased errors of OI forecasts during the OI-undefined period (*IFRS_UNDEF* = 1) are significantly reduced after the OI definition is reinstated. Overall, these results suggest that analysts' OI forecast accuracy declines when a formal OI definition is temporarily unavailable following IFRS adoption and that a market-wide consensus on the OI metric enhances analysts' forecasting performance.

In sum, the results from Fig. 2 and Tables 4 and 5 support the view that the temporary removal of the OI definition in the early stage

[14] We also confirm that our inferences remain unchanged when estimating the linear probability model with the dependent variable as an indicator variable for an analyst's issuance of a sales, OI, or net income forecasts for a given firm-quarter.

Table 4
Analyst coverage decision (H1).

Dependent variable =	*NAF_SALE*	*NAF_OI*	*NAF_NI*
	(1)	(2)	(3)
IFRS_UNDEF	−0.062	−0.314***	−0.121
	(-0.47)	(-3.32)	(-1.02)
IFRS_DEF	0.113*	0.067	0.045
	(1.82)	(0.95)	(0.80)
SIZE	0.062	0.039	0.055*
	(1.68)	(1.58)	(1.71)
LOSS	0.006	0.009	0.001
	(0.34)	(0.58)	(0.10)
BTM	0.073*	0.062*	0.061
	(1.85)	(1.98)	(1.69)
INTANG	−1.158	−1.574	−1.574
	(-0.90)	(-0.94)	(-1.17)
EARN	−0.093	−0.060	−0.077
	(-0.40)	(-0.30)	(-0.38)
EARNCHG	0.176	0.120	0.144
	(0.84)	(0.76)	(0.78)
SALECHG	−0.024	−0.001	−0.024
	(-0.43)	(-0.02)	(-0.47)
ABRET	0.045**	0.053***	0.041**
	(2.36)	(3.05)	(2.43)
EARNVOL	−0.844***	−0.948***	−0.850***
	(-4.34)	(-4.70)	(-4.50)
RETVOL	2.714	2.928*	2.689
	(1.59)	(1.87)	(1.67)
ANAL	0.154***	0.132***	0.137***
	(4.13)	(4.49)	(3.94)
TURNOVER	−0.038*	−0.043**	−0.035*
	(-1.86)	(-2.47)	(-1.81)
ISSUE	0.023*	0.014	0.016
	(1.75)	(1.23)	(1.41)
BROKER	0.005**	0.006***	0.005**
	(2.65)	(3.34)	(2.69)
GENEXP	−0.021***	−0.018***	−0.020***
	(-11.05)	(-8.67)	(-10.61)
FIRMEXP	−0.001	−0.001	−0.001
	(-1.30)	(-0.90)	(-0.57)
NIND	0.023***	0.015**	0.025***
	(3.50)	(2.48)	(3.96)
NFIRM	0.012**	0.013***	0.010**
	(2.44)	(2.98)	(2.12)
Test of the coefficient change following restoration of the OI definition			
IFRS_DEF−IFRS_UNDEF	0.175	0.381***	0.166
	[2.424]	[15.433]	[2.644]
Firm & Analyst FE	Yes	Yes	Yes
Observations	105,514	105,514	105,514
Adjusted R^2	0.351	0.358	0.346

Note: The numbers in parentheses (square brackets) represent *t*-statistics (*F*-statistics) calculated based on standard errors clustered by firm and quarter. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively, in two-tailed tests.

of IFRS adoption adversely affects analysts' behavior, leading to reductions in both their OI forecast coverage and accuracy.

5. Additional analyses

5.1. Investor reaction to analysts' forecast revisions

Building on our findings on analysts' behavior, we further examine how investors respond to analysts' OI forecast revisions. On the one hand, investors' reactions may weaken post-IFRS due to the absence of a formal OI definition, which increases uncertainty in the measurement of firm performance and potentially deteriorates analysts' forecasting accuracy. As a result, investors may discount

Table 5
Analyst forecast errors (H2).

Dependent variable =	*FE_SALE*	*FE_OI*	*FE_NI*
	(1)	(2)	(3)
IFRS_UNDEF	0.145	0.122***	−0.025
	(0.96)	(2.97)	(-0.55)
IFRS_DEF	0.206	0.036	−0.059
	(1.07)	(0.80)	(-1.20)
SIZE	−0.353*	−0.041	0.026
	(-1.80)	(-0.95)	(0.44)
LOSS	−0.049	0.186***	0.532***
	(-0.50)	(5.14)	(7.90)
BTM	−0.320	−0.126**	−0.169**
	(-1.45)	(-2.60)	(-2.08)
INTANG	−32.755**	−2.307	−1.118
	(-2.63)	(-0.97)	(-0.52)
EARNVOL	5.760	2.787***	8.658***
	(1.53)	(3.05)	(6.31)
RETVOL	−6.149	−1.523**	3.006
	(-1.64)	(-2.04)	(1.42)
ANAL	−0.244**	−0.024	−0.077**
	(-2.15)	(-1.62)	(-2.62)
TURNOVER	0.345*	0.037	−0.036
	(1.99)	(0.98)	(-0.47)
ISSUE	0.049	0.002	0.031
	(0.67)	(0.10)	(0.94)
BROKER	−0.002	−0.002	−0.003
	(-0.37)	(-1.25)	(-1.50)
GENEXP	−0.012	−0.002	−0.001
	(-1.41)	(-1.07)	(-0.34)
FIRMEXP	−0.000	−0.001	−0.001
	(-0.08)	(-1.49)	(-0.96)
NIND	−0.009	−0.007	−0.009
	(-0.38)	(-1.19)	(-1.05)
NFIRM	0.004	0.005*	0.004
	(0.29)	(1.70)	(0.76)
FREQ	−0.009	−0.002*	−0.004**
	(-1.57)	(-1.78)	(-2.67)
HORIZON	6.910***	1.451***	1.977***
	(12.99)	(12.25)	(14.09)
DAYS	0.159	−0.000	−0.019
	(0.86)	(-0.01)	(-0.53)
FE_OI_LAG	0.229***	0.056**	0.047*
	(3.54)	(2.45)	(1.76)
FE_SALE		0.107***	0.091***
		(11.84)	(8.68)
Test of the coefficient change following restoration of the OI definition			
IFRS_DEF−IFRS_UNDEF	0.061	−0.086***	−0.034
	[0.372]	[7.148]	[0.640]
Firm & Analyst FE	Yes	Yes	Yes
Observations	28,338	28,338	28,338
Adjusted R^2	0.357	0.493	0.442

Note: The dependent variables are the forecast errors of sales (*FE_SALE*), operating income (*FE_OI*), and net income (*FE_NI*) in Columns (1), (2), and (3), respectively. The numbers in parentheses (square brackets) represent *t*-statistics (*F*-statistics) calculated based on standard errors clustered by firm and quarter. ***, **, and * indicate statistical significance at the 1%, 5% and 10% levels, respectively, in two-tailed tests.

analysts' OI forecast revisions, reducing reliance on earnings signals perceived as noisy (Holthausen & Verrecchia, 1988). Additionally, the heightened information uncertainty in the post-IFRS environment can exacerbate investor underreactions (e.g., Jiang et al., 2005; Zhang, 2006). On the other hand, if investors suspect that managers' discretionary OI figures are potentially influenced by opportunistic incentives, they may view analysts' forecasts as a more credible alternative information source. According to the cognitive heuristics theory of source credibility—which posits that information users rely on credible sources under uncertainty (Metzger & Flanagin, 2013; Sparks & Rapp, 2011; Sundar, 2008)—this perception could enhance investors' responsiveness to analysts' OI forecast revisions when discretionary OI reporting is permitted.

For this analysis, we estimate Equation (3) using an OLS regression:

$$BHAR_{i,f,t} = \alpha + \beta_1 REV\_SALE_{i,f,t} + \beta_2 REV\_SALE_{i,f,t} \times IFRS\_UNDEF_{i,t} + \beta_3 REV\_SALE_{i,f,t} \times IFRS\_DEF_{i,t} + \beta_4 REV\_OI_{i,f,t} + \beta_5 REV\_OI_{i,f,t} \times IFRS\_UNDEF_{i,t} + \beta_6 REV\_OI_{i,f,t} \times IFRS\_DEF_{i,t} + \beta_7 REV\_NI_{i,f,t} + \beta_8 REV\_NI_{i,f,t} \times IFRS\_UNDEF_{i,t} + \beta_9 REV\_NI_{i,f,t} \times IFRS\_DEF_{i,t} + \beta_{10} IFRS\_UNDEF_{i,t} + \beta_{11} IFRS\_DEF_{i,t} + \mathbf{Z}'_{firm}\,\gamma + \mathbf{Z}'_{analyst}\,\delta + firm\ fixed\ effects + analyst\ fixed\ effects + \varepsilon_{i,f,t} \quad (3)$$

where *i*, *f*, and *t* denote analyst, firm, and quarter, respectively. The dependent variable (*BHAR*) is the size-adjusted buy-and-hold return measured over the three days around the forecast revision date. *REV_SALE*, *REV_OI*, and *REV_NI* are the magnitudes of analysts' revisions in sales, OI, and net income forecasts, respectively, scaled by lagged total assets. We include firm- and analyst-specific control variables identical to those in Equation (2), as well as firm and analyst fixed effects.

Table 6 presents the results. In Column (1), the coefficients on *REV_SALE* and *REV_OI* are positive and statistically significant, with the coefficient on *REV_OI* (0.008) being eight times larger than that on *REV_SALE* (0.001). This finding indicates that investors rely more heavily on OI as a measure of core performance. Column (2) includes interaction terms with *IFRS_UNDEF* and *IFRS_DEF*. The coefficient on *REV_OI*×*IFRS_UNDEF* is not significantly negative (coefficient = −0.001; *t*-statistic = −0.39), and the sum of the coefficients on *REV_OI* and *REV_OI*×*IFRS_UNDEF* is statistically insignificant (*F*-statistic = 1.76, untabulated), indicating muted investor reactions during the OI-undefined period. However, the coefficient on *REV_OI*×*IFRS_DEF* is significantly positive (coefficient = 0.007; *t*-statistic = 3.14), and the coefficient difference between *REV_OI*×*IFRS_DEF* and *REV_OI*×*IFRS_UNDEF* (0.008) is also significantly positive (*F*-statistic = 4.56). These results suggest that reinstating the OI definition enhances investor reactions, recovering from the muted responses during the OI-undefined period.

Overall, these findings imply that discretionary OI reporting adversely affects investor sentiment concerning OI metrics.[15] However, the reintroduction of a formal OI definition reduces noise in OI measurements, thereby restoring confidence in analysts' forecasts. These findings remain robust after controlling for net income forecast revisions, as shown in Column (3).

5.2. Degree of managers' discretion in OI reporting

To strengthen our main inferences, we consider the extent to which managers exercise their discretion in reporting OI during the OI-undefined period. Specifically, we re-calculate OI according to the former K-GAAP definition (hereafter, adjusted OI) and compare it with the actual OI reported under IFRS. We posit that a greater deviation of actual OI from adjusted OI represents a greater level of managerial discretion. To classify the OI-undefined period (*IFRS_UNDEF* = 1) observations into two groups based on the level of managerial discretion, we define *IFRS_UNDEF_HIGHDISC* (*IFRS_UNDEF_LOWDISC*) as one if the absolute difference between adjusted and actual OIs scaled by lagged total assets is above (below) the median value. Replacing *IFRS_UNDEF* with these two indicators, we re-perform the analysis of H2 to determine whether our findings are more pronounced for firms with greater discretion in OI reporting (i.e., *IFRS_UNDEF_HIGHDISC* = 1).

The results are reported in Table 7. In Column (2), the coefficient on *IFRS_UNDEF_HIGHDISC* (0.177) is significantly positive, whereas that on *IFRS_UNDEF_LOWDISC* (0.067) is marginally insignificant. The former is significantly greater in magnitude than the latter at the 10% level (*F*-statistic = 3.10). These results suggest that the adverse effect of removing an OI definition on OI forecast accuracy is more pronounced for firms whose reported OI deviates more from the K-GAAP-based OI. In addition, the coefficient difference between *IFRS_DEF* and *IFRS_UNDEF_HIGHDISC* (−0.142) is larger and more statistically significant than that between *IFRS_DEF* and *IFRS_UNDEF_LOWDISC* (−0.032). These results indicate that OI forecast accuracy improves more for firms exercising greater discretion in reporting OI during *IFRS_DEF* = 1 when OI is redefined. By contrast, no significant results are found in Columns (1) and (3) for sales and net income forecast errors. Collectively, the results in Table 7 validate our inference that managerial discretion in reporting OI is a primary driver of our findings.[16]

5.3. Moderating effect of managerial voluntary disclosure

Given the importance of managerial disclosure as an information source for capital market participants, our main results may vary depending on the extent to which managers voluntarily provide additional information to the capital market. Specifically, management earnings forecasts can complement reported financial information available to external users, becoming more valuable under conditions of increased information uncertainty (e.g., Clement et al., 2003). Accordingly, we expect that the negative impact of OI

[15] In an untabulated analysis, we examine whether these findings are attributable to (i) investors' tendency to be less sensitive to earnings with more noise (e.g., Holthausen & Verrecchia, 1988) or (ii) investors' underreactions in periods of uncertainty (Jiang et al., 2005; Zhang, 2006). To distinguish between these two explanations, we estimate Equation (3) using subsamples partitioned by the median value of OI forecast errors. The results are salient only for subsamples with greater forecast errors (untabulated). This is consistent with the noise signaling hypothesis, providing additional support for our argument that increased analyst forecast errors due to firms' discretionary OI reporting contributed to investors' muted responses during the early IFRS period.

[16] Consistent with this analysis, we further examine investors' responses to analysts' OI forecast revisions, considering the extent of managerial discretion exercised during the OI-undefined period. Our findings (untabulated) indicate that investors' muted reactions to OI forecast revisions are mostly observed in firms exercising significant discretion in reporting OI (*IFRS_UNDEF_HIGHDISC*=1) and they regain confidence in OI forecast revisions for these firms after the reinstatement of the OI definition, reinforcing the results in Table 7.

Table 6
Investor reaction to analyst forecast revisions.

Dependent variable =	*BHAR*		
	(1)	(2)	(3)
REV_SALE	0.001**	0.000	0.000
	(2.11)	(1.61)	(1.35)
REV_SALE×IFRS_UNDEF		−0.000	−0.000
		(-0.09)	(-0.07)
REV_SALE×IFRS_DEF		0.001	0.001
		(1.07)	(1.16)
REV_OI	0.008***	0.006***	0.004***
	(7.66)	(7.21)	(3.28)
REV_OI×IFRS_UNDEF		−0.001	0.001
		(-0.39)	(0.25)
REV_OI×IFRS_DEF		0.007***	0.010***
		(3.14)	(3.71)
REV_NI			0.004***
			(3.03)
REV_NI×IFRS_UNDEF			−0.003
			(-1.22)
REV_NI×IFRS_DEF			−0.003
			(-1.37)
IFRS_UNDEF	−0.001	−0.002	−0.002
	(-0.52)	(-0.67)	(-0.69)
IFRS_DEF	−0.001	0.000	0.000
	(-0.44)	(0.13)	(0.12)
SIZE	−0.004*	−0.004**	−0.004**
	(-1.86)	(-2.19)	(-2.19)
LOSS	−0.001	−0.000	0.001
	(-0.53)	(-0.21)	(0.43)
BTM	−0.001	−0.002	−0.002
	(-0.73)	(-1.21)	(-1.26)
INTANG	0.077	0.089	0.096
	(0.58)	(0.68)	(0.73)
EARNVOL	0.029	0.030	0.027
	(0.85)	(0.89)	(0.79)
RETVOL	0.096	0.084	0.104
	(1.46)	(1.29)	(1.59)
ANAL	0.003**	0.003**	0.003**
	(2.55)	(2.61)	(2.55)
TURNOVER	0.002	0.002	0.001
	(0.80)	(0.86)	(0.68)
ISSUE	−0.002	−0.002	−0.002
	(-1.36)	(-1.26)	(-1.26)
BROKER	−0.000	−0.000	−0.000
	(-0.67)	(-0.60)	(-0.50)
GENEXP	0.000	0.000	0.000
	(0.55)	(0.56)	(0.61)
FIRMEXP	−0.000	−0.000	−0.000
	(-0.21)	(-0.14)	(-0.20)
NIND	−0.000	−0.000	−0.000
	(-0.65)	(-0.65)	(-0.60)
NFIRM	−0.000	−0.000	−0.000
	(-0.45)	(-0.42)	(-0.41)
FREQ	0.000	0.001	0.001
	(0.05)	(0.19)	(0.37)
HORIZON	0.000	0.000	0.000
	(0.19)	(0.02)	(0.04)
DAYS	−0.007	−0.007	−0.008*
	(-1.55)	(-1.64)	(-1.78)
FE_OI_LAG	−0.000	−0.000	−0.000
	(-0.45)	(-0.42)	(-0.46)
Test of the coefficient change following restoration of the OI definition			
REV_SALE×IFRS_DEF–REV_SALE×IFRS_UNDEF		0.001	0.001
		[0.33]	[0.36]
REV_OI×IFRS_DEF–REV_OI×IFRS_UNDEF		0.008**	0.009**
		[4.56]	[4.93]
REV_NI×IFRS_DEF–REV_NI×IFRS_UNDEF			0.000
			[0.02]

(*continued on next page*)

Table 6 (*continued*)

Dependent variable =	*BHAR*		
	(1)	(2)	(3)
Firm & Analyst FE	Yes	Yes	Yes
Observations	28,338	28,338	28.838
Adjusted R^2	0.060	0.062	0.064

Note: The dependent variable is the size-adjusted buy-and-hold returns measured over the three days around the forecast revision date (*BHAR*). The numbers in parentheses (square brackets) represent *t*-statistics (*F*-statistics) calculated based on standard errors clustered by firm and quarter. ***, **, and * indicate statistical significance at the 1%, 5% and 10% levels, respectively, in two-tailed tests.

Table 7
Moderating effect of managerial discretion in reporting operating income.

Dependent variable =	*FE_SALE*	*FE_OI*	*FE_NI*
	(1)	(2)	(3)
IFRS_UNDEF_HIGHDISC	0.103	0.177***	−0.022
	(0.59)	(2.93)	(-0.40)
IFRS_UNDEF_LOWDISC	0.187	0.067	−0.029
	(1.21)	(1.65)	(-0.59)
IFRS_DEF	0.206	0.035	−0.059
	(1.07)	(0.79)	(-1.20)
Test of the coefficient equality			
IFRS_UNDEF_HIGHDISC−IFRS_UNDEF_LOWDISC	−0.084	0.110*	0.007
	[0.37]	[3.10]	[0.03]
IFRS_DEF−IFRS_UNDEF_HIGHDISC	0.103	−0.142**	−0.037
	[0.60]	[6.60]	[0.51]
IFRS_DEF−IFRS_UNDEF_LOWDISC	0.019	−0.032	−0.030
	[0.03]	[0.95]	[0.47]
Controls	Yes	Yes	Yes
Firm & Analyst FE	Yes	Yes	Yes
Observations	28,338	28,338	28,338
Adjusted R^2	0.357	0.493	0.442

Note: This table reports the results of testing H2, using *IFRS_UNDEF_HIGHDISC* and *IFRS_UNDEF_LOWDISC* as the test variables instead of *IFRS_UNDEF*. The numbers in parentheses (square brackets) represent *t*-statistics (*F*-statistics) calculated based on standard errors clustered by firm and quarter. ***, **, and * indicate statistical significance at the 1%, 5% and 10% levels, respectively, in two-tailed tests.

definition removal on analysts' forecast accuracy (H2) would be attenuated for firms with higher voluntary managerial disclosure.

To test our prediction, we obtain data on managers' voluntary earnings disclosures from the Korea Investor's Network for Disclosure System. We count the number of managers' earnings-related voluntary disclosures in the three-month period before the issue date for each analyst forecast. Then, we divide our sample into two subgroups based on the median disclosure frequency and re-estimate Equation (2) separately for each subgroup. The untabulated results indicate that an increase in OI forecast errors is observed only for the subgroup with relatively low voluntary disclosure, which is approximately 1.6 times larger than that of the high voluntary disclosure subgroup. These results suggest that management disclosure serves as an alternative information source for analysts, mitigating the negative effects of discretionary reporting due to OI definition removal.[17]

5.4. Comparison with forecasts of non-operating income

Removing the common OI definition leads to transient market confusion regarding the production and interpretation of accounting information. To further validate our inference, we test whether the results for H2 also apply to analysts' forecasts of the non-OI component in earnings. We expect the results to weaken or even disappear in the non-OI component forecast, which is unlikely to be affected by the removal (and restoration) of the OI definition. This finding would support our conclusion that the absence of an OI definition drives our main results. For this analysis, we re-estimate Equation (2) using analyst forecast errors for non-OI (*FE_NOI*) as the dependent variable. The untabulated results show that the coefficient on *IFRS_UNDEF* is insignificant and not statistically different

[17] Supporting this inference, the negative effect of OI definition removal on investors' reactions, as reported in Tables 6 and is significant only for firms in the low voluntary disclosure subgroup (untabulated). This finding supports our view that market participants view management disclosure as an alternative information source.

from that on *IFRS_DEF*. This indicates that analysts' forecast errors for non-OI components are unrelated to the availability of an OI definition, which further supports our main findings.[18]

5.5. Addressing concerns about potential selection bias

As delineated in H1, analysts' coverage decisions are not random. Analysts choose to follow firms by weighing the benefits and costs of providing forecasts, especially when faced with greater uncertainty and higher information processing costs. Consequently, empirical results based on observable analyst forecasts may be biased due to the systematic differences between analysts who choose to provide forecasts and those who do not, particularly during the transition from K-GAAP to IFRS. To address this concern, we use Heckman's (1979) two-stage estimation method to control for the potential selection bias arising from analysts' endogenous decisions to follow firms.

Specifically, following Yu (2008), we identify an instrumental variable that captures changes in the size of brokerage houses, which creates exogenous variation in analysts' coverage decisions, but is unlikely to be associated with the innate characteristics of individual analysts and target firms. We calculate the expected analyst coverage of a given firm driven by changes in the size of brokerage houses and include this in Equation (1) to estimate the inverse Mills ratio.[19] For this estimation, we use *DAF_X* as the dependent variable, defined as one if an analyst provides at least one sales, OI, or net income forecast for a given firm-quarter. Then, we control for the inverse Mills ratio corresponding to each forecast type, which is obtained from the first-stage model, in Equation (2), and re-examine our analysis of H2. The untabulated results demonstrate that the main findings regarding H2 remain robust even after controlling for the inverse Mills ratio, alleviating concerns about selection bias.

5.6. Other analyses

We conduct several additional analyses. First, we repeat the analysis of H2 using firm-level observations, in which a firm's OI forecast error is defined as the absolute difference between the actual OI and the median value of the OI forecasts issued by analysts following the firm. Our results remain unchanged (untabulated). Second, we investigate investors' reactions to unexpected OI over the three days around the earnings announcement date, with unexpected OI defined as the actual OI minus the median value of analysts' OI forecast estimates. We find that investors' reactions to unexpected OI become muted during the OI-undefined period (untabulated), consistent with the results in Table 6. Furthermore, we examine whether our main results are sensitive to alternative definitions of the test variables. For instance, we redefine *IFRS_UNDEF* (*IFRS_DEF*) as one for firm-quarters from the initial year of IFRS adoption to the *second* quarter of 2012 (firm-quarters from the *third* quarter of 2012 onward), as the redefinition of OI was announced on September 28, 2012, allowing firms to report OI according to the definition reintroduced from the third quarter of 2012. Our results remain qualitatively the same with these alternative test variables (untabulated). Finally, our results are robust to excluding observations from the third quarter of 2012 (untabulated) or before 2009, ensuring that the K-GAAP, OI-undefined, and OI-defined periods roughly cover the same duration (i.e., two years) (untabulated).

6. Conclusion

Recognizing the potential adverse effects of discretionary reporting of earnings subtotals, the IASB recently mandated the presentation of three-layered earnings subtotals in income statements. Although the literature has primarily focused on the merits of IFRS adoption, the potential transition costs associated with this shift remain relatively unexplored. By analyzing Korea's unique institutional setting, this study identifies the potential costs of IFRS adoption.

This study documents novel findings using Korean data from 2007 to 2014. First, analysts' coverage declines significantly when the OI definition is initially removed with IFRS adoption, a trend salient only for OI forecasts but not for other types of forecasts, such as sales and net income forecasts. Second, the accuracy of OI forecasts deteriorates without an OI definition. Third, investors' responses to analysts' OI forecast revisions become muted when OI is undefined. Finally, these disruptions begin to decrease once the official guidelines for OI reporting are reinstated. This study provides direct evidence supporting the IASB's recent initiative to mandate firms to report earnings subtotals consistently and highlights the potential costs associated with the discretionary reporting of financial performance.

By weighing the costs and benefits, we carefully document the process through which accounting regulations evolve (e.g., Chen & Yang, 2023). Our results reveal that accounting standards evolve with the consideration of net benefits. For instance, while the elimination of an OI definition under IFRS aims to enhance relevance by allowing discretionary reporting, it inevitably sacrifices some

[18] In line with this evidence, our untabulated analysis of investors' differential responses to analysts' OI and non-OI forecast revisions reveals that the reinstatement of the OI definition strengthens investors' reliance on OI forecast revisions, while having no significant impact on investors' reliance on non-OI forecast revisions.

[19] The expected coverage is calculated in two steps. First, at the brokerage house level, we calculate the expected coverage in year *t* as the actual coverage in the benchmark year multiplied by the ratio of the brokerage house size in year *t* to its size in the benchmark year. Second, we sum the expected coverage of a given firm across all brokerage houses following the firm in year *t*, resulting in a firm- and year-level variable. We use 2010—the year immediately preceding IFRS adoption—as the benchmark year. However, the results remain consistent when using alternative benchmark years, such as 2007, 2008, and 2009 (untabulated). See Yu (2008) for additional discussion on this instrumental variable.

degree of faithful representation. Restoring the definition serves as a corrective measure to mitigate these costs.

Despite our efforts to establish a more robust causal relationship by comparing various types of forecasts around IFRS adoption, our research design may not fully eliminate potential confounding factors associated with IFRS adoption. This limitation arises because IFRS applies to all listed firms in Korea, making it challenging to isolate specific treatment effects. However, it is essential to emphasize that our cross-item analyses effectively identify the treatment effects stemming from changes in the OI definition among IFRS adopters.

We believe that our study has implications for IFRS-adopting countries that allow discretionary reporting of selected accounting items in financial statements. This study provides policymakers and regulators with practical insights into the standardization of reporting earnings sub-totals in response to Leuz and Wysocki's (2016) call for balanced research on the costs and benefits of financial reporting regulations. Furthermore, our findings demonstrate that the Korean regulator's timely intervention limited discretionary reporting, reducing information processing costs and restoring investors' confidence in earnings information under IFRS. This intervention effectively mitigated the unintended disruptions caused by IFRS adoption. Collectively, our evidence underscores the proactive role of regulators during the transition period and illustrates the dynamic nature of accounting standards and their corresponding regulations.

Declaration of generative AI and AI-assisted technologies in the writing process

During the preparation of this work, the author(s) used OpenAI ChatGPT in order to assist with refining language and proofreading in certain sections. After using this tool/service, the author(s) reviewed and edited the content as needed and take(s) full responsibility for the content of the publication.

Funding statement

Lee appreciates financial support by the Institute of Management Research at Seoul National University.

Declaration of interest statement

The authors report there are no competing interests to declare.

Acknowledgments

We appreciate the invaluable comments provided by the editors, two anonymous referees, Bok Baik, Jong-Hag Choi, Yaowen Shan, Bryan Byung-Hee Lee, Chang-Joon Song, and participants at the 2019 Korean Accounting Association Winter Conference. Any opinions expressed are those of the authors and not those of the Korea Accounting Standards Board.

Appendix A. Example of OI reporting around the IFRS adoption in Korea

Panel A. Income statement and related footnote of Doosan Heavy Industries & Construction Co., Ltd for FY2011.

- Consolidated statement of financial performance

(Unit: 1 million KRW)

Account	2011	2010
I. Sales	8,495,506	7,928,868
II. Cost of goods sold	7,250,464	6,582,510
III. Gross margin	1,245,042	1,346,358
Selling, general, and administrative expenses	742,585	794,553
Other operating revenues	102,882	41,017
Other operating expenses	35,707	77,056
IV. Operating income	569,632	515,766
Gains and losses from equity-method investments	504,914	(91,198)
Financial revenues	442,471	423,377
Financial expenses	656,558	640,348

- Footnote

		(Unit: 1 million KRW)
Account	2011	2010
Other operating revenues		
Rentals	3,122	2,885
Restoration of accrued provisions	925	–
Gains from disposal of tangible assets	1,324	1,149
Gain on bargains purchase	10,403	–
Others	87,108	36,983
Total	102,882	41,017
Other operating expenses		
Losses from disposal of tangible assets	1,401	3,855
Impairment losses from tangible assets	1,139	424
Impairment losses from investment properties	–	13,000
Impairment losses from intangible assets	3,416	19,476
Other bad debt expenses	–	13,191
Donations	18,030	18,538
Others	11,721	8,572
Total	35,707	77,056

Panel B. Income statement of Doosan Heavy Industries & Construction Co., Ltd for FY2012.

- Consolidated statement of financial performance

		(Unit: 1 million KRW)
Account	2012	2011
I. Sales	9,627,184	8,495,506
II. Cost of goods sold	8,204,845	7,250,464
III. Gross margin	1,368,339	1,245,042
Selling, general, and administrative expenses	791,500	718,885
IV. Operating income	594,839	526,157
Financial revenues	889,471	442,471
Financial expenses	1,143,414	677,472

Note: This table compares the income statement and related footnote of Doosan Heavy Industries & Construction Co., Ltd (hereafter, Doosan) between FY 2011; FY 2012. Panel A presents part of the income statement and related footnotes describing other operating revenues/expenses as reported in 2011 in the absence of the formal definition of operating income. In addition to selling, general, and administrative expenses, Doosan had incorporated additional revenue/expense items into measuring operating income. Panel B presents part of the income statement of Doosan as reported in 2012 when the KASB offered an official definition of operating income. While Doosan adjusted various items of operating revenues and expenses for the measurement of operating income in 2011 as shown in Panel A, it reported only one operating component after gross margin—selling, general, and administrative expenses—in 2012, similar to that under K-GAAP. In addition, selling, general, and administrative expenses for FY 2011 were originally reported as 742,585 million KRW in the FY 2011 income statement as shown in Panel A, and as 718,885 million KRW in the FY 2012 income statement as shown in Panel B. The substantial change in the selling, general, and administrative expenses for FY 2011 is attributable to managers' discretion in reporting operating income in 2011.

Appendix B. Definitions of Variables

Variable		Definition
Main variables		
DAF_X	=	Indicator variable that equals one if an analyst issues a specific type (*X*) of forecast for a given firm-quarter (type (*X*) includes forecasts of operating income (*OI*), sales (*SALE*), and net income (*NI*)), and zero otherwise.
NAF_X	=	Natural logarithm of one plus the number of a specific type (*X*) of forecast issued by an analyst for a given firm-quarter, and zero otherwise.
FE_X	=	Error of a specific type (*X*) of the forecast: The error is calculated as [the absolute difference between the forecast estimate and actual accounting number that corresponds to the estimate scaled by lagged total assets] multiplied by 100.
REV_X	=	Forecast revision of a specific type (X) of the forecast: The revision is calculated as [an analyst's forecast less its most recent prior forecast scaled by lagged total assets] multiplied by 100.
BHAR	=	The size-adjusted buy-and-hold return is calculated as a firm's three-day buy-and-hold stock returns in excess of three-day buy-and-hold stock returns of a value-weighted portfolio of firms in the same decile group based on the market value of equity.
IFRS	=	Indicator variable that equals one if financial reporting is prepared under IFRS for a given firm-quarter, and zero otherwise.
IFRS_UNDEF	=	Indicator variable that equals one if financial reporting is prepared under IFRS (*IFRS* = 1) and without a formal definition of operating income, and zero otherwise, where firm-quarters from the initial year of IFRS adoption to the third quarter of 2012 are coded as *IFRS_UNDEF* = 1.
IFRS_UNDEF_HIGHDISC	=	Indicator variable that equals one if *IFRS_UNDEF* = 1 and the absolute difference between the operating income under K-GAAP and the reported operating income under IFRS scaled by lagged total assets is greater than its median value, and zero otherwise.
IFRS_UNDEF_LOWDISC	=	Indicator variable that equals one if *IFRS_UNDEF* = 1 and the absolute difference between the operating income under K-GAAP and the reported operating income under IFRS scaled by lagged total assets is smaller than its median value, and zero otherwise.
IFRS_DEF	=	Indicator variable that equals one if financial reporting is prepared under IFRS (*IFRS* = 1) and with a formal definition of operating income, and zero otherwise, where firm-quarters from the fourth quarter of 2012 onward are coded as *IFRS_DEF* = 1.
Firm-specific control variables		
ABRET	=	Abnormal return during the fiscal quarter, calculated as the quarterly buy-and-hold return adjusted for the value-weighted market return.
ANAL	=	Natural logarithm of the number of analysts who follow a firm during a given quarter, and zero otherwise.
BTM	=	Ratio of the book value of equity to the market value of equity.
EARN	=	Net income divided by the number of outstanding shares scaled by the lagged stock price.
EARNCHG	=	Quarterly change in net income divided by the number of outstanding shares scaled by the lagged stock price.
EARNVOL	=	Standard deviation of net income divided by the number of outstanding shares scaled by the lagged stock price over the fiscal quarters *t*-3 to *t*.
INTANG	=	Intangible assets scaled by lagged total assets.
ISSUE	=	Indicator variable that equals one if the sum of equity and debt issuance is greater than 5% of the total assets, and zero otherwise.
LOSS	=	Indicator variable that equals one if a firm reports negative net income, and zero otherwise.
RETVOL	=	Standard deviation of daily stock returns over the fiscal quarter.
SALECHG	=	Quarterly change in sales divided by lagged sales.
SIZE	=	Natural logarithm of the market value of equity.
TURNOVER	=	Quarterly trading volume scaled by the number of outstanding shares.
Analyst-specific control variables		
BROKER	=	Number of analysts employed by a brokerage house for which the analyst works.
DAYS	=	Number of days elapsed since the most recent prior forecast made by an analyst following the firm.
FIRMEXP	=	Analyst's firm-specific experience, defined as the difference between the current quarter and the first quarter when an analyst initiates the coverage for the firm.
FREQ	=	Number of forecasts made by an analyst for a given firm-year.
GENEXP	=	Analysts' general experience, defined as the difference between the current quarter and the first quarter when analysts start their career.
HORIZON	=	Number of days between the forecast date and the quarterly earnings announcement date scaled by 365.
FE_OI_LAG	=	Lagged forecast error of operating income, calculated as the absolute value of the difference between the actual operating income and the forecast estimate for the previous quarter for a firm.
NFIRM	=	Number of unique firms covered by an analyst.
NIND	=	Number of unique industries covered by an analyst.

Data availability

All data are publicly available from the sources identified in the paper.

References

Bae, K. H., Tan, H., & Welker, M. (2008). International GAAP differences: The impact on foreign analysts. *The Accounting Review, 83*(3), 593–628.
Barker, R., & Imam, S. (2008). Analysts' perceptions of 'earnings quality. *Accounting and Business Research, 38*(4), 313–329.
Barth, M. E., Gow, I. D., & Taylor, D. J. (2012). Why do pro forma and street earnings not reflect changes in GAAP? Evidence from SFAS 123R. *Review of Accounting Studies, 17*, 526–562.

Barth, M. E., Landsman, W. R., & Lang, M. H. (2008). International accounting standards and accounting quality. *Journal of Accounting Research, 46*(3), 467–498.
Beyer, A., Cohen, D. A., Lys, T. Z., & Walther, B. R. (2010). The financial reporting environment: Review of the recent literature. *Journal of Accounting and Economics, 50*, 296–343.
Bilinksi, P., Lyssimachou, D., & Walker, M. (2013). Target price accuracy: International evidence. *The Accounting Review, 88*(3), 825–851.
Black, D. E., & Christensen, T. E. (2009). US managers' use of 'pro forma' adjustments to meet strategic earnings targets. *Journal of Business Finance & Accounting, 36*(3), 297–326.
Black, D. E., Christensen, T. E., Ciesielski, J. T., & Whipple, B. C. (2018). Non-GAAP reporting: Evidence from academia and current practice. *Journal of Business Finance & Accounting, 45*(3–4), 259–294.
Black, D. E., Christensen, T. E., Ciesielski, J. T., & Whipple, B. C. (2021). Non-GAAP earnings: A consistency and comparability crisis? *Contemporary Accounting Research, 38*(3), 1712–1747.
Bradshaw, M. T., & Sloan, R. G. (2002). GAAP versus the Street: An empirical examination of two alternative definitions of earnings. *Journal of Accounting Research, 40*(1), 41–66.
Bradshaw, M. T., & Soliman, M. (2007). Discussion of "Letting the 'tail wag the dog": The debate over GAAP versus street earnings revisited.". *Contemporary Accounting Research, 24*(3), 735–739.
Brown, L. D., Call, A. C., Clement, M. B., & Sharp, N. Y. (2015). Inside the "Black Box" of sell-side financial analysts. *Journal of Accounting Research, 53*(1), 1–47.
Brown, L. D., & Sivakumar, K. (2003). Comparing the value relevance of two operating income measures. *Review of Accounting Studies, 8*, 561–572.
Byard, D., Li, Y., & Yu, Y. (2011). The effect of mandatory IFRS adoption on financial analysts' information environment. *Journal of Accounting Research, 49*(1), 69–96.
Chang, H. S., Donohoe, M., & Sougiannis, T. (2016). Do analysts understand the economic and reporting complexities of derivatives? *Journal of Accounting and Economics, 61*(2−3), 584–604.
Chen, H., & Yang, L. (2023). Stability and regime change: The evolution of accounting standards. *The Accounting Review, 98*(3), 135–152.
Choi, Y.-S., & Young, S. (2015). Transitory earnings components and the two faces of non-generally accepted accounting principles earnings. *Accounting and Finance, 55*, 75–103.
Christensen, H. B., Lee, E., Walker, M., & Zeng, C. (2015). Incentives or standards: What determines accounting quality changes around IFRS adoption? European. *The Accounting Review, 24*, 31–61.
Clement, M. B., Frankel, R., & Miller, J. (2003). Confirming management earnings forecasts, earnings uncertainty, and stock return? *Journal of Accounting Research, 41*(4), 653–679.
Cotter, J., Tarca, A., & Wee, M. (2012). IFRS adoption and analysts' earnings forecasts: Australian evidence. *Accounting and Finance, 52*(2), 395–419.
Covrig, V. M., DeFond, M. L., & Hung, M. (2007). Home bias, foreign mutual fund holdings, and the voluntary adoption of International Accounting Standards. *Journal of Accounting Research, 45*(1), 41–70.
Cuijpers, R., & Buijink, W. (2005). Voluntary adoption of non-local GAAP in the European union: A study of determinants and consequences. *European Accounting Review, 14*(3), 487–524.
Daske, H., Hail, L., Leuz, C., & Verdi, R. (2008). Mandatory IFRS reporting around the world: Early evidence on the economic consequences. *Journal of Accounting Research, 46*(5), 1085–1142.
De George, E. T., Ferguson, C. B., & Spear, N. A. (2013). How much does IFRS cost? IFRS adoption and audit fees. *The Accounting Review, 88*(2), 429–462.
Demmer, M., Pronobis, P., & Yohn, T. L. (2019). Mandatory IFRS adoption and analyst forecast accuracy: The role of financial statement-based forecasts and analyst characteristics. *Review of Accounting Studies, 24*, 1022–1065.
Doyle, J., Jennings, J., & Soliman, M. (2013). Do managers define non-GAAP earnings to meet or beat analyst forecasts? *Journal of Accounting and Economics, 56*, 40–56.
Ertimur, Y., Mayew, W. J., & Stubben, S. R. (2011). Analyst reputation and the issuance of disaggregated earnings forecasts to I/B/E/S. *Review of Accounting Studies, 16*(1), 29–58.
Financial Accounting Standards Board (FASB). (2009). *Informational board meeting handout: Financial statement presentation (September 21, 2009)* (pp. 10–35).
Glaum, M., Baetge, J., Grothe, A., & Oberdörster, T. (2013). Introduction of International Accounting Standards, disclosure quality and accuracy of analysts' earnings forecasts. *European Accounting Review, 22*(1), 79–116.
Gu, Z., & Chen, T. (2004). Analysts' treatment of non-recurring items in street earnings. *Journal of Accounting and Economics, 38*, 129–170.
Gu, F., & Wang, W. (2005). Intangible assets, information complexity, and analysts' earnings forecasts. *Journal of Business Finance & Accounting, 32*(9−10), 1673–1702.
Hail, L., Leuz, C., & Wysocki, P. (2010). Global accounting convergence and the potential adoption of IFRS by the U.S. (Part I): Conceptual underpinnings and economic analysis. *Accounting Horizons, 24*(3), 355–394.
Hamberg, M., Paananen, M., & Novak, J. (2011). The adoption of IFRS 3: The effects of managerial discretion and stock market reactions. *European Accounting Review, 20*(2), 263–288.
Heckman, J. (1979). Sample selection bias as a specification error. *Econometrica, 47*(1), 153–162.
Holthausen, R., & Verrecchia, R. E. (1988). The effect of sequential information releases on the variance of price changes in an intertemporal multi-asset market. *Journal of Accounting Research, 26*(1), 82–106.
Hong, H. A., Hung, M., & Lobo, G. J. (2014). The impact of mandatory IFRS adoption on IPOs in global capital markets. *The Accounting Review, 89*(4), 1365–1397.
Hoogervorst, H. (2019). Strengthening the relevance of financial reporting. In *IFRS foundation conference*. Available at: https://www.ifrs.org/news-and-events/2019/06/strengthening-the-relevance-of-financial-reporting. (Accessed 9 January 2022).
Horton, J., & Serafeim, G. (2010). Market reaction to and valuation of IFRS reconciliation adjustments: First evidence from the UK. *Review of Accounting Studies, 15*, 725–751.
Hung, M., & Subramanyam, K. R. (2007). Financial statement effects of adopting international accounting standards: The case of Germany. *Review of Accounting Studies, 12*(4), 623–657.
International Accounting Standards Board (IASB). (2018). *Primary financial statements: Project overview*. Available at:. In https://www.ifrs.org/projects/work-plan/primary-financial-statements/#supporting-material (Accessed 9 January 2022).
International Accounting Standards Board (IASB). (2024). *Ifrs 18: Presentation and disclosure in financial statements*. Available at:. In https://www.ifrs.org/supporting-implementation/supporting-materials-by-ifrs-standards/ifrs-18 (Accessed 14 August 2024)..
Irani, A. J., & Karamanou, I. (2003). Regulation fair disclosure, analyst following, and analyst forecast dispersion. *Accounting Horizons, 17*(1), 15–29.
Jennings, J., Lee, J., & Matsumoto, D. A. (2017). The effect of industry co-location on analysts' information acquisition costs. *The Accounting Review, 92*(6), 103–127.
Jiang, G., Lee, C. M. C., & Zhang, Y. (2005). Information uncertainty and expected returns. *Review of Accounting Studies, 10*, 185–221.
Jones, S., & Higgins, A. D. (2006). Australia's switch to international financial reporting standards: A perspective from account preparers. *Accounting and Finance, 46*, 629–652.
Keung, E. C. (2010). Do supplementary sales forecasts increase the credibility of financial analysts' earnings forecasts? *The Accounting Review, 85*(6), 2047–2074.
Kolev, K., Marquardt, C. A., & McVay, S. E. (2008). SEC Scrutiny and the evolution of non-GAAP reporting. *The Accounting Review, 83*(1), 157–184.
Korea Accounting Standards Board (KASB). (2012). Revision of operating profit disclosure standards. *Press Release*. Available at: http://www.kasb.or.kr/fe/bbs/NR_view.do?bbsCd=1005&bbsSeq=108.
Lehavy, R., Li, F., & Merkley, K. (2011). The effect of annual report readability on analyst following and the properties of their earnings forecasts. *The Accounting Review, 86*(3), 1087–1115.
Leuz, C., & Verrecchia, R. E. (2000). The economic consequences of increased disclosure. *Journal of Accounting Research, 38*(Supplement), 91–124.
Leuz, C., & Wysocki, P. D. (2016). The economics of disclosure and financial reporting regulation: Evidence and suggestions for future research. *Journal of Accounting Research, 54*(2), 525–622.

Li, S. (2010). Does mandatory adoption of international financial reporting standards in the European Union reduce the cost of equity capital? *The Accounting Review, 85*(2), 607–636.
Matsumoto, D. A. (2002). Management's incentives to avoid negative earnings surprises. *The Accounting Review, 77*(3), 483–514.
McDonald, R., & Siegel, D. (1986). The value of waiting to see. *Quarterly Journal of Economics, 101*(4), 707–727.
Metzger, M. J., & Flanagin, A. J. (2013). Credibility and trust of information in online environments: The use of cognitive heuristics. *Journal of Pragmatics, 59*(B), 210–220.
Noh, M., Moon, D., & Parte, L. (2017). Earnings management using revenue classification shifting – evidence from the IFRS adoption period. *International Journal of Accounting and Information Management, 25*(3), 333–355.
O'Brien, P., & Bhushan, R. (1990). Analyst following and institutional ownership. *Journal of Accounting Research, 28*, 55–76.
Richardson, S., Teoh, S. H., & Wysocki, P. D. (2004). The walk-down to beatable analyst forecasts: The role of equity issuance and insider trading incentives. *Contemporary Accounting Research, 21*(4), 885–924.
Sparks, J. R., & Rapp, D. N. (2011). Readers' reliance on source credibility in the service of comprehension. *Journal of Experimental Psychology: Learning, Memory, and Cognition, 37*(1), 230–247.
Stickel, S. E. (1992). Reputation and performance among security analysts. *The Journal of Finance, 47*(5), 1811–1836.
Sundar, S. (2008). The MAIN model: A heuristic approach to understanding technology effects on credibility. In M. Metzger, & A. Flanagin (Eds.), *Digital media, youth, and credibility* (pp. 73–100). Cambridge, MA: MIT Press.
Tan, H., Wang, S., & Welker, M. (2011). Analyst following and forecast accuracy after mandated IFRS adoptions. *Journal of Accounting Research, 49*(5), 1307–1357.
Verrecchia, R. (1983). Discretionary disclosure. *Journal of Accounting and Economics, 5*, 179–194.
Yu, F. (2008). Analyst coverage and earnings management. *Journal of Financial Economics, 88*, 245–271.
Zhang, X. F. (2006). Information uncertainty and analyst forecast behavior. *Contemporary Accounting Research, 23*(2), 565–590.