The Effects of IFRS Adoption on Accounting Quality: Early Evidence in Korea

Soon-Young Ha, ph.d student, Pusan National University, Korea(South)

Abstract: This paper examines whether adoption of International Financial Reporting Standards is associated with accounting quality in Korea by classifying all listed firms into KOSPI and KOSDAQ to test the difference of accounting quality between K-IFRS and K-GAAP.

We provide evidence on the effects of mandatory IFRS adoption on income smoothing, benchmark earnings management, and reporting aggressiveness (proxied by timeliness of loss recognition) using a sample of more than 1,030 firms in Korea that adopted IFRS in 2011. We compare KOSPI firms’ earnings with earnings for KOSDAQ firms which exhibit more evidence of smoothing, greater tendency to manage towards a target, and less timely recognition of losses after IFRS adoption in 2011.

Our findings contrast with prior studies that document evidence suggesting an increase in accounting quality after IFRS adoption.

Key Words: Accounting quality; Domestic GAAP; income smoothing; benchmark earnings management; timeliness of loss recognition; International Financial Reporting Standards; KOSPI and KOSDAQ
I. Introduction

The question capital market participant address is that the effects of mandatory IFRS adoption on accounting quality critically depend upon whether IFRS are of higher or lower quality than domestic GAAP and how they affect the efficacy of enforcement mechanisms. By a higher quality standard we mean a standard that either reduces managerial discretion over accounting choices or inherently disallows smoothing or overstatement of earnings. If IFRS are of higher quality than domestic GAAP, and they are appropriately enforced, then we expect mandatory adoption of IFRS to improve accounting quality. On the other hand, if IFRS are of lower quality than domestic GAAP or if they weaken enforcement (for example because of increased discretion or flexibility), then we would expect them to reduce accounting quality. Thus, the impact of IFRS on accounting quality is an empirical question [see Ahmed et al. (2012)].

We provide evidence on the preliminary effects of mandatory adoption of International Financial Reporting Standards (IFRS) on accounting quality in Korea. In particular, we investigate whether accounting amounts of firms that apply IFRS exhibit less earnings management and more timely loss recognition than accounting amounts of firms that apply domestic standards. Ball et al. (2003) argue that adopting high quality standards might be a necessary condition for high quality information, but not necessarily a sufficient one. This paper contributes to this debate by examining whether the adoption of IFRS is associated with high accounting quality. In particular, we question whether IFRS are sufficient to override managers’ incentives to engage in earnings management and affect the quality of reported earnings.

Widespread adoption of IFRS will result in a fundamental change in the business environment, since prior to 2005, companies followed a variety of country-specific Generally Accepted Accounting Principles (GAAP). As of 2005, almost all publicly listed companies in Europe and many other countries are required to prepare financial statements in accordance with International Financial Reporting Standards (IFRS). In addition, the Financial Accounting Standards Board has embarked on a comprehensive project aimed at convergence between IFRS and U.S. standards.

Even though the movement toward global acceptance of IFRS has generated considerable attention and debate, we predict that application of IFRS is associated with higher accounting quality than domestic accounting standards, which requiring all
publicly listed Korean firms to report in 2011.

In the U.S., the move towards adopting a global set of accounting standards gained momentum in 2007 and 2008 when the Securities Exchange Commission (SEC) announced its decision to no longer require foreign corporations listed in the U.S. to reconcile between IFRS and U.S. GAAP and proposed a “roadmap” for the mandatory adoption of IFRS by U.S. firms (SEC Releases 33-8982; 34-58960). Although the momentum towards the adoption of IFRS in the U.S. has slowed, the Financial Accounting Standards Board (FASB) and the International Accounting Standards Board (IASB) have recommitted to converging U.S. GAAP and IFRS by 2011 and Japan began allowing listed companies to file under IFRS for fiscal years ending after March 2010.

The proponents of mandatory IFRS adoption assert that IFRS will “reduce the cost of capital and open new opportunities for diversification and improved investment returns” (Tweedie 2006). Furthermore, some proponents also maintain that requiring firms to report under IFRS will enhance the comparability of financial reports across countries and will bring greater efficiency to firms reporting across multiple jurisdictions (Covrig et al., 2007; Barth et al., 2008).

Opponents suggest that requiring firms to adopt IFRS will be costly and that the benefits of comparability may not be realized due to disparities in the application of IFRS across countries (Ciesielski, 2007; FFSA and AFG, 2007; Herz, 2007; Soderstrom and Sun, 2007; Turner, 2007; Holthausen, 2009; Sunder, 2009; Kvaal and Nobes, 2010; Hail et al., 2010a, 2010b).

In Korea, the Roadmap toward IFRS Adoption was announced on 15 March, 2007. According to the Roadmap the adoption of IFRS is mandatory for all publicly listed companies from 2011, with early adoption permitted for non-financial institutions from 2009 in order to reform its local capital markets and enhance transparency in financial reporting and then boost foreign investors’ confidence. Adoption of IFRS is optional for unlisted companies.

The purpose of this study is to fill this gap by exploring that mandatory IFRS adoption enhance the quality of financial reporting and then alleviate the so called “Korea Discount”, the amount by which foreign investors undervalue Korean stocks and that induce the inflow of foreign capital, as a result, it can affect capital market. In an attempt to provide insight into the effects of the change, this paper reviews literature on the consequences of changing accounting principles and the determinants of accounting quality
that are likely to influence the effect of the change by classifying all listed firms into KOSPI and KOSDAQ in Korea to test the difference of accounting quality between K-IFRS and K-GAAP. We focus on studying the effects of mandatory\(^1\) adoption on three groups of accounting quality metrics: income smoothing, earnings management to meet or beat a target, and reporting aggressiveness (proxied by timeliness of loss recognition). While there is no agreed-upon definition of accounting quality, these measures are related to faithful representation of the underlying economics which is broadly accepted by standard-setters, regulators, practitioners, users, as well as by academics as an important feature of high quality accounting [see for example, FASB (2008), SEC (2000), Knutson and Napolitano (1998), Healy and Wahlen (1999), Schipper and Vincent (2003), Ball (2006) and Dechow et al. (2010) among others].\(^2\)

Our tests are based on the volatility of net income, the ratio of the volatility of net income to the volatility of cash flows, the correlation between cash flows and accruals, the likelihood of meeting or beating a benchmark, the magnitude of signed accruals, and the timeliness of loss recognition.

We focus on studying the effects of mandatory adoption on three groups of accounting quality metrics: income smoothing, earnings management to meet or beat a target, and reporting aggressiveness (proxied by accruals and timeliness of loss recognition).

The Korea Composite Stock Price Index (“KOSPI”) market is the KRX(Korea Stock Exchange)’s main board listing medium to large capital blue chip stocks. The Korea Securities Dealers Automated Quotations (“KOSDAQ”) market is a financing channel for small and medium venture companies with growth potential. Different quantitative and qualitative requirements apply to the KOSPI and KOSDAQ markets, with the listing requirements and fees for KOSDAQ market being simpler and lower than for the KOSPI market.

It has been reported that earnings management of the KOSDAQ firms is severe than that of the KOSPI firms. Accordingly we expect KOSDAQ firms have different effects of mandatory IFRS adoption on properties of accounting numbers comparing with KOSPI firms.

\(^1\) A number of other studies examine the effect of mandatory IFRS adoption on accounting quality focusing on a single country or a few countries. For example Christensen et al. (2008) and Pananen and Lin (2007) find evidence of an increase in earnings management and a reduction in the timeliness of loss recognition in Germany. Jeanjean and Stolowy (2009) document that earnings management after mandatory IFRS adoption increased in France but did not change in Australia and the UK.

\(^2\) Recognizing losses on a more timely basis than gains is strictly inconsistent with faithful representation of the underlying economics which would imply symmetric timeliness. However, we use this measure to assess whether loss recognition is being delayed under IFRS. If so, that would suggest a reduction in accounting quality.
To investigate this difference, we split our sample into two groups, KOSPI firms and KOSDAQ firms. Overall the evidence on the association between mandatory IFRS adoption and accounting quality is mixed, although papers applying more recent data generally find relatively better accounting quality among the firms that adopt IFRS.

Our findings can be summarized as follows. First, we find evidence of a significant increase in income smoothing for KOSDAQ firms between K-GAAP period and K-IFRS period relative to KOSPI firms’ no change after mandatory IFRS adoption. Specifically, we find a significant decrease in the volatility of net income, the volatility of net income relative to the volatility of cash flows, and the correlation between cash flows and accruals for IFRS firms relative to benchmark firms.

Second, we find evidence of a significant reduction in timeliness of loss recognition for KOSDAQ firms in IFRS period relative to KOSPI firms’ no change.

Third, in addition to earnings smoothing, we find evidence of an earnings benchmarks, the positive earnings threshold in the KOSDAQ firms after K-IFRS adoption. While the evidence is not fully consistent across all proxies, taken together the results suggest that accounting quality decreased after mandatory IFRS adoption in the KOSDAQ market.

We note the following caveats of our study. First, while the interpretation of the accounting quality proxies we use is consistent with prior work, we reiterate that properties of accounting numbers(such as smoothness or reporting aggressiveness) are determined by a complex set of factors including (i) the underlying economic determinants such as product market competition, cost structure, investment opportunities (Lev 1983; Dechow, Ge and Schrand 2010), (ii) managerial reporting incentives, and (iii) constraints on managers’ accounting decisions such as accounting standards, auditing, and monitoring by outside directors, shareholders, and regulators. Second, our tests are based on only one year of post-adoption data. It is conceivable that over a longer period the effects we document may not

\[3\]

The Korea Exchange (KRX) is responsible for operating the Korean stock market. The KRX has 3 market divisions: KOSPI, KOSDAQ and derivatives. **KOSPI:** The Korea Composite Stock Price Index is more commonly known as the KOSPI and often compared to the Dow Jones in the US. KOSPI is considered the representative list of companies publicly traded companies in Korea. As of today there are about 800 companies listed on the KOSPI. There are many KOSPI indexes from those that track certain industries, to those that track small, medium or large cap companies listed on the KOSPI, but the “KOSPI 200” is Korea’s most well-known index and is the main benchmark that is used to gauge the overall performance of the Korean economy, and it is one of the most widely traded indexes in the world. **KOSDAQ:** The Korean Securities Dealers Automated Quotations is more commonly known as KOSDAQ. KOSDAQ has about 1,000 small and medium sized businesses and start-ups listed on it. KOSDAQ is considered much more risky than KOSPI. It is often compared to NASDAQ in the US.
persist with our results. Thus, it is not clear that changing one element (i.e. accounting standards) would necessarily result in the change of accounting quality.

II. Literature Review and Hypotheses Development

2.1 IFRS Adoption in Korea

When Korea accepted IMF bail-out package in 1997 to overcome severe financial crisis, Korea carried out a large scale of intense restructuring. As a part of reforming, Korea Generally Accepted Accounting Principles (K-GAAP) was made out to enhance accounting creditability. K-GAAP, however, was not enough to coincide with international standard, many foreign investors still harbour doubts about the level of transparency in its corporate culture. This lack of confidence led to the Korean capital market suffering from what some term the “Korea Discount”, as global investors saw the Korean accounting system as lacking transparency.

In March 2007, Korea announced its own roadmap for convergence with IFRS in order to reform its local capital markets and enhance transparency in financial reporting and then boost foreign investors’ confidence. In the wake of IFRS-based financial reporting in Korea, the Korea Accounting Standard Board (KASB) translates and issues the Korean IFRS (K-IFRS) at the end of 2007. The K-IFRS are a word-for-word translation of the full IFRS issued by the International Accounting Standards Board (IASB) and will become mandatory for Korean listed companies with asset over 2 trillion won, from 2011, with voluntary early adoption for all companies from 2009 except financial institutions. However, companies, of which asset is less than 2 trillion won, is allowed to keep their current accounting system until 2013. Thus, managers and investors need to understand the K-IFRS and the impact of mandatory adoption of IFRS on financial reporting in Korea.

One of the main changes incurred by introducing IFRS is that unlike K-GAAP, K-IFRS generally uses historical cost, but intangible assets, property, plant and equipment (PPE) an investment property may be revalued to fair value. Derivatives and certain other financial instruments and biological assets are also revalued to fair value. Because of these changes, if revaluation makes profit, companies are able to expect to a decrease in liabilities. Therefore, companies owning many of fine tangible assets such as land,
buildings are expected to get benefits by adopting IFRS to their current accounting system and it will make their books more attractive.

After adopting IFRS, the balance sheet and income statements are reported as consolidated statements quarterly. By implementing worldwide used of a single set of high quality financial reporting standard, it is expected easier to compare domestic and foreign companies that mainly use consolidated financial statements. Also, it will not be necessary for companies to duplicate similar external financial statements; hence it will reduce the costs and time of making two types of financial statements.

In a separate move to clean up accounting practices, the Korean government has given companies a two-year grace period to declare and voluntarily correct any past accounting irregularities and avoid being sued under newly allowed class action lawsuits. Consolidated quarterly and semiannual financial reporting was required beginning in 2011 for companies with 2 trillion won in assets or more. Starting in 2013, companies with less than 2 trillion won in assets must begin making consolidated financial reports. From 2009, 14 domestic companies tested the external financial statements by IFRS, 50 ~ 60% of accounts were resulted to reduce but notes were increased twice than before, since IFRS recommend to simplify the accounts and make notes for further explanation. Simplified financial statements might cause the confusion when the external users interpret the financial statement. Companies need to be clear when they make notes on their financial statements, also external users will be needed to look reports more carefully. Voluntary adopters included Pohang Iron & Steel Corporation along with most banks and companies listed in the US and Europe such as Samsung Electronics, Korea Telecom and SK Telecom. Hopefully, continued improvements to the IFRS used by Korean listed companies and a speedy, widespread adoption of IFRS for SMEs will help to further distance us from the era of the “Korea Discount”.

2.2 IFRS and accounting quality

Prior literature that investigates the impact of IFRS adoption on accounting information can be classified into three areas, the impact of voluntary adoption on accounting quality, the impact of mandatory adoption on accounting quality, and the comparison of accounting quality under IFRS and under local GAAP.

A few studies of the first area use multinational accounting data and some of it use
domestic data and investigate the impact of the voluntary adoption of IFRS on accounting quality.

Barth et al. (2008) examine whether voluntary adoption of International Accounting Standard (IAS) is associated with higher accounting quality in 21 countries. They find that firms applying IAS provide less earnings management, more timely loss recognition, and more value relevant accounting information than do matched sample firms applying non-U.S. domestic standards. They also find that the earnings quality after adoption of IAS is higher than that before adoption.

As an extension of these findings, Daske et al. (2007a) focus on the heterogeneity in the consequences of voluntary IFRS adoption and find that on average capital markets respond modestly to voluntary IFRS reporting. However, consistent with their predictions, they find that "serious" adopters experience significantly stronger effects on their cost of capital and market liquidity than “label” adopters, suggesting that for some firms the quality of financial reporting improves in association with voluntary IFRS adoption.

On the other hand, Van tendeloo and Vanstraelen (2005) and Goncharov (2005) find no differences in earnings management between German firms that voluntarily adopted IFRS prior to 2001 and German firms that applied HGB(German GAAP). In contrast, Gassen and Sellhorn (2006) find that German firms that voluntarily adopted IFRS from 1998 to 2004 have more persistent, less predictable and more conditionally conservative earnings than a matched group of German firms applying German GAAP. Hung and Subramanyam (2007) reach a similar conclusion for a sample of German firms adopting IFRS voluntarily between 1998 and 2002. Rather than focus on cross-sectional differences between firms, however, Hung and Subramanyam exploit the fact that firms adopting IFRS restate their comparative figures and compare net income and net equity under German GAAP and IFRS for the same firm-years. Bartov et al. (2005) report that firms adopting IFRS have accounting information with higher value relevance.

Overall the evidence on the association between voluntary IFRS adoption and accounting quality is mixed, although papers applying more recent data generally find relatively better accounting quality among the firms that adopt IFRS. A common feature of these studies is that they are based on voluntary IFRS adopters.

The second area of studies investigates the impact of mandatory adoption on earnings quality. Isamil et al. (2010) report that earnings quality increases after mandatory adoption in Malaysia using both price-earnings and return-earnings models. Balsari et al. (2010) show
same research results for Turkish firms. However, Ahmed et al. (2010), using a broad sample from 21 countries that mandatorily adopting IFRS in 2005, find that income smoothing increases, conservatism decreases, and timeliness of good news increases in the post-adoption period for IFRS firms relative to benchmark firms. Also, Cascino and Gassen (2010), using sample of in 40 countries, find that while the mandatory adoption of IFRS increases the comparability of some prominent balance sheet line items across countries, it has no clear effect on the cross-country comparability of earnings attributes. Christensen et al. (2008) compare earnings quality between German firms that voluntarily adopted IFRS and firms that mandatorily adopted IFRS. They find that earnings quality increases for the voluntary adopters but it decreases for the mandatory adopters.

In summary of prior studies, firms that voluntarily adopted IFRS improve the earnings quality, while firms that mandatorily adopted IFRS do not always increase the earnings quality. Barth et al. (2008) mentions that the earnings quality of firms do not always increase as a consequence of adoption of IFRS but the motivation of adoption is an important determinant of improving earnings quality.

Barth et al. (2006) suggest that accounting quality could be improved with elimination of alternative accounting methods that are less reflective of firms’ performance and are used by managers to manage earnings. They compare management for firms that voluntarily switch to IFRS with firms that use domestic accounting standards. They find that after IFRS adoption, firms have higher variance of changes in net income, a higher ratio of variance of changes in net income to variance of changes in cash flows, higher correlation between accruals and cash flows, lower frequency of small positive net income, and higher frequency of large losses. Barth et al. (2006) also investigate the value relevance of earnings by comparing the R-squared from two regressions: 1) price regressed on book value and earnings; and 2) earnings regressed on positive and negative returns. They find that R-squared increases after IFRS adoption, providing evidence of greater value relevance for IFRS earnings.

Although Barth predict that application of IAS is associated with higher accounting quality, there are at least two reasons why this may not be true. First, IFRS could eliminate accounting alternatives that are most appropriate for communicating the underlying economics of a business thus forcing managers of these firms to use less appropriate alternatives thus resulting in a reduction in accounting quality. Second, because IFRS are principles-based, they inherently lack detailed implementation guidance and thus afford
managers greater flexibility (Langmead and Soroosh 2009). For some important areas such as revenue recognition for multiple deliverables, the absence of implementation guidance would significantly increase discretion and allowable treatments depending upon how they are interpreted and implemented. Given managers’ incentives to exploit accounting discretion to their advantage documented in prior studies such as Leuz et al. (2003) and Bhattacharya et al. (2003), the increase in discretion due to lack of implementation guidance is likely to lead to more earnings management and thus lower accounting quality, ceteris paribus.

A further reason IFRS may lower accounting quality is because certain accounting treatments under IFRS inherently result in more income smoothing and/or overstatement of earnings than domestic GAAP. For example, IFRS permits capitalization of development expenditures. This is likely to result in both smoother and higher income.

The third area of studies compares the accounting quality produced by two accounting standards using the pre-disclosure information for the same firm and the same year. Regulatory agencies in many countries require or encourage firms to disclose the impact of the IFRS adoption before adoption of IFRS. IFRS also requires first-time adoptors to present one year of comparative financial statements that are fully adjusted for compliance with IFRS. Hung and Subramanyam(2007) examine financial statement effects of adopting IAS using a sample of 80 German firms during the period from 1998 to 2002. They find that book value has greater value relevance under IAS but net income has decreasing value relevance in most models. Jarva and Lantto(2010) examine financial statement effects of adopting IFRS using a sample of 94 Finnish firms that released transition statements in 2004. They report that the earnings, book values of assets and liabilities do not have value relevance under IFRS. In brief, the two prior studies report that the earnings quality under IFRS is not always higher than those under Local GAAP.

In Korea, Choi et al.(2011) use pre-disclosure information and investigate whether voluntary adopters of K-IFRS intend to increase their reported earnings and whether reconciliation adjustments from K-GAAP to K-IFRS have incremental value relevance over K-GAAP accounting information. They find results that ROA(ROE) is significantly higher under IFRS than under K-GAAP with the greater increase occurring in those firms with lower levels of ROA(ROE) under K-GAAP, and reconciliation adjustments of EPS have incremental value relevance, but those of BPS do not. And Choe and Son(2012) analyze the Effect of K-IFRS Asset Revaluation on Firm Value and on the Accuracy of Analysts’ Earnings Forecast. This study examines the abnormal stock returns around the
public disclosure dates of the results of asset revaluation for firms listed on Korea Stock Exchange which disclosed the results of asset revaluation following K-IFRS asset revaluation model.

The year 2011 was the first year for listed companies and financial companies to write the financial reports in accordance with K-IFRS, as a mandatory requirement. Many academics, practitioners, and government agencies have high concern whether the adoption increases accounting quality and improves transparency of accounting information. However, prior studies conducted in other countries show that adoption of IFRS does not always increase the earnings quality (Tendeloo and Vanstraelen, 2005; Ahmed et al., 2010; Piot et al., 2010). Thus, this paper investigates the impact of IFRS adoption on the earnings quality of Korean firms.

2.3. Hypotheses Development

The adoption of IFRS is generally perceived to be of higher quality than domestic GAAP, it is expected to lead a reduced asymmetry of information and to improve transparency of companies. However in stark contrast to voluntary adoption of IFRS, we have difficulty to find evidence of such accounting quality improvements for firms that are forced to adopt IFRS in previous research. That is, the adoption of IFRS does not necessarily lead to higher quality accounting, at least not when the preparers have no incentives to adopt. Christensen et al. (2008) provide two potential explanations for this finding. First, the flexibility embedded in IFRS might render it ineffective in restricting earnings management of firms with low incentives to comply. Second, IFRS might not be sufficient to decrease earnings management and increase timely loss recognition. In this case, the observed accounting quality improvements for voluntary adopters could be driven by changes in incentives of these firms around the time of their adoption. Overall the evidence on the association between IFRS adoption and accounting quality is mixed.

Given the competing arguments, whether mandatory IFRS adoption results in an increase or a decrease in accounting quality is an empirical question. Thus, we test a two-tailed hypothesis stated in null form as follows:

**H1:** Accounting quality does not change after mandatory IFRS adoption in Korea.

Prior studies suggest that a number of institutional factors impact accounting quality. We
focus on an important institutional factor that has been shown to significantly affect accounting quality: the types of capital markets. In the Korean stock markets, KOSPI market is the KRX(Korea Stock Exchange)'s main board listing medium to large capital blue chip stocks and KOSDAQ (Korea Securities Dealers Automated Quotation) market has served as a major channel for external financing to help develop technology intensive industries led by promising small and medium entities since 1996. However, in case of KOSDAQ market, its control system lagged behind the rapid expansion of the market in terms of capitalization, leading to frequent management moral hazards such as embezzlement at initial public offering, back door listing via detours such as equity swaps and/or M&A, lack of adequate disclosure, tax evasion attempts, illegal equity disposal, stock price manipulations etc. So we extend our hypothesis in null hypothesis form: there is no difference in accounting quality between KOSDAQ and KOSPI after IFRS adoption.

## III. The Empirical Model and Variable Descriptions

### 3.1. Research Design

We consider a variety of accounting characteristics that have been suggested in the prior literature. Our focus in determining our measures is on accounting quality and comparability. For expositional convenience, we divide our measures into three related groups: earnings smoothing, management toward earnings targets, timely loss recognition.

### 3.2. Accounting Quality Metrics

#### 3.2.1. Earnings smoothing

We apply the methodology in Barth et al. (2008) as closely as possible to ensure that our results are comparable to prior literature. We focus on two kinds of earnings management, earnings smoothing and managing towards small positive earnings. Earnings smoothing is measured by three constructs: the variability of changes in earnings, the variability of changes in earnings relative to the variability of changes in cash flows and the negative correlation between accruals and cash flows. A high variability of earnings is consistent with less smoothing of earnings. For the metrics used to examine earnings smoothing we use the
residuals from the regressions of Equations (1).

\[ \text{Variable}_{it} = \alpha_0 + \alpha_1 \text{SIZE}_{it} + \alpha_2 \text{GROWTH}_{it} + \alpha_3 \text{LEV}_{it} + \alpha_4 \text{DISSUE}_{it} + \alpha_5 \text{TURB}_{it} \\
+ \alpha_6 \text{CF}_{it} + \alpha_7 \text{BIG}_{it} + \alpha_8 \text{CLOSE}_{it} + \epsilon_{it} \]  

(1)

Where Variable represents \( \Delta NI, \Delta CF, CF \text{ or } ACC \); \( SIZE \) is the natural logarithm of the market value of equity at the end of the year; \( GROWTH \) is the percentage change in sales; \( LEV \) is end-of-year total liabilities divided by total assets for year \( t \); \( DISSUE \) is percentage change in total liabilities; \( TURN \) is sales divided by end-of-year total assets; \( BIG \) is an indicator variable that equals one if the firm’s auditor is Big 4 and zero otherwise; and \( CLOSE \) is the percentage of closely held shares of the firm reported by DART.

We construct our three measures of income smoothing as follows. First, we measure the variance of \( \Delta NI \) (Lang, Raedy, and Wilson [2006]) where lower values indicate less volatile earnings. That is, we interpret a smaller variance of the change in net income as evidence of earnings smoothing. However, as mentioned in prior research, change in net income is likely to be sensitive to a variety of factors unattributable to the financial reporting system, such as the economic environment and incentives to adopt IFRS. Thus, following Lang, Raedy, and Yetman [2003] and Lang, Raedy, and Wilson [2006], our earnings variability metric is the variance of the residuals from the regression of change in net income on variables identified in prior research as controls for these factors (Ashbaugh [2001], Pagano, R¨oell, and Zechner [2002], Lang, Raedy, and Yetman [2003], Tarca [2004], Lang, Raedy, and Wilson [2006]).

Second, we measure the ratio of the variance of \( \Delta NI^{*} \) to the variance of \( \Delta CF^{*} \), \( \frac{VAR(\Delta NI^{*})}{VAR(\Delta CF^{*})} \). If firms use accruals to manage earnings, the variability of the change in net income should be lower than that of operating cash flows. Accordingly, we interpret less positive values for this ratio as indicating greater income smoothing.

Our third measure, \( Corr(ACC^{*}, CF^{*}) \), is based on the Spearman correlation between \( ACC^{*} \) and \( CF^{*} \). We expect that this association will be negative in all cases; however greater income smoothing should lead to a more negative correlation between accruals and cash flows. Accordingly, we interpret more negative values of this correlation as indicating greater income smoothing.

3.2. 2. Managing toward earnings targets
In addition to smoothing reported earnings managers can target salient earnings benchmarks. To calculate our measure of earnings management towards a target, we follow Anwer S. Ahmed, et al.(2012) by focusing on earnings benchmarks, the positive earnings threshold, and test whether firms appear more likely to manage earnings towards benchmarks following IFRS adoption. Specifically we estimate the following equation (2):

\[ IFRS_{it} = \beta_0 + \beta_1 SPOS_{it} + \beta_2 SIZE_{it} + \beta_3 GROWTH_{it} + \beta_4 LEV_{it} + \beta_5 DISSUE_{it} + \beta_6 TURN_{it} + \beta_7 CF_{it} + \beta_8 BIG4_{it} + \epsilon_{it} \]  

where \( SPOS_{it} \) equals 1 if net income scaled by average total assets is between 0.00 and 0.01 and equals zero otherwise. IFRS equals one in 2011 and equals 0 otherwise. Other variables are defined above. We also include industry fixed effects and estimate Equation (2) using Logistic regression.

3.2.3. Timely loss recognition

Another approach is to consider the evidence of timely loss recognition. Research like Ball et al.(2000) suggests that a primary issue in international contexts is the willingness to recognize large losses as they occur rather than spread their effects over multiple periods. This issue is closely related to earnings smoothing: if earnings are being smoothed, large losses should be relatively rare.

For our first measure of timely loss recognition we follow Barth et al. (2008) by running the logistic regression in Equation (3):

\[ IFRS_{it} = \gamma_0 + \gamma_1 LNEG_{it} + \gamma_2 SIZE_{it} + \gamma_3 GROWTH_{it} + \gamma_4 LEV_{it} + \gamma_5 DISSUE_{it} + \gamma_6 TURN_{it} + \gamma_7 CF_{it} + \gamma_8 BIG4_{it} + \epsilon_{it} \]  

where \( LNEG \) is an indicator variable that equals one for observations in which annual net income scaled by total assets is less than \(-0.20\), and zero otherwise. A positive coefficient on \( LNEG \) suggests that IFRS firms recognize large losses more frequently in the post-adoption period than they do in the pre-adoption period.

Another method for inferring the timeliness of earnings is to examine their relation to stock returns. Papers like Basu (1997) consider reverse regressions of earnings on an
indicator variable for bad news (negative returns), returns and the interaction of returns with the indicator variable for negative returns. Basu’s (1997) operationalization of accounting conservatism focuses on the implication that earnings will reflect ‘bad news’ more quickly than ‘good news’, which is known as the asymmetric timeliness of earnings. Basu (1997) was the first to link asymmetric timeliness with accounting conservatism - the greater the asymmetric timeliness, the greater the degree of accounting conservatism. Empirically, Basu (1997) developed the following cross-sectional regression, also known as the Basu regression, to estimate the degree of conservatism (i.e. asymmetric timeliness):

$$\frac{\text{EPS}_{it}}{P_{it}} = \delta_0 + \delta_1 \text{Return}_{it} + \delta_2 D_{it} + \delta_3 D \times \text{Return}_{it} + \delta_4 \text{IFRS}_{it} + \delta_5 \text{IFRS} \times \text{Return}_{it} + \delta_6 \text{IFRS} \times D_{it} + \delta_7 D \times \text{Return} \times \text{IFRS}_{it} + \epsilon_{it}$$ (4)

where,

• EPS_{it} : Earnings per share for firm i year t
• P_{it} : Opening stock market price for firm i year t
• Return_{it} : Stock markets return for firm i year t
• D_{it} : Dummy variable that is equal to 1 if the stock market return for firm I in year t is negative, and equal to 0 if the stock market return for firm i in year t is non-negative.
• IFRS : an indicator variable that equals 1 for our sample of 2011 and equals zero for 2009

In essence, Basu (1997) regresses accounting earnings (EPS/P) on stock returns (R) separately for ‘good-news’ and ‘bad-news’ firm-year observations. A firm-year is deemed as a ‘good-news’ firm-year, if its market return is positive or zero, i.e. Return_{it} ≥0. Conversely, a firm-year is deemed as a ‘bad-news’ firm-year, if its stock return is negative, i.e. Return_{it} < 0. The estimated slope coefficients measure how timely the news embodied in the stock return is recognized in earnings, conditional on the sign of stock returns.

Technically, the Basu regression model uses the dummy variable, D*Return, to distinguish between ‘good-news’ and ‘bad-news’, and thereby allows the slope coefficients and the intercepts to differ between these two groups. Under good news (R_{it} ≥0), D*Return is equal to 0 and the good-news timeliness coefficient is \(\delta_2\). Under bad news (R_{it} < 0), D*Return is equal to 1 and the bad-news timeliness coefficient is \(\delta_2 + \delta_4\). Clearly, \(\delta_2\) is the asymmetric
timeliness coefficient and is the primary indicator of accounting conservatism in the Basu model. The greater $\beta_1$ is, the higher the degree of conservatism. In our analysis, we focus on coefficient $\delta$. 

IV. Empirical Results

4.1. Sample selection

We include all inactive and existing firms domiciled in Korea that have data on accounting standards applied available in Fn-Guide and DART. For each of these firms we check the applied accounting standards to the annual reports. Table 1 describes the sample selection process in detail. The sample size reflects our having winsorized at the 5% level all variables used to construct our metrics to mitigate the effects of outliers on our inferences.

We gather financial and accounting data from firms listing KOSPI and KOSDAQ. Consistent with previous research, we exclude financial institutions. Financial institutions are excluded because of their specific accounting requirements, which differ substantially from those of industrial and commercial companies and which prevent them from freely selecting the accounting standards they apply. we also exclude companies for fiscal years not ending December and companies without data available from Fn-Guide or DART.

Our final sample comprises 455 and 575 firm-year observations from KOSPI and KOSDAQ respectively, relating to the period 2008–2011. All companies in our sample are listed firms.

<insert table 1 about here>

4.2 Descriptive Statistics

Table 2 presents descriptive statistics on all variables used in the analysis of accounting quality. Panel A includes the variables used in the tests that follow the methodology of Barth et al. (2008). The statistics are generally close to those reported by Barth et al. (2008). Table 2 reveals that firms registered in KOSPI and KOSDAQ have significantly different in propensity to smooth income after adopting IFRS.

Following Barth et al. (2008) we winsorize the accounting variables used to construct the
test metrics of Equations (1) to (4) ($\Delta NI, \Delta CF, ACC, CF$ and all non-dummy control variables) at the 5% level. The high level of winsorization reflects the fact that metrics based on variability are sensitive to outliers.

The descriptive statistics on the control variables show that on average the firms under the IFRS have significantly lower growth and larger than the firms under the K-GAAP and higher leverage under the IFRS.

<insert table 2 about here>

4.3 Cross-sectional Regression Analysis

4.3.1 Income smoothing

Our first earnings smoothing metric is based on the variability of the change in net income scaled by total assets, $\Delta NI$ (Lang, Raedy, and Wilson [2006]). We interpret a smaller variance of the change in net income as evidence of earnings smoothing. Following Lang, Raedy, and Yetman [2003] and Lang, Raedy, and Wilson [2006], our earnings variability metric is the variance of the residuals from the regression of change in net income on variables identified in prior research as controls for these factors (Ashbaugh [2001], Pagano, Roell, and Zechner [2002], Lang, Raedy, and Yetman [2003], Tarca [2004], Lang, Raedy, and Wilson [2006]). If accounting quality is improved after IFRS adoption, each measurement has same direction with higher level sign in Table 3.

Table 3 presents the comparison of accounting quality between the pre- and post adoption periods for mandatory adopters. Table 3 presents the comparison of accounting quality between the K-GAAP and K-IFRS periods for KOSPI and KOSDAQ listed firms. In the KOSPI markets, the variability of earnings ($\Delta NI$), the variability of earnings relative to the variability of cash flows ($\Delta NI/\Delta CF$), and correlation between accruals and cash flows are not significantly different in the post-adoption period. However, in the KOSDAQ market, three proxies for income smoothing are increased in the post-adoption period, which is significant at the 1% level. That is, income smoothing of the KOSDAQ firms is severe than that of the KOSPI firms after IFRS adoption. The KOSDAQ firms are more aggressive stance in income smoothing strategies than the KOSPI firms in the circumstance that KOSDAQ defines itself as high risk, high growth market for smaller and venture companies and as a stock market
independent from and competitive against KOSPI. Given that IFRS is principles-based standards and its inherent flexibility could provide greater opportunity for firms to manage earnings, and thereby decreasing accounting quality in the KOSDAQ market.

<insert table 3 about here>

4.3.2. Managing toward earnings targets

An alternate approach to determine the extent of earnings management is to assess the frequency of small positive earnings. A commonly conjectured outcome of earnings management is an unusually high frequency of small positive reported earnings resulting from discretionary accrual management. Research such as Leuz et al. (2002) provides evidence of substantial variation in the frequency of small positive earnings internationally, consistent with the effects of earnings management. We compare the frequency of small positive earnings (earnings, scaled by total assets, between 0 and 0.01) for our KOSPI and KOSDAQ firms pre- and post IFRS adoption period.

Burgstahler and Dichev(1997) detect that firms manage earnings to avoid reporting earnings decreases (with statistical tests) and earnings losses (with visual evidence but without statistical tests). That is, the incentive to manage earnings is homogeneous to all firms, and suggests that the discontinuities around zero in the earnings distributions are driven, at least partly, by firms’ earnings management behavior. In addition, they observe that these practices are more prevalent among medium- and large-sized firms. In this paper, the coefficient on small positive profits (SPOS) in the regression of Equation (2) is insignificant in the post-adoption period, which suggests that there is not managing earnings towards an earnings after IFRS adoption. One interpretation of the results relating to SPOS is that incentive to undertake earnings management to avoid losses can be decreased, recently managers of firms are more seek to meet or beat analyst’s earning forecasts.

<insert table 4 about here>

To test the robustness of the baseline empirical findings of small positive profits (SPOS) reported in Table 4 we perform a number of sensitivity tests. First, we examine the empirical distributions of changes in ROA of K-GAAP and K-IFRS firms whether firms manage
earnings to avoid reporting earnings decreases and losses. Fig.1 and Fig.2 show the empirical distributions of changes in ROA of KOSPI and KOSDAQ respectively. Fig.1 shows that there is no evidence of discontinuous distributions of small negative losses or small positive profit to manage earnings to avoid earnings decreases and losses in KOSPI firms. These findings are similar in Fig.2 which is in the KOSDAQ market. That is, in consistent with preceeding regression results of SPOS, there is no difference between K-IFRS and K-GAAP to manage earnings to avoid earnings decreases and losses in KOSPI and KOSDAQ firms.

4.3.3. Timely loss recognition

We also examine differences in the timeliness of loss recognition between KOSPI and KOSDAQ firms. Research such as Ball (2001) suggests that firms differ across environments in terms of timely recognition of losses. If so, we should observe an increased incidence of extreme negative earnings outcomes for firms, and to examine this effect we investigate cases in which firms report net income as a proportion of assets below -0.20.

In the KOSDAQ market, the negative coefficient on large negative NI($LNEG$) in the Equation (3) regression suggests that firms are less likely to recognize large losses in the post-adoption period, which result is statistically significant at the 1% level. These results document a decrease in the timeliness of loss recognition after mandatory IFRS adoption of KOSDAQ firms to avoid arousing suspicion of earning management and timely loss recognition by deferring their loss recognition. These findings are in sharp contrast to those reported for voluntary adopters that showed a reduction in earnings management and an increase in timely loss recognition.

4.4 Additional Test

K-IFRS standards are broader and more principles-based than K- GAAP. IFRS tends to leave implementation of the principles up to preparers of financial statements and auditors.
One of the differences exist with presentation of significant items. Variations emerge with disclosure of performance measures such as operating profit. There is no requirement in IFRS to report an operating profit amount. That is, The IFRS allows companies to freely decide which profits are included in operating profit.

As the coefficient on small positive profits (SPOS) in the regression of Equation (2) is insignificant in the post-adoption period, which suggests that there is no specific incentive for managing earnings towards an earnings by IFRS adoption itself. However, in the KOSDAQ market, we can expect that managers are more seek to undertake earnings management to avoid losses in disclose of operating profit. Because the KOSDAQ firms are possibly delisted due to adverse audit opinion.

Traditionally, operating profit has been an important figure for investors in evaluating a company’s value since it shows whether a company has the capability of generating sustainable, solid profit.\(^4\)(Cheon and Ha, 2011. Disclosure and Classification of Operating Income by Firms that Early Adopt K-IFRS.) However, as the IFRS has no specific rules as to which categories are included in operating profits, there are some companies that should be delisted due to poor performances. But they manipulate the system so their books look great.

According to FN Guide, a company offering information on the financial markets including research and reports, among 1,500 companies listed on the KOSPI and KOSDAQ 30 that posted a surplus in operating profits under the IFRS system were found to have suffered losses under the K-GAPP system on their fiscal report for last year. Roughly 40 companies saw their operating profits double under the IFRS system. The Korea Accounting Standards Board is expected to revise the K-IFRS to create its own detailed regulations on reporting operating profits and losses by the end of this year.

\(<\text{insert figure 3 about here}>\)

V. Conclusion

Following the recent adoption of IFRS in many regions of the world, much attention is being given to the association between accounting standards and accounting quality. We provide evidence on the effects of mandatory IFRS adoption on income smoothing,

\(^4\) Cheon and Ha( 2011) examines whether and how firms that adopted K-IFRS in 2009 and 2010 disclose operating income in financial statements and how they calculate operating income.
benchmark earnings management, and reporting aggressiveness (proxied by timeliness of loss recognition) using a sample of more than 1,030 firms in Korea that adopted IFRS in 2011. We compare how accounting quality is affected by the adoption of IFRS for two groups of firms: a) KOSPI listed firms and b) KOSDAQ listed firms.

The purpose is to examine whether IFRS per se leads to accounting quality improvements as we expect. Toward this end we exploit the unique setting that exists in Korea, where firms became mandatory to adopt IFRS in 2011. Consistent with prior research we find that earnings management increases and timely loss recognition reduction after mandatory IFRS adoption.

Our findings can be summarized as follows. First, we find evidence of a significant increase in income smoothing for KOSDAQ firms between K-GAAP period and K-IFRS period relative to KOSPI firms’ no change after mandatory IFRS adoption. Specifically, we find a significant decrease in the volatility of net income, the volatility of net income relative to the volatility of cash flows, and the correlation between cash flows and accruals for IFRS firms.

Second, in addition to earnings smoothing, we find evidence of an earnings benchmarks, the positive earnings threshold in the KOSDAQ firms after K-IFRS adoption. While the evidence is not fully consistent across all proxies, taken together the results suggest that accounting quality decreased after mandatory IFRS adoption in the KOSDAQ market.

Third, we find evidence of a significant reduction in timeliness of loss recognition for KOSDAQ firms in IFRS period relative to KOSPI firms’ no change.

Our findings contrast with prior studies that document evidence suggesting an increase in accounting quality after IFRS adoption. Furthermore, our results suggest that enforcement mechanisms in strong enforcement capital market were not able to offset the increased flexibility afforded to managers by IFRS adoption.

References


Jeanjean, T., and H. Stolowy. 2009. Determinants of board members' financial expertise —


Table 1 <sample selection>

<table>
<thead>
<tr>
<th>Panel A: Sample Selection</th>
<th>KOSPI</th>
<th>KOSDAQ</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initial Sample</td>
<td>647</td>
<td>804</td>
</tr>
<tr>
<td>(excluding) banking, finance and insurance industry</td>
<td>(44)</td>
<td>(31)</td>
</tr>
<tr>
<td>(excluding) companies for fiscal years not ending December</td>
<td>(20)</td>
<td>(30)</td>
</tr>
<tr>
<td>(excluding) without data available from Fn-Guide or DART</td>
<td>(54)</td>
<td>(95)</td>
</tr>
<tr>
<td>(excluding) IFRS early adopters sample</td>
<td>(25)</td>
<td>(25)</td>
</tr>
<tr>
<td>(excluding) less than 5 industry sample</td>
<td>(37)</td>
<td>(30)</td>
</tr>
<tr>
<td>(excluding) outliers (exceeding ±3σ)</td>
<td>(12)</td>
<td>(18)</td>
</tr>
<tr>
<td>Final Sample</td>
<td>455</td>
<td>575</td>
</tr>
</tbody>
</table>

| Panel B: Industry breakdown | | |
| Construction                | 29  | 10  |
| Manufacturing               | 305 | 459 |
| Retail trade                | 41  | 29  |
| Service                     | 32  | 25  |
| Etc.                        | 48  | 52  |
| Final sample                | 455 | 575 |
Table 2 <Descriptive Statistics>

<table>
<thead>
<tr>
<th>variables</th>
<th>KOSPI</th>
<th></th>
<th></th>
<th>T-test</th>
<th>KOSPI</th>
<th></th>
<th></th>
<th>T-test</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
<td>K-GAAP</td>
<td>K-IFRS</td>
<td>T-test</td>
<td>n</td>
<td>K-GAAP</td>
<td>K-IFRS</td>
<td>T-test</td>
</tr>
<tr>
<td>Panel A: Variables used in tests on income smoothing</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ΔNI</td>
<td>910</td>
<td>-0.0766</td>
<td>-0.0167</td>
<td>3.34***</td>
<td>1,398</td>
<td>0.0319</td>
<td>0.0016</td>
<td>2.95***</td>
</tr>
<tr>
<td>ΔCF</td>
<td>910</td>
<td>-0.640</td>
<td>-0.0016</td>
<td>3.54***</td>
<td>1,398</td>
<td>-0.0037</td>
<td>-0.0023</td>
<td>-0.17</td>
</tr>
<tr>
<td>CF</td>
<td>910</td>
<td>0.0535</td>
<td>0.0323</td>
<td>3.63***</td>
<td>1,398</td>
<td>0.0554</td>
<td>0.0325</td>
<td>4.08</td>
</tr>
<tr>
<td>ACC</td>
<td>910</td>
<td>0.231</td>
<td>0.217</td>
<td>0.22</td>
<td>1,398</td>
<td>0.0410</td>
<td>0.0229</td>
<td>2.01**</td>
</tr>
<tr>
<td>Panel B: Variables used in tests on timely loss recognition</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Return</td>
<td>910</td>
<td>0.3074</td>
<td>0.1115</td>
<td>8.14***</td>
<td>1,398</td>
<td>0.3691</td>
<td>0.1941</td>
<td>10.14***</td>
</tr>
<tr>
<td>D</td>
<td>910</td>
<td>0.1424</td>
<td>0.4392</td>
<td>11.73</td>
<td>1,398</td>
<td>0.1526</td>
<td>0.3953</td>
<td>9.03***</td>
</tr>
<tr>
<td>Panel C: control variables</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SIZE</td>
<td>910</td>
<td>19.3196</td>
<td>19.9253</td>
<td>6.38***</td>
<td>1,398</td>
<td>18.0771</td>
<td>18.2952</td>
<td>4.98***</td>
</tr>
<tr>
<td>GROWTH</td>
<td>910</td>
<td>0.2684</td>
<td>0.1113</td>
<td>2.45**</td>
<td>1,398</td>
<td>0.3157</td>
<td>0.1292</td>
<td>3.57***</td>
</tr>
<tr>
<td>LEV</td>
<td>910</td>
<td>0.4176</td>
<td>0.4512</td>
<td>2.41**</td>
<td>1,398</td>
<td>0.4011</td>
<td>0.4150</td>
<td>1.29</td>
</tr>
<tr>
<td>DISAUSE</td>
<td>910</td>
<td>0.1415</td>
<td>0.1381</td>
<td>0.04</td>
<td>1,398</td>
<td>3.5445</td>
<td>3.4382</td>
<td>0.12</td>
</tr>
<tr>
<td>TURN</td>
<td>910</td>
<td>0.8728</td>
<td>0.8961</td>
<td>0.62</td>
<td>1,398</td>
<td>0.8687</td>
<td>0.8942</td>
<td>0.85</td>
</tr>
<tr>
<td>BIG</td>
<td>910</td>
<td>0.6853</td>
<td>0.7051</td>
<td>0.58</td>
<td>1,398</td>
<td>0.4177</td>
<td>0.4236</td>
<td>0.22</td>
</tr>
<tr>
<td>CLOSE</td>
<td>910</td>
<td>0.4226</td>
<td>0.4328</td>
<td>0.89</td>
<td>1,398</td>
<td>0.3820</td>
<td>0.3774</td>
<td>0.53</td>
</tr>
</tbody>
</table>

Note 1) ΔNI = (Net Income for t year – Net Income for t-1) / Total Asset for t year
ΔCF = (Cash flow from operation for t year – Cash flow from operation for t-1) / Total Asset for t year
CF = Cash flow from operation for t year / Total Asset for t year
ACC = Net Income for t year - Cash flow from operation for t year
Return = Stock markets return for firm i year t
D= an indicator variable that is equal to 1 if the stock market return for firm I in year t is negative, and equal to 0 if the stock market return for firm i in year t is non- negative
SIZE = natural log of total assets
GROWTH = the percentage change in sales
LEV= end-of-year total liabilities divided by end-of-year total assets
DISSUE = the percentage change in total liabilities;
TURN = sales divided by end-of-year total assets
BIG = an indicator variable that equals one if the firm’s auditor is Big 4 and zero otherwise
CLOSE = the percentage of closely held shares of the firm reported by DART.
Note 2) ***, **, * represent significance levels at 1%, 5%, 10%, respectively.
Table 3 <Income smoothing>

<table>
<thead>
<tr>
<th>Variables</th>
<th>Higher quality sign</th>
<th>K-GAAP</th>
<th>K-IFRS</th>
<th>Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Panel A : full sample (N=1,030)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VAR(ΔNI)</td>
<td>K-GAAP&lt;K-IFRS</td>
<td>0.0552</td>
<td>0.0319</td>
<td>-0.0233</td>
</tr>
<tr>
<td>VAR(ΔNI)/VAR(ΔCF)</td>
<td>K-GAAP&lt;K-IFRS</td>
<td>1.2633</td>
<td>1.2265</td>
<td>-0.0368</td>
</tr>
<tr>
<td>CORR(ACC,CF)</td>
<td>K-GAAP&lt;K-IFRS</td>
<td>-0.5626</td>
<td>-0.5713</td>
<td>0.0087</td>
</tr>
<tr>
<td>Panel B : KOSPI firms (N=455)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VAR(ΔNI)</td>
<td>K-GAAP&lt;K-IFRS</td>
<td>0.0741</td>
<td>0.0766</td>
<td>-0.0025</td>
</tr>
<tr>
<td>VAR(ΔNI)/VAR(ΔCF)</td>
<td>K-GAAP&lt;K-IFRS</td>
<td>1.2180</td>
<td>1.2193</td>
<td>-0.0013</td>
</tr>
<tr>
<td>CORR(ACC,CF)</td>
<td>K-GAAP&lt;K-IFRS</td>
<td>-0.5628</td>
<td>-0.5526</td>
<td>0.0102</td>
</tr>
<tr>
<td>Panel C : KOSDAQ firms (N=575)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VAR(ΔNI)</td>
<td>K-GAAP&lt;K-IFRS</td>
<td>0.0554</td>
<td>0.0163</td>
<td>-0.0391</td>
</tr>
<tr>
<td>VAR(ΔNI)/VAR(ΔCF)</td>
<td>K-GAAP&lt;K-IFRS</td>
<td>1.6085</td>
<td>1.2822</td>
<td>-0.3263***</td>
</tr>
<tr>
<td>CORR(ACC,CF)</td>
<td>K-GAAP&lt;K-IFRS</td>
<td>-0.5618</td>
<td>-0.6073</td>
<td>-0.0455***</td>
</tr>
</tbody>
</table>
Table 4  <Target earnings managemet(SPOS)>

<table>
<thead>
<tr>
<th>variables</th>
<th>full sample</th>
<th>KOSPI</th>
<th>KOSDAQ</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Coef. (Wald-chi)</td>
<td>Coef. (Wald-chi)</td>
<td>Coef. (Wald-chi)</td>
</tr>
<tr>
<td>SPOS</td>
<td>-0.1898 (1.3303)</td>
<td>-0.2124 (0.7233)</td>
<td>-0.1431 (0.3966)</td>
</tr>
<tr>
<td>SIZE</td>
<td>-0.2671 (17.0436)**</td>
<td>-0.2281 (16.6456)**</td>
<td>-0.6099 (24.5345)**</td>
</tr>
<tr>
<td>GROWTH</td>
<td>0.0985 (18.9309)**</td>
<td>0.0366 (12.1742)**</td>
<td>0.4841 (20.5848)**</td>
</tr>
<tr>
<td>LEV</td>
<td>0.3363 (2.0695)</td>
<td>0.2460 (0.4307)</td>
<td>0.8130 (6.4002)**</td>
</tr>
<tr>
<td>DISSUE</td>
<td>-0.00089 (0.5057)</td>
<td>-0.00056 (0.3543)</td>
<td>-0.0306 (12.9964)**</td>
</tr>
<tr>
<td>TURN</td>
<td>-0.2722 (10.1160)**</td>
<td>-0.2210 (2.4560)</td>
<td>-0.5840 (22.8389)**</td>
</tr>
<tr>
<td>BIG4</td>
<td>0.1046 (1.3357)</td>
<td>0.0319 (0.0427)</td>
<td>0.1236 (1.0936)</td>
</tr>
<tr>
<td>CLOSE</td>
<td>0.00221 (0.7176)</td>
<td>-0.00376 (0.7928)</td>
<td>0.00895 (6.5317)</td>
</tr>
<tr>
<td>obs.</td>
<td>2,060</td>
<td>910</td>
<td>1,150</td>
</tr>
<tr>
<td>Pseudo-R2</td>
<td>0.1385</td>
<td>0.1124</td>
<td>0.1953</td>
</tr>
</tbody>
</table>

Note 1) SPOS = equals 1 if net income scaled by average total assets is between 0.00 and 0.01 and equals zero otherwise
CF = Cash flow from operation for t year / Total Asset for t year
SIZE = natural log of total assets
GROWTH = the percentage change in sales
LEV= end-of-year total liabilities divided by end-of-year total assets
DISSUE = the percentage change in total liabilities;
TURN = sales divided by end-of-year total assets
BIG = an indicator variable that equals one if the firm’s auditor is Big 4 and zero otherwise
CLOSE = the percentage of closely held shares of the firm reported by DART.
Note 2) ***, **, * represent significance levels at 1%, 5%, 10%, respectively.
Table 5 <Timely loss recognition (LNEG)>

<table>
<thead>
<tr>
<th>variables</th>
<th>Full sample</th>
<th>KOSPI</th>
<th>KOSDAQ</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Coef. (Wald-chi)</td>
<td>Coef. (Wald-chi)</td>
<td>Coef. (Wald-chi)</td>
</tr>
<tr>
<td>intercept</td>
<td>4.7329 (24.3317)**</td>
<td>-0.34552 (1.40)</td>
<td>-1.07336 (3.41)*</td>
</tr>
<tr>
<td>LNEG</td>
<td>0.0164 (1.7698)</td>
<td>0.11137 (1.51)</td>
<td>-0.20033 (14.3800)**</td>
</tr>
<tr>
<td>SIZE</td>
<td>0.2684 (16.2522)**</td>
<td>0.04346 (18.5487)**</td>
<td>0.09259 (20.6746)**</td>
</tr>
<tr>
<td>GROWTH</td>
<td>0.0996 (18.8760)**</td>
<td>-0.0007 (12.2374)**</td>
<td>-0.00691 (30.9729)**</td>
</tr>
<tr>
<td>LEV</td>
<td>0.3143 (0.0072)</td>
<td>-0.09582 (0.9071)</td>
<td>-0.10701 (3.9104)</td>
</tr>
<tr>
<td>DISSUE</td>
<td>-0.00089 (0.4993)</td>
<td>0.00003337 (0.3089)</td>
<td>0.0006 (0.69)</td>
</tr>
<tr>
<td>TURN</td>
<td>-0.2657 (9.5767)**</td>
<td>0.04829* (2.8487)</td>
<td>0.06354 (2.57)</td>
</tr>
<tr>
<td>CF</td>
<td>-0.7917 (21.6788)**</td>
<td>-0.90493 (16.2064)**</td>
<td>-0.78405 (24.1541)**</td>
</tr>
<tr>
<td>BIG4</td>
<td>0.1073 (1.4048)</td>
<td>0.00662 (0.0750)</td>
<td>-0.01670 (1.1557)</td>
</tr>
<tr>
<td>CLOSE</td>
<td>0.00219 (0.7045)</td>
<td>0.00096817 (0.9274)</td>
<td>0.00986 (1.77)*</td>
</tr>
<tr>
<td>obs.</td>
<td>2,060</td>
<td>910</td>
<td>1,150</td>
</tr>
<tr>
<td>Pseudo-R2</td>
<td>0.1599</td>
<td>0.1334</td>
<td>0.1821</td>
</tr>
</tbody>
</table>

Note 1) LNEG = an indicator variable that equals one for observations in which annual net income scaled by total assets is less than –0.20, and zero otherwise
CF = Cash flow from operation for t year / Total Asset for t year
SIZE = natural log of total assets
GROWTH = the percentage change in sales
LEV = end-of-year total liabilities divided by end-of-year total assets
DISSUE = the percentage change in total liabilities;
TURN = sales divided by end-of-year total assets
BIG = an indicator variable that equals one if the firm’s auditor is Big 4 and zero otherwise
CLOSE = the percentage of closely held shares of the firm reported by DART.

Note 2) ***, **, * represent significance levels at 1%, 5%, 10%, respectively.
### Table 6: <Conservatism by Basu Model>

<table>
<thead>
<tr>
<th>variables</th>
<th>Full sample</th>
<th>KOSPI</th>
<th>KOSDAQ</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(t-value)</td>
<td>(t-value)</td>
<td>(t-value)</td>
</tr>
<tr>
<td>intercept</td>
<td>0.1019</td>
<td>0.1162</td>
<td>0.1536</td>
</tr>
<tr>
<td></td>
<td>(1.09)</td>
<td>(0.72)</td>
<td>(1.06)</td>
</tr>
<tr>
<td>Return</td>
<td>-0.0983</td>
<td>-0.0028</td>
<td>-0.0388</td>
</tr>
<tr>
<td></td>
<td>(-0.83)</td>
<td>(-1.18)</td>
<td>(-0.45)</td>
</tr>
<tr>
<td>D</td>
<td>-0.0287</td>
<td>-0.0372</td>
<td>-0.0918</td>
</tr>
<tr>
<td></td>
<td>(-0.14)</td>
<td>(-0.10)</td>
<td>(-0.52)</td>
</tr>
<tr>
<td>D*Return</td>
<td>0.0214</td>
<td>0.0181</td>
<td>0.0248</td>
</tr>
<tr>
<td></td>
<td>(3.71)****</td>
<td>(1.70)*</td>
<td>(5.51)****</td>
</tr>
<tr>
<td>K-IFRS</td>
<td>-0.1084</td>
<td>-0.1477</td>
<td>-0.1283</td>
</tr>
<tr>
<td></td>
<td>(-0.79)</td>
<td>(-0.63)</td>
<td>(-1.09)</td>
</tr>
<tr>
<td>K*Return</td>
<td>0.0024</td>
<td>0.0065</td>
<td>0.0076</td>
</tr>
<tr>
<td></td>
<td>(1.21)</td>
<td>(1.70)*</td>
<td>(0.05)</td>
</tr>
<tr>
<td>K*D</td>
<td>0.1459</td>
<td>0.2168</td>
<td>0.1703</td>
</tr>
<tr>
<td></td>
<td>(0.54)</td>
<td>(0.47)</td>
<td>(0.76)</td>
</tr>
<tr>
<td>K<em>D</em>Return</td>
<td>-0.0114</td>
<td>-0.0077</td>
<td>-0.0141</td>
</tr>
<tr>
<td></td>
<td>(-1.59)</td>
<td>(-0.54)</td>
<td>(-2.60)****</td>
</tr>
<tr>
<td>obs.</td>
<td>2,060</td>
<td>910</td>
<td>1,150</td>
</tr>
<tr>
<td>adj-R</td>
<td>0.0124</td>
<td>0.0234</td>
<td>0.0690</td>
</tr>
</tbody>
</table>

Note 1) Return = Stock markets return for firm i year t
D = an indicator variable that is equal to 1 if the stock market return for firm I in year t is negative, and equal to 0 if the stock market return for firm i in year t is non-negative
IFRS = an indicator variable that equals 1 for our sample of 2011 and equals zero for 2009
Note 2) ***, **, * represent significance levels at 1%, 5%, 10%, respectively.
<Fig.1 Distribution of KOSPI firms’ ROA>

KOSPI 2009

<Fig.2 Distribution of KOSDAQ firms’ ROA>

KOSDAQ 2009

<Fig.3 Distribution of KOSDAQ firms’ OI>

KOSDAQ 2009