Fair Value Accounting And Financial Stability – Based On The Adoption Of K-IFRS In 2011

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ABSTRACT

Fair value accounting refers to the accounting method which an asset or liability is estimated based on the current market price, so called fair value. Under the fair value accounting, it is more difficult for managers to hide bad information, because the value of an asset or liabilities is re-estimated periodically to reflect the changes in fair value in the market. In this case, firms' financial stability will be increased. On the other hand, fair value accounting can intensity the volatility of the numbers in the financial statement, which leads to decreases the financial stability. This papers empirically examines the effect of the fair value accounting on the financial stability based on the IFRS adoption in Korea. Using the non-financial firms listed in KOSPI and KOSDAQ from 2000 to 2013, we find that the expansion of fair value accounting increases financial stability. The results support the argument that fair value accounting prohibits managers from hiding bad information, rather it enforces the disclosure of value-relevant information to the investors. The results are consistent with a battery of robustness checks. Thus, the overall results show that the expansion of fair value accounting increase financial stability.

Keywords: Fair Value Accounting; Financial Stability; Crash Risk; Stock Return Volatility; Negative Skewness

1. INTRODUCTION

The role of fair value accounting is in big controversy, especially after financial crisis. Fair value accounting highlights the value-relevant information through mark-to-market accounting. Under the mark-to-market accounting, assets and liabilities are re-estimated periodically to reflect changes in their value and thus accounting information better reflects true underlying performance and financial statements. And due to the mechanism that periodically changes the reported value, it is more difficult for managers to hid bad information to investors under this system. As a results, the information are disclosed to public in a timely manner, works as an early warning mechanisms, which leads to the improvement in firm's financial stability.

However, there is also a cost in applying fair value accounting. First, the reliability of the accounting number is likely to be distorted since the fair value is estimated by the managers who tend to pursue the strong self-interests. Second, under the fair value accounting, changes in market value can impact on either net income or other comprehensive income. Managers have an opportunistic incentive to transfer the unrealized gains and losses to other comprehensive income, which causes the selective gains trading. Third, the fair value measures sometimes provides less relevant information than amortized (Song and No, 2011). In this respect, fair value accounting is likely to be related to the economic or accounting events that are not directly linked to the firm's operation activities. According to this view, fair value accounting can impose risks and harm the financial stability.

Despite the competing argument in the relations between fair value accounting and financial stability, there is no direct empirical analysis that examine the effect of fair value accounting and financial stability. Even if there are some empirical studies, they only focused on financial industries (Barth et al., 1995; Veron. 2008) and does not provide implication for non-financial industries.

However, Korea provides a good research setting to test the effect of fair value accounting on crash risk for nonfinancial firms. Since 2011, all listed companies in Korea have to adopt IFRS, which requires all firms to apply extensive fair value accounting in estimating the value of the assets and liabilities. Since previous Korean accounting standard used historical cost accounting system, IFRS adoption could be a good research setting to test the effect of fair value accounting on financial stability, especially for nonfinancial firms. So, the purpose of this paper is to get a comprehensive implication with regard to the effect of fair value accounting on the financial stability. Following prior studies, we measure financial stability using the first, second, and third moment of stock returns: the frequency of crash risk, volatility, and negative skewness respectively. (Chen et al. 2001; DeFond et al. 2015; Hutton et al. 2009; Kim et al. 2010, 2011).

Using the listed firms in KOSPI and KOSDAQ from 2000 to 2013, we find that the expansion of fair value accounting increases financial stability. It supports the argument that fair value accounting prohibits managers from hiding information, rather it enforces the disclosure of value-relevant information to the investors. The results are consistent with a battery of robustness checks. To remove the effect of financial crisis on the financial stability, we examine the separate period, but the main results are not changed. And when we analyze the subsample of firms that adopted IFRS voluntarily, financial stability is also improved after the adoption of IFRS. Thus, the overall results show that the expansion of fair value accounting increase financial stability.

Despite the measurement errors and correlated omitted problems, this paper contributes to the literatures as follows: First, it is the first paper that empirically examines the effect of fair value accounting on financial stability in nonfinancial firms. Second, by comparing the two different accounting system, historical cost accounting versus fair value accounting, it provides practical implication for regulators. Even though fair value accounting can be a double-edged sword, it can work as an instrument for curbing managers' opportunistic behavior.

The remainder of the paper proceeds as follows: Section 2 describes the institutional backgrounds in Korea and hypothesis development; Section 3 and 4 discusses the research design and data, respectively. Section 5 and 6 shows the main empirical results and sensitivity checks; Finally, Section 7 concludes the paper.

2. HYPOTHESIS DEVELOPMENT

2.1. Fair-Value Accounting in Korea

Korea adopted IFRS (International Financial Reporting Standards) to enhance the accounting transparency in 2011. Adoption of IFRS has influenced various accounting practices in Korea. Korea Accounting Standard Board (KASB) pointed out that the extended application of fair value accounting is one of the key characteristics of IFRS compared to previous accounting standard.[1]

Before the adoption of IFRS, Korean accounting standard (K-GAAP) is largely based on the cost model in evaluating assets and liabilities. Under the cost model, which emphasize the reliability in accounting information, assets and liabilities are recorded at the initial cost when they are acquired and the value of the assets and liabilities are not changed. Since there is less uncertainty in estimating the value of the assets and liabilities, cost model is better in terms of the reliability.

However, cost-based model does not provide useful information because the recorded value can be far from the market value. Thus, IFRS requires fair value measurement and disclosures to provide more value relevant information. Specifically, all financial assets and liabilities that satisfy certain criteria are estimated based on market value and gain/loss from the financial instruments can be included in net income. IFRS also permits fair-value accounting to nonfinancial assets and liabilities. For example, fair-value accounting can be applied to tangible assets such as land or buildings as well as liabilities including post-employment benefit obligations.

[1] As a key difference between IFRS and K-GAAP, KASB mentioned principle-based accounting, fair-value accounting and consolidated financial statement. (http://www.kasb.or.kr/web/services/page/viewPage.action?page=standards/kifrs_diff.html)

2.2. Hypothesis Development

Fair value accounting highlights the value-relevant information through mark-to-market accounting. Under the mark-to-market accounting, assets and liabilities are re-estimated periodically to reflect changes in their value and thus accounting information better reflects true underlying performance and financial statements

However, there is a cost in applying fair value accounting. First, the reliability of the accounting number is likely to be distorted since the fair value is estimated by the managers who tend to pursue the strong self-interests. Second, under the fair value accounting, changes in market value can impact on either net income or other comprehensive income. Managers have an opportunistic incentives to transfer the unrealized gains and losses to other comprehensive income, which causes the selective gains trading[2]. Third, the amortized cost can be more relevant than the fair value measures since amortized cost is likely to focus on the decision of purchasing, realized income effect and the recovery value (Song and No, 2011). In this respect, fair value accounting is likely to be related to the economic or accounting events that are not directly linked to the firm's operation activities.

This controversy in fair value accounting is also related to the financial stability. Due to the double sides of fair value accounting, the effect of fair value accounting on the financial stability is also inconclusive. Financial stability means that the stock does not move sharply in the capital market. It sometimes has the opposite concept of crash risk. Financial stability can be considered in three different aspects. First, if the frequency of extreme negative stock returns are too high, the stock is regarded as financially unstable. This is related to the first moment of stock returns. Second aspect is volatility, the second moment of stock returns. If the volatility of the stock is too high, the stock is regarded as financially unstable. Third one is negative return skewness of the firms, which is a third moment of stock returns. If the firm has a disproportionate likelihood of experiencing extreme negative stock returns, financial stability of the firms is considered low.

Some studies provide a hint that fair value accounting has a positive effect on financial stability. Bleck and Liu (2007) show a theoretical rationale for a shift in accounting standards from historic cost accounting to marking to market accounting. According to the paper, marking to market accounting system can better reflect true performance because it provides investors with an early warning mechanisms. Thus, under the fair value accounting, it becomes more difficult for manages to hide bad news. On the other hand, managers have greater opportunities to mask a firm's true economic performance under historical cost accounting.

Some empirical studies also support the positive role of fair value accounting on the financial stability during the crisis period. During the crisis period, stock returns fluctuate severely. However, Barth et al. (2010) show that fair value accounting is likely to relate little or no role to the financial crisis. Laux et al. (2010) also contradict the contention that fair value accounting has contributed to the year 2008 financial crisis, proposed by the European Commission and U.S. Congress. Instead, they find that there is little evidence as to whether fair value accounting played a role in the U.S banks' problems during the financial crisis.

A recent study by the IMF (2008) delineates pro-cyclical impact of fair value accounting on the capital ratios of banks and seeks potential measures that could mitigate it, which includes expanding the set of liabilities that are mark-to-market and limiting the impact of changes in fair value on the balance sheet via a smoothing mechanism or a circuit breaker. This suggests fair value accounting system mitigate the impact of macroeconomic factors on the financial statement from pro-cyclical market movement. Practically, IMF exhorts the adoption of fair value estimation for the reasons above.

On the other hand, some prior literatures provide evidence that support the negative effect of fair value accounting on the financial stability. For example, banks that have experienced losses from the deficiency of liquidity in crisis period transferred their accounting system from fair value accounting to historical cost accounting (Basel Committee, 2008).

[2] Song and Ji (2009) and Song and No (2011) assert that since the gains and losses of valuation from available sales are recognized as capital stocks, among these accrued gains and losses of valuation, certain parts of gains and losses are likely to be used as a tool for the firm's earnings management by cherry-picking. To diminish the possibility of inappropriate uses of gains and losses of valuation, K-IFRS restraints the recognition of unrealized gains and losses as another comprehensive income. Even if the gains and losses were recognized as another comprehensive income and subsequently realized, the unrealized gains and losses should be reclassified as current net income.

This indicates that the application of the fair value accounting system at financial institutions appears to have weakness and inconsistency in regards to the recent financial crisis in 2008. Under the financial crisis, serious write-offs are required in terms of financial assets at fair value, deteriorating their financial liquidation and credit evaluation. Ultimately, the financial stability is ruined (IIF, 2008)[3]. In addition, banks recognize the losses at fair value under the economic recession and thus attempt to raise extra capital to maintain their solvency ratio (Veron, 2008) [4]. Also, Youngman (2008) asserts that since the financial market is frequently occupied by the market participants' optimism or pessimism, fair value accounting unintentionally affects the economy and its financial system. Furthermore, fair value accounting intensifies the volatility of the earnings in bank industries (Barth et al., 1995).

Despite the controversy in the relations between fair value accounting and financial stability, there is no direct empirical analysis that examine the effect of fair value accounting and financial stability. Bleck and Liu (2007) show a theoretical comparison between historic cost accounting versus fair value accounting, they did not show any empirical analyses. Even if there are some empirical studies, they only focused on financial industries (Barth et al., 1995; Veron. 2008). The empirical analyses in these studies are largely based on the financial institutions, especially around crisis period, and there is lack of literatures that examines the effect of fair value accounting in nonfinancial companies. International Accounting Standard (IAS) 39, which is directly related to the fair value accounting, contains the standards about the recognition and measurement of financial instruments. That is why many prior literatures deal with financial industries.

However, Korea provides a good research setting to test the effect of fair value accounting on crash risk for nonfinancial firms. Since 2011, all listed companies in Korea have to adopt IFRS, which requires all firms to apply extensive fair value accounting in estimating the value of the assets and liabilities. Since previous Korean accounting standard used historical cost accounting system, IFRS adoption could be a good research setting to test the effect of fair value accounting on the crash risk, especially for nonfinancial firms. Thus, using the Korean data, we test the following hypothesis:

Hypothesis: Ceteris paribus, fair value accounting has no effect on financial stability

3. RESEARCH DESIGN

3.1. Measuring Financial Stability

Financial stability is measured using three variables: crash risk(*CRASH*), negative skewness(*NCSKEW*), and stock return volatility(*VOL*). These three measures are related to the first, second, and third moment of stock return respectively and are inverse measures of financial stability.

3.1.1 Crash Risk (*CRASH*)

Our first financial stability measure is crash risk, which is widely used in prior studies (Hutton et al. 2009; Kim et al. 2010). To measure crash risk, we first estimate firm-specific weekly returns for each firm and year from the following expanded market model:

$$r_{it}=\alpha_j+\beta_{1i}r_{m,t-1}+\beta_{2i}r_{i,t-1}+\beta_{3i}r_{m,t}+\beta_{4i}r_{i,t}+\beta_{5i}r_{m,t+1}+\beta_{6i}r_{i,t+1}+\varepsilon_{i,t} \quad (1)$$

[3] IIF (2008) reports that the write-off is likely to increase financial risk or liquidity premia under the current fair value accounting system, since the fair value accounting accelerates further write-downs, margin calls, and the financial volatility. Thus, it is the main cause of the exceeding actual economic losses of many financial instruments.

[4] Both IFRS and US GAAP require the disclosure that fair value hierarchy must be attached to the financial statement for financial instruments. This hierarchy arrays level 1, 2 and 3 depending on the market activation. If assets are traded in active market, it should be included in level 1. If an asset is not traded in active market but it has a benchmark price from similar instruments, it should be in level 2. Level 3 includes assets that are not traded in active market or have benchmark price in the market; they can only be relied upon the particular individual valuation model to have their value estimated. Under this disclosure system, the condition of complex financial instruments in the market breaks out the imbalance between supply and demand of the financial instruments. This leads to the liquidation since the asset's value loses relevance with its future cash flow capacity. Thus, the banks are required to report without the asset's real value in this situation. Ultimately, the firm's solvency ratio deteriorates because of the shrinking of the firm's equity value. To protect their solvency ratio, they raise a capital from new financing activities (Veron, 2008).

where

$r_{j,t}$: the return on stock *i* in week *t*
$r_{m,t}$: the return on market index (KOSPI index, KOSDAQ index) in week *t*
ε_{it} : residual in Equation (1)

We also include the lead and lag terms to allow the non-simultaneous transaction effects (Dimson, 1979). The firm specific weekly return for firm *i* in week *t* (W_{it}) is measured by the natural log of one plus the residual (ε_{it}) in Eq. (1).

We define crash weeks as those weeks during which the stock return experiences weekly returns 3.2 standard deviations below the mean weekly returns over the entire fiscal year. 3.2 standard deviation is equivalent to the 0.1% in the normal distribution. *CRASH*, which is the first financial stability measure, is defined as an indicator variable that equals to one for a firm-year that experiences one or more firm-specific weekly returns falling 3.2 standard deviations below the mean firm-specific weekly returns over the fiscal year, and zero otherwise. The mean value of *CRASH* is 0.129, indicating that 12.9% of Korean listed firms, on average, experienced at least one crash event during a given year.

3.1.2 Negative Skewness (*NCSKEW*)

We measure our second financial stability proxy, *NCSKEW*, using the negative conditional return skewness (Chen et al. 2001; DeFond et al. 2015; Kim et al. 2011). Main cause of the *NCSKEW* is the volatility feedback effects (French et al., 1987; Campbell and Hentschel 1992). For example, the large variance of price may cause investors to be more hesitant and cautious, driving the risk premium from the financial market. Furthermore, the increased risk premium is likely to drop the equilibrium price. It will reinforce the impact of the bad news or weaken the impact of the good news. This procedure creates negative skewness (*NCSKEW*). Thus, stock return with higher negative skewness indicates that the firm's financial stability is low.

We measure *NCSKEW* by taking the negative value of the third moment of the firm-specific weekly returns for each sample period and then we divide it by the standard deviation of the firm–specific weekly returns raised to the third power, as shown in the Equation (2) below:

$$NCSKEW_{it} = -[n(n-1)^{3/2}\sum W_{it}^3]/[(n-1)(n-2)(\sum W_{it}^2)^{3/2}] \quad (2)$$

3.1.3 Stock return Volatility (*VOL*)

Our last measure for financial stability is stock return volatility, *VOL*. Compare to the previous two measures, *VOL* does not premise the direction of the stock return. Volatility is calculated as the standard deviation of the firm *i*'s weekly returns at a given year. Higher volatility indicates that the firm's stock price changes suddenly and unexpectedly. In other words, volatile stock return means lower financial stability.

3.2 Research Models

We set the model (3) and (4) to show the relation between fair value disclosure and firm's financial stability as follows:

$$\begin{aligned} CRASH_{i,t}\ (or\ NCSKEW_{i,t}\ or\ VOL_{i,t}\ ) \\ = \alpha_0 + \alpha_1 FAIR_{i,t} + \alpha_2 DTURN_{i,t-1} + \alpha_3 RET_{i,t-1} + \alpha_4 SIZE_{i,t-1} \\ + \alpha_5 MB_{i,t-1} + \alpha_6 LEV_{i,t-1} + \alpha_7 ROA_{i,t-1} + \alpha_8 NCSKEW_{it-1} \\ + \alpha_9 OPAQUE_{i,t-1} + \Sigma INDUS + \epsilon_{it} \end{aligned} \quad (3)$$

Where

$CRASH_{i,t}$	: an indicator variable that takes the value of one for a firm-year that experiences one or more firm-specific weekly returns of firm j at year t
$NCSKEW_{i,t}$	: the negative skewness of firm-specific weekly returns over the fiscal year period of firm i at year t
$VOL_{i,t}$	: the standard deviation of the firm i's weekly returns at year t
$DTURN_{i,t-1}$	: the average of firm-specific weekly trading turnover over the fiscal year period of firm i at year t-1
$SIGMA_{i,t-1}$	: the standard deviation of firm-specific weekly returns over the fiscal year period of firm i at year t-1
$RET_{i,t-1}$	: the mean of firm-specific weekly returns over the fiscal year t-1
$SIZE_{i,t-1}$	: the log of market value of equity of firm i at the beginning of the fiscal year
$MB_{i,t-1}$	: the market value of the equity divided by the book value of equity of firm i at the beginning of the fiscal year
$LEV_{i,t-1}$	: the total debts divided by total assets of firm i at the beginning of the fiscal year
$ROA_{i,t-1}$	: the income before extraordinary items for fiscal year 5-1 divided by average total assets of firm i
$OPAQUE_{i,t-1}$	: the moving sum of the absolute value of discretionary accruals over the last three years (years t-1, t-2, and t-3) of firm i

We use $CRASH_{i,t}$ ($or\ NCSKEW_{i,t}\ or\ VOL_{i,t}$) as dependent variables to show their relations to the fair value accounting. $FAIR_{i,t}$ represents our main interest variable which equals to one in the year after the K-IFRS adoption and 0 otherwise. Based on the prior studies (Chen et al. 2001; Hutton et al. 2009; Kim et al. 2011a, 2011b) we control the following variables that are regarded as the determinants of crash risk:$DTURN_{t-1}$, RET_{t-1}, $SIZE_{t-1}$, MB_{t-1}, LEV_{t-1}, ROA_{t-1}, $NCSKEW_{t-1}$, $OPAQUE_t$.

DTURN is the detrended average monthly stock turnover, where turnover is calculated as the monthly trading volume divided by the total number of shares outstanding during the previous fiscal year. *DTURN* indicates differences in the opinion among the investors, leading to positive (+) coefficient. *RET* is the average of weekly stock returns for the fiscal-year period. *SIZE* represents the firm size and expected coefficient is positive, because prior studies show a positive association between firm size and crash risk. *MB* is the market to book the ratio. Since growth firms are more likely to face negative stock shocks and higher return volatility, we expect *MB* to be positively related to crash risk. *LEV* represents the long-term financial stability at time t. Since higher leverage is likely to go through higher financial risk, we expect that *LEV* to be positively associated to the firm's crash risk. *ROA*, which represents the profitability, are expected to have a negative sign because firms with higher profitability have a stable financial condition. $NCSKEW_{t-1}$ represents the prior period *NCSKEW*, regarded as one of the determinant of the current financial stability (Chen et al., 2001). We also suggest *OPAQUE* as the proxy of financial transparency. Hutton et al. (2009) found that the opacity of financial information is positively related to the firm's crash risk. Finally, we add the industry dummy ($\sum INDUS$) to the control industry fixed effects.

4. SAMPLE AND DATA

The sample includes all nonfinancial firms that are listed on Korean exchange market, KOSPI and KOSDAQ, from 2000 to 2013. The year 1999 is included when we define the stock crash (*CRASH*), negative skewness (*NCSKEW*) and the stock volatility (*VOL*) since we use the one-year-prior stock weekly returns to estimate these dependent variables. All the other control variables used in the data in the sample period from the year 2000 to 2013.

We excluded firms that belong to financial industry and firms whose fiscal year is not December. Financial institutions are excluded because their financial reporting standard differs from other industries.[5] In addition, fair value accounting

[5] Before the adoption of K-IFRS in 2011, the reporting system is used to differentiate between general manufacturing firms and financial firms. However, after the adoption of K-IFRS the gap between general manufacturing firms and financial firms is not distinguished since K-IFRS does not provide special accounting rules for financial firms.

and crash risk in the financial industries, especially during the crisis period, are already covered in the prior studies. After deleting observations that have missing values in variables needed to estimate financial stability and other control variables, 16,521 firm-year observations are used in the main analysis. <Table 1> shows summary statistics that used in the main analysis.

Table 1. Summary statistics

Variable	Obs.	Mean	Std. Dev.	Min	Median	Max
NCSKEW	12,988	-0.2571	0.9608	-6.8043	-0.2431	5.3663
CRASH	12,988	0.1290	0.3352	0.0000	0.0000	1.0000
VOL	12,988	7.9306	3.8772	0.0000	7.0921	56.7347
DTURN	12,988	-0.0034	0.0335	-0.9937	-0.0010	0.4949
RET	12,988	0.3386	1.7817	-40.7400	0.2252	71.4300
SIZE	12,988	17.9724	1.5387	12.2691	17.7057	26.1358
MB	12,988	1.3287	6.0562	-89.7471	0.8328	483.8676
LEV	12,988	0.4653	0.3505	0.0086	0.4612	26.4768
ROA	12,988	0.0041	0.2377	-13.0930	0.0298	9.6883
OPAQUE	12,988	0.2792	0.3962	0.0048	0.2014	17.4771

Table 2 shows the correlation among the main variables used in the empirical tests. First, $FAIR_t$ is negatively (-) related with all the dependent variables *(*$CRASH_t, NCSKEW_t$, VOL_t). It means that the expansion of the fair value accounting is likely to decrease the financial stability. For the control variables, firm size ($SIZE_{t-1}$) and profitability (ROA_{t-1}) are the main causes of the decreased financial stability. On the other hand, the firm's leverage (LEV_{t-1}) and opacity ($OPAQUE_{t-1}$) are positively (+) related to the financial stability as we expected.

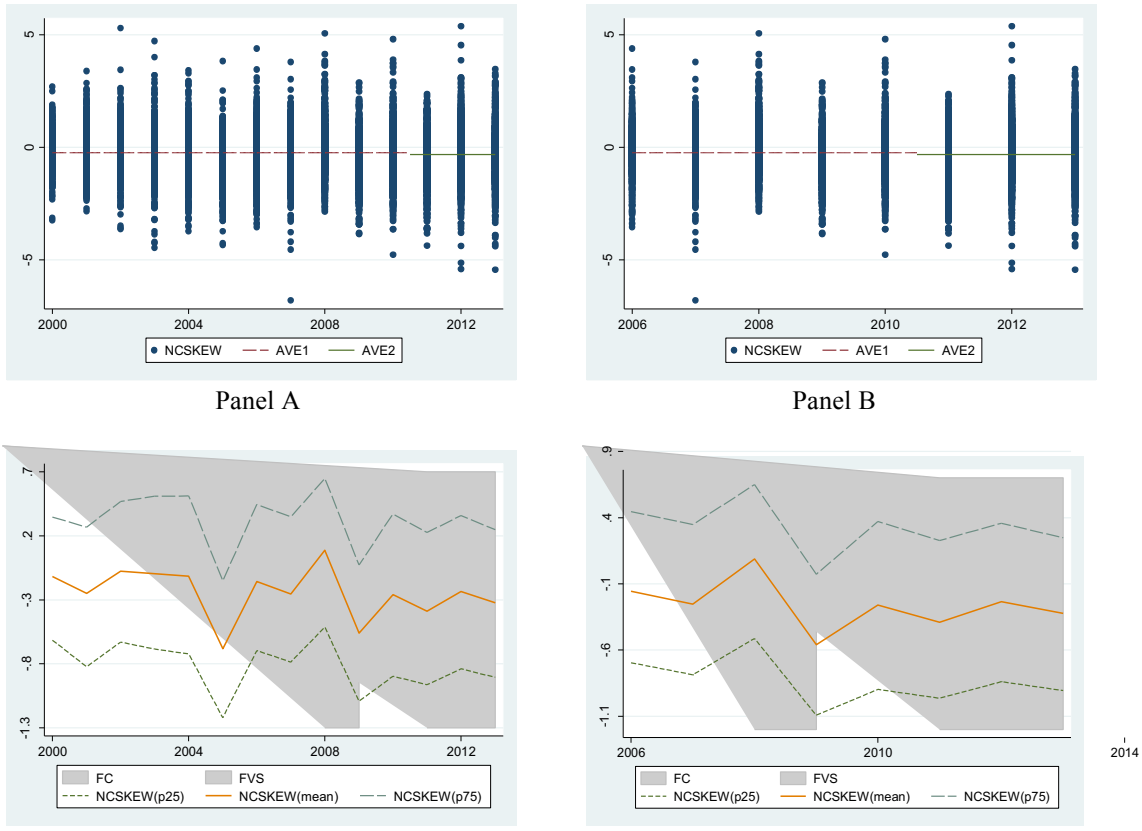
Before exhibiting the main empirical results, we show the trends of the main dependent variables (NCSKEW & VOL) during research period. Panel A of Figure 1 displays the trend of NCSKEW from the year 2000 to 2013. It indicates that the average of *NCSKEW* differs between period 1 (2000-2010) and 2 (2011-2013). We find that the average value is lower in period 2, compared to period 1. We also attempt to adjust the time period during the year 2006-2013 to show the more recent trends. Panel B of Figure 1 obviously indicates that the average value is lower during period 2, compared to period 1. However, in period 1 from the year 2008 to 2009, an abrupt decrease can be seen, from which we can infer that the effect of financial crisis in the year 2008 affected the financial stability. This is due to the attempt of the regulator trying to stabilize the financial market during the financial crisis and the efforts of the firms to avoid a liquidity risk from the financial market. Panel A and B of Figure 2 show the results of using the *VOL*, another proxy for a financial stability. These results are similar to the results presented in Figure 1. Thus, we may infer that the financial stability has decreased due to the expansion of the fair value accounting system from IFRS since 2011 in Korea.

Table 2. Pearson Correlation

Variable	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]
[1] $NCSKEW_t$	1.000											
[2] $NCSKEW_{t-1}$	-0.004	1.000										
[3] $CRASH_t$	**0.173**	0.012	1.000									
[4] VOL_{t-1}	**0.024**	**-0.253**	**0.232**	1.000								
[5] $FAIR_t$	**-0.037**	**-0.030**	**-0.131**	**-0.183**	1.000							
[6] $DTURN_{t-1}$	0.003	**-0.161**	0.014	**0.284**	0.003	1.000						
[7] RET_{t-1}	**0.050**	**-0.389**	-0.008	**0.169**	**-0.025**	**0.220**	1.000					
[8] $SIZE_{t-1}$	**0.145**	**-0.049**	**-0.115**	**-0.216**	**0.172**	**0.062**	**0.132**	1.000				
[9] MB_{t-1}	**0.028**	**-0.032**	**0.041**	**0.056**	0.007	-0.001	**0.044**	**0.058**	1.000			
[10] LEV_{t-1}	0.001	0.001	**0.104**	**0.120**	-0.021	**0.025**	0.008	**-0.035**	**0.022**	1.000		
[11] ROA_{t-1}	-0.007	**-0.067**	**-0.174**	**-0.181**	**0.020**	-0.007	**0.080**	**0.146**	**-0.064**	**-0.286**	1.000	
[12] $OPAQUE_{t-1}$	**0.026**	**0.031**	**0.135**	**0.231**	**-0.076**	-0.017	**-0.029**	**-0.101**	**0.066**	**0.100**	**-0.063**	1.000

This table presents results from the Pearson Correlation analysis among the main variables used in the research models. We suggest coefficient estimates, among which the numbers in bold indicate at least 5% level of significance. All variables are defined in the Appendix A.

Figure 1. Negative Skewness Trend



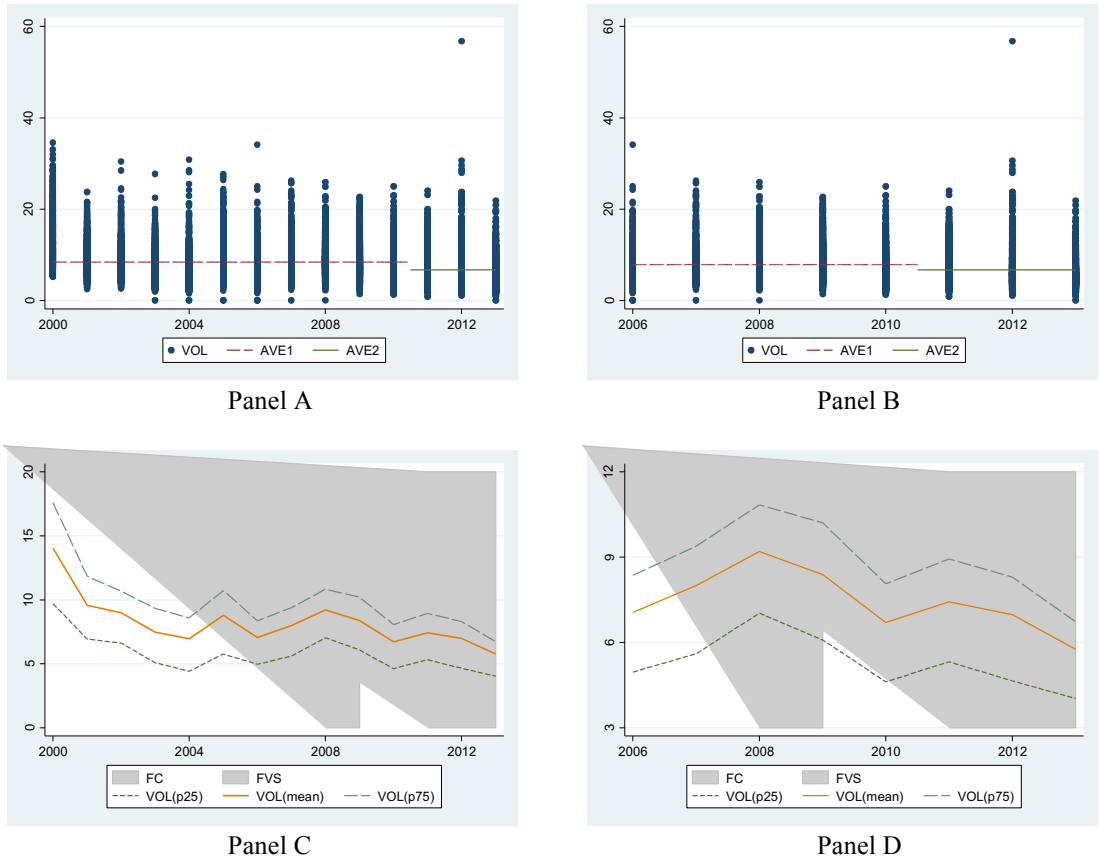
In panel A, the dot trend represents the pattern of *NCSKEW* from 2000 to 2013. The broken line (AVE1) indicates the pattern of *NCSKEW* from 2000-2010 before the adoption of IFRS in 2011. On the other hand, the solid line (AVE2) represents the pattern of *NCSKEW* from 2011 to 2013 after the adoption of IFRS in 2011.

In panel B, the dot trend represents the pattern of *NCSKEW* from 2006 to 2013. The broken line (AVE1) indicates the pattern of *NCSKEW* from 2006-2010 before the adoption of IFRS in 2011. On the other hand, the solid line (AVE2) represents the pattern of *NCSKEW* from 2011 to 2013 after the adoption of IFRS in 2011.

In panel C, the solid line trend represents the pattern of *NCSKEW*'s mean from 2000 to 2013. The long broken line (p25) above the solid line trend indicates the pattern of *NCSKEW* from 2000 to 2013 within the first quantile (25%). On the other hand, the short broken line (p75) represents the pattern of *NCSKEW* from 2000 to 2013 within the third quantile (75%).

In Panel D, the solid line trend represents the pattern of *NCSKEW*'s mean from 2006 to 2013. The long broken line (p25) above the solid line trend indicates the pattern of *NCSKEW* from 2006 to 2013 within the first quantile (25%). On the other hand, the short broken line (p75) represents the pattern of *NCSKEW* from 2006 to 2013 within the third quantile (75%).

Figure 2. Volatility Trend



In panel A, the dot trend represents the pattern of *VOL* from 2000 to 2013. The broken line (AVE1) indicates the pattern of *VOL* from 2000-2010 before the adoption of IFRS in 2011. On the other hand, the solid line (AVE2) represents the pattern of *VOL* from 2011 to 2013 after the adoption of IFRS in 2011.

In panel B, the dot trend represents the pattern of *VOL* from 2006 to 2013. The broken line (AVE1) indicates the pattern of *NCSKEW* from 2006-2010 before the adoption of IFRS in 2011. On the other hand, the solid line (AVE2) represents the pattern of *VOL* from 2011 to 2013 after the adoption of IFRS in 2011.

In panel C, the solid line trend represents the pattern of *VOL*'s mean from 2000 to 2013. The long broken line (p25) above the solid line trend indicates the pattern of *VOL* from 2000 to 2013 within the first quantile (25%). On the other hand, the short broken line (p75) represents the pattern of *VOL* from 2000 to 2013 within the third quantile (75%).

In panel D, the solid line trend represents the pattern of *VOL*'s mean from 2006 to 2013. The long broken line (p25) above the solid line trend indicates the pattern of *VOL* from 2006 to 2013 within the first quantile (25%). On the other hand, the short broken line (p75) represents the pattern of *VOL* from 2006 to 2013 within the third quantile (75%).

5. EMPIRICAL ANALYSIS

Table 3 demonstrates the effect of the expansion of the fair value accounting on the financial stability due to the adoption of IFRS in 2011. First, Column (1) in Table 3 displays a negative coefficient on $FAIR_t$, indicating that the adoption of fair value accounting in year 2011 increases negative conditional return skewness. (Coefficient: -0.088, t-value: -4.79). Column (2) also reports a significant negative coefficient of $FAIR_t$ on the firm's crash risk (Coefficient: -0.602, z-value: -7.93). This indicates that the expansion of fair value accounting from the year 2011 to 2013 decreases crash risk, representing improvement in financial stability. Column (3) reports the result of using *VOL* as a proxy for financial stability. It also shows a negative relation with *FAIR* (Coefficient: -0.483, t-value: -8.30).

All results in Table 3 generally suggest that the expansion of the fair value accounting by the adoption of IFRS improves the firm's financial instability. The results are consistent with the theoretical argument advocated by Bleck and Liu (2007). Since the fair value accounting provides an early warning mechanisms to the investors, managers have less opportunity to hide bad news in the capital market. In other words, fair value accounting alleviates the firm's information risk or uncertainty. As a results, the frequency of negative shocks and negative skewness in stock return are reduced. This results are consistent with prior literatures which argues the positive role of fair value accounting in the financial industries. (Barth et al. 2010; Laux et al. 2010)

Table 3. Result of the Expansion of Fair Value System

$$CRASH_{i,t}\ (or\ NCSKEW_{i,t}\ or\ VOL_{i,t}) = \alpha_0 + \alpha_1 FAIR_{i,t} + \alpha_2 DTURN_{i,t-1} + \alpha_3 RET_{i,t-1} + \alpha_4 SIZE_{i,t-1} + \alpha_5 MB_{i,t-1} + \alpha_6 LEV_{i,t-1} + \alpha_7 ROA_{i,t-1} + \alpha_8 NCSKEW_{it-1} + \alpha_9 OPAQUE_{i,t-1} + \Sigma INDUS + \epsilon_{it} \quad (3)$$

Column (1) Dependent = *NCSKEW*			Column (2) Dependent = *CRASH*			Column (3) Dependent = *VOL*		
	Coef.	**t-value**		**Coef.**	**z-value**		**Coef.**	**t-value**
$FAIR_t$	-0.088	-4.79	$FAIR_t$	-0.602	-7.93	$FAIR_t$	-0.483	-8.30
$NCSKEW_{t-1}$	0.021	2.10	$NCSKEW_{t-1}$	0.122	3.55	$NCSKEW_{t-1}$	0.201	6.50
$DTURN_{t-1}$	-0.718	-2.68	$DTURN_{t-1}$	-3.131	-4.13	$DTURN_{t-1}$	-6.037	-7.15
$SIGMA_{t-1}$	0.010	3.53	$SIGMA_{t-1}$	0.129	14.51	$SIGMA_{t-1}$	0.349	38.82
RET_{t-1}	0.016	3.22	RET_{t-1}	0.008	0.48	RET_{t-1}	-0.027	-1.73
$SIZE_{t-1}$	0.120	20.49	$SIZE_{t-1}$	-0.080	-3.42	$SIZE_{t-1}$	-0.397	-21.44
MB_{t-1}	0.002	1.37	MB_{t-1}	0.005	1.37	MB_{t-1}	0.004	0.90
LEV_{t-1}	-0.096	-2.33	LEV_{t-1}	0.845	5.93	LEV_{t-1}	1.275	9.85
ROA_{t-1}	-0.141	-3.73	ROA_{t-1}	-1.029	-6.83	ROA_{t-1}	-1.396	-11.77
$OPAQUE_{t-1}$	0.077	3.57	$OPAQUE_{t-1}$	0.289	4.00	$OPAQUE_{t-1}$	0.585	8.65
Indus	Included		*Indus*	Included		*Indus*	Included	
Adj_R2	0.035		*Pse_R2*	0.104		*Adj_R2*	0.261	
No. obs	12,988		*No. obs*	12,988		*No. obs*	12,988	
Pro>F	0.000		*Pro>chi2*	0.000		*Pro>F*	0.000	

This table presents results from the regression analyses (H1) of the effect of fair value accounting adoption since 2011 in Korea on financial stability (with the value estimated in *NCSKEW*E, *CRASH* and *VOL*). The fair value accounting system has expanded since 2011. Thus, our main independent variable (FAIR) has a dummy value when the year is 2011, 2012 and 2013, the value has 0; otherwise, 1.

Across all regressions, we take N=12,988 for model (3), (4) and (5) using firm-years observations from 2000 to 2013. We also suggest the results from the regression of *CRASH* and *VOL* with similar results with *NCSKEW*. We suggest coefficient estimates with t-value, only significant if t-value (z-value) > |2|. Column 1 shows the coefficient value, wherein the dependent variable is *NCSKEW* as the proxy of financial stability, with main independent variable FAIR, representing the expansion of fair value accounting system. Column 2 and 3 present the results from similar regression analyses as Column 1 with financial stability estimated with *CRASH* and *VOL*. All the variables are defined in the Appendix A.

6. SENSITIVITY TESTS

6.1 Segment Research Periods

To distinguish the effect of the financial crisis occurred in year 2008 from the adoption of K-IFRS effect, we added a separated time dummy variable such as Time2009, Time2010 and Time2011.

$$NCSKEW_{i,t}\ (CRASH_{i,t}, VOL_{i,t}) = \alpha_0 + \alpha_1 PERIOD1_{i,t} + \alpha_2 PERIOD2_{i,t} + \alpha_3 PERIOD3_{i,t} + \alpha_4 DTURN_{i,t-1} + \alpha_5 RET_{i,t-1} + \alpha_6 SIZE_{i,t-1} + \alpha_7 MB_{i,t-1} + \alpha_8 LEV_{i,t-1} + \alpha_9 ROA_{i,t-1} + \alpha_{10} NCSKEW_{it-1} + \alpha_{11} OPAQUE_{i,t-1} + \Sigma INDUS + \epsilon_{i,t} \quad (4)$$

where

$PERIOD1_{i,t}$: the time variable of the year 2009 of firm i
$PERIOD2_{i,t}$: the time variable of the year 2010 of firm i
$PERIOD3_{i,t}$: the time variable of the year 2011 of firm i

Table 4 shows the sole impact of the financial crisis in the year 2008 on the financial stability. Column (1) provides the result of the separated time trend variables, PERIOD1, PERIOD2 and PERIOD3, with *NCSKEW*. First, PERIOD1 has a significant negative coefficient (Coefficient: -0.043, t-value: -1.39). This indicates that the financial crash risk is mitigated by the financial regulation, and that the efficient firm's financial risk managements are possible during the financial crisis. On the other hand, PERIOD2 has a significant positive coefficient (Coefficient: 0.262, t-value: 6.63) so when the impact of the regulation shrinks, it leads the firms to resume investment activities after the financial crisis. As a result, the firm's crash risk returns to the average level. Finally, PERIOD3, represents the adopted year of IFRS, and reports the significant negative coefficient with *NCSKEW* (Coefficient: -0.377, t-value: -12.22). This suggests that those two events exclusively affect the financial stability. Column (2) also tests the exclusive effect of the financial crisis and the adoption of IFRS in terms of the financial stability by using the firm's crash risk measure. PERIOD1 is not significant; however, PERIOD3, representing the expansion of fair value accounting by adoption of IFRS, shows a significant negative coefficient (Coefficient: -1.307, z-value: -10.06). Column (3) suggests that firm's volatility (*VOL*) as a proxy of financial stability is related to time trend variables. First, PERIOD1 is positively related to firm's volatility (Coefficient: 0.429, t-value: 4.42). But PERIOD3 shows negative relation with the firm's volatility with significance (Coefficient: -0.274, t-value: -2.82). Thus, from the results of <Table 4>, we infer that the effect of financial crisis in the year 2008 and the effect of the adoption of IFRS in 2011 are mutually exclusive on the financial stability.

Table 4. Empirical Result of the Segmented Research Period

$$NCSKEW_{i,t}\ (CRASH_{i,t}, VOL_{i,t}) = \alpha_0 + \alpha_1 \mathrm{PERIOD1}_{i,t} + \alpha_2 \mathrm{PERIOD2}_{i,t} + \alpha_3 \mathrm{PERIOD3}_{i,t} + \alpha_4 \mathrm{DTURN}_{i,t-1} + \alpha_5 \mathrm{RET}_{i,t-1} + \alpha_6 \mathrm{SIZE}_{i,t-1} + \alpha_7 \mathrm{MB}_{i,t-1} + \alpha_8 \mathrm{LEV}_{i,t-1} + \alpha_9 \mathrm{ROA}_{i,t-1} + \alpha_{10} NCSKEW_{it-1} + \alpha_{11} \mathrm{OPAQUE}_{i,t-1} + \Sigma \mathrm{INDUS} + \epsilon_{i,t} \quad (4)$$

Column (1) Dependent = *NCSKEW*			Column (2) Dependent = *CRASH*			Column (3) Dependent = *VOL*		
	Coef.	**t-value**		**Coef.**	**z-value**		**Coef.**	**t-value**
$PERIOD1_{i,t}$	-0.043	-1.39	$PERIOD1_{i,t}$	-0.043	-0.32	$PERIOD1_{i,t}$	0.429	4.42
$PERIOD2_{i,t}$	0.262	6.63	$PERIOD2_{i,t}$	0.479	2.82	$PERIOD2_{i,t}$	-0.852	-6.83
$PERIOD3_{i,t}$	-0.377	-12.22	$PERIOD3_{i,t}$	-1.307	-10.06	$PERIOD3_{i,t}$	-0.274	-2.82
$NCSKEW_{t-1}$	0.028	2.88	$NCSKEW_{t-1}$	0.127	3.65	$NCSKEW_{t-1}$	0.184	5.93
$DTURN_{t-1}$	-0.807	-3.03	$DTURN_{t-1}$	-3.315	-4.39	$DTURN_{t-1}$	-5.716	-6.80
$SIGMA_{t-1}$	0.016	5.68	$SIGMA_{t-1}$	0.147	15.93	$SIGMA_{t-1}$	0.352	38.69
RET_{t-1}	0.005	0.96	RET_{t-1}	-0.033	-1.68	RET_{t-1}	-0.018	-1.12
$SIZE_{t-1}$	0.124	21.11	$SIZE_{t-1}$	-0.056	-2.39	$SIZE_{t-1}$	-0.382	-20.70
MB_{t-1}	0.001	1.08	MB_{t-1}	0.004	1.15	MB_{t-1}	0.003	0.82
LEV_{t-1}	-0.095	-2.32	LEV_{t-1}	0.901	6.26	LEV_{t-1}	1.260	9.78
ROA_{t-1}	-0.128	-3.43	ROA_{t-1}	-1.021	-6.77	ROA_{t-1}	-1.397	-11.83
$OPAQUE_{t-1}$	0.064	2.99	$OPAQUE_{t-1}$	0.253	3.46	$OPAQUE_{t-1}$	0.577	8.57
Indus	Included		*Indus*	Included		*Indus*	Included	
Adj_R2	0.046		*Pse_R2*	0.123		*Adj_R2*	0.270	
No. obs	12,988		*No. obs*	12,988		*No. obs*	12,988	
Pro>F	0.000		*Pro>chi2*	0.000		*Pro>F*	0.000	

This table shows the results of sensitivity test to identify the pure effect on financial stability (with the value estimated with *NCSKEW*E, *CRASH* and *VOL*) of the effect of the expansion of fair value accounting system from the effect of financial crisis in 2008 in the regression model (6), (7) and (8). The fair value accounting system has expanded since 2011, thus our main independent variable (FAIR) has a dummy value when the year is 2011, 2012 and 2013, the value has 0; otherwise, 1.

Across all the regressions, we take N=12,988 for model (6), (7) and (8) using firm-years observations from 2000 to 2013. We also suggest the results from the regression of *CRASH* and *VOL* with similar results with *CRASH*. We suggest coefficient estimates with t-value, only significant if t-value (z-value)> |2|. Column 1 shows the coefficient value, wherein the dependent variable is *NCSKEW* as the proxy of financial stability, with main independent variable FAIR, representing the expansion of fair value accounting system. Column 2 and 3 present the results from similar regression analyses as Column 1 with financial stability estimated with *CRASH* and *VOL*. All the variables are defined in the Appendix A.

6.2 Comparison between the Impacts on Financial Stability by Industry Types

We attempt to test whether the adoption of fair value accounting affects the financial stability differently depending on the type of industry. Table 5 shows the industry categories.

Table 5. Industry Categories

Industries	N of Obs	Percent	Cumulative
[1] Construction	559	3.38%	3.38%
[4] Wholesale and Retail	1,342	8.12%	11.51%
[5] Communication	373	2.26%	13.76%
[6] Non-Metal Manufacturing	1,740	10.53%	24.30%
[7] Consumer Manufacturing	1,911	11.57%	35.86%
[9] Electronics Manufacturing	3,026	18.32%	54.18%
[10] Expert Service	1,568	9.49%	63.67%
[11] Detailed Manufacturing	2,741	16.59%	80.26%
[12] Publication, Media, Broadcasting and Information Services	718	4.35%	84.61%
[13] Chemical Manufacturing	2,543	15.39%	100%
Total	**16,521**	**100%**	**100%**

Table 6 shows the results that examine the effect of fair value accounting on financial stability of each industry. The results generally support that FAIR is negatively (-) related to NCSKEW (IndusN (4), (5), (7), (9), (10), and (13)). We can infer that the expansion of fair value accounting is likely to increase financial stability. Thus, we conclude that the expansion of fair value accounting by adopting K-IFRS in 2011 affects financial stability even in the test with individual industries.

Table 6. Comparison of the Impact on the Financial Stability by Individual Industry Types

Panel A

Variable	Indus (1)		Indus (4)		Indus (5)		Indus (6)		Indus (7)	
NCSKEW	**Coef.**	**t-vlaue**	**Coef.**	**t-value**	**Coef.**	**t-value**	**Coef.**	**t-value**	**Coef.**	**t-value**
$FAIR_t$	0.126	1.130	-0.162	-2.510	-0.249	-2.080	0.012	0.200	-0.171	-2.820
$NCSKEW_{t-1}$	0.028	0.480	0.046	1.190	0.098	1.360	0.028	0.930	0.007	0.250
$DTURN_{t-1}$	-2.626	-1.750	-1.129	-0.940	-4.186	-1.740	0.323	0.310	-1.265	-1.550
$SIGMA_{t-1}$	0.029	2.050	0.007	0.720	-0.007	-0.380	0.007	0.770	0.018	2.040
RET_{t-1}	-0.028	-0.590	0.051	1.510	0.092	1.340	-0.023	-1.920	0.005	0.670
$SIZE_{t-1}$	0.145	4.480	0.107	5.730	0.013	0.410	0.092	4.710	0.174	8.570
MB_{t-1}	-0.070	-1.930	0.033	2.150	0.135	2.270	0.006	0.520	-0.001	-0.110
LEV_{t-1}	-0.222	-0.800	0.114	0.850	-0.051	-0.190	-0.281	-1.810	-0.231	-1.970
ROA_{t-1}	-0.474	-1.180	-0.088	-0.700	-0.287	-1.040	-0.271	-1.080	-0.188	-1.120
$OPAQUE_{t-1}$	-0.253	-0.780	0.153	1.660	-0.236	-1.020	-0.080	-0.560	0.253	1.630
Indus	Included		Included		Included		Included		Included	
Adj_R2	0.045		0.061		0.044		0.015		0.047	
No. obs	438		1,045		301		1,357		1,495	
Prob>F	0.001		0.000		0.010		0.001		0.000	

(Table 6 continued on next page)

(Table 6 continued)

Panel B

Variable	Indus (9)		Indus (10)		Indus (11)		Indus (12)		Indus (13)	
NCSKEW	**Coef.**	**t-value**	**Coef.**	**t-value**	**Coef.**	**t-value**	**Coef.**	**t-value**	**Coef.**	**t-value**
$FAIR_t$	-0.097	-2.390	-0.101	-1.790	-0.043	-0.980	-0.079	-0.970	-0.089	-1.810
$NCSKEW_{t-1}$	0.021	0.820	0.070	2.030	0.068	2.460	0.029	0.540	0.085	3.040
$DTURN_{t-1}$	-0.332	-0.650	-1.157	-1.260	-1.573	-2.310	-1.401	-1.480	-2.236	-2.760
$SIGMA_{t-1}$	0.002	0.280	-0.010	-1.160	0.020	2.500	0.002	0.130	-0.004	-0.470
RET_{t-1}	0.080	4.040	0.094	3.170	0.084	3.500	0.154	3.620	0.118	4.170
$SIZE_{t-1}$	0.138	9.170	0.099	5.770	0.093	6.510	0.187	4.790	0.085	4.950
MB_{t-1}	-0.001	-0.440	0.001	0.260	0.001	0.700	0.003	0.120	0.027	2.250
LEV_{t-1}	0.041	0.440	0.044	0.370	-0.113	-1.040	0.075	0.350	-0.106	-0.890
ROA_{t-1}	-0.189	-2.870	-0.051	-0.590	0.034	0.230	-0.373	-2.140	-0.130	-0.540
$OPAQUE_{t-1}$	0.075	2.600	0.114	2.430	0.196	2.340	0.120	0.680	0.022	0.150
Indus	Included		Included		Included		Included		Included	
Adj R2	0.052		0.048		0.037		0.088		0.036	
No. obs	2,420		1,372		2,140		577		1,978	
Prob>F	0.000		0.000		0.000		0.000		0.000	

This table suggests the results of sensitivity test to identify the sole effect on financial stability (with the value estimated in *NCSKEW*) of the effect of the expansion of the fair value accounting system in the regression model (3), (4) and (5) by each industry. The fair value accounting system has expanded since 2011, and thus our main independent variable (FAIR) has a dummy value when the year is 2011, 2012 and 2013, the value has 0; otherwise, 1.

Across all the regressions, we take N=16,521 by using firm-years observations from 2000 to 2013. We suggest coefficient estimates with t-value (z-value), only significant if t-value > |2|. Column 1 shows the coefficient value, wherein the dependent variable is *NCSKEW* as the proxy of financial stability, with main independent variable FAIR, representing the expansion of fair value accounting system. Column 2 and 3 present the results from similar regression analyses as Column 1 with financial stability estimated with *CRASH* and *VOL*. All the variables are defined in the Appendix A.

6.3 Early Adoption of K-IFRS on the Financial Stability

Previous results show the effect of mandatory adoption of K-IFRS on the financial stability. However, several firms voluntarily adopted K-IFRS earlier than 2011. Early adopters may have different characteristics that are related to the financial stability compared to the other firms. Thus, we test the effect of the early adoption of K-IFRS on the financial stability using the following regression model:[6]

$$NCSKEW_{i,t}(CRASH\ \&\ VOL) = \alpha_0 + \alpha_1 EADOP_{i,t} + \alpha_2 DTURN_{i,t-1} + \alpha_3 RET_{i,t-1} + \alpha_4 SIZE_{i,t-1} + \alpha_5 MB_{i,t-1} + \alpha_6 LEV_{i,t-1} + \alpha_7 ROA_{i,t-1} + \alpha_8 NCSKEW_{it-1} + \alpha_9 OPAQUE_{i,t-1} + \Sigma INDUS + \epsilon_{it} \quad (5)$$

where

$EADOP_{i,t}$: firms that early adopts the K-IFRS

[6] We provide the list of early adoption firms from 2009 to 2010 in Appendix B.

Table 7. Empirical Result of the Early Adoption Firms

$$NCSKEW_{i,t}(CRASH\ \&\ VOL) = \alpha_0 + \alpha_1 EADOP_{i,t} + \alpha_2 DTURN_{i,t-1} + \alpha_3 RET_{i,t-1} + \alpha_4 SIZE_{i,t-1} + \alpha_5 MB_{i,t-1} + \alpha_6 LEV_{i,t-1} + \alpha_7 ROA_{i,t-1} + \alpha_8 NCSKEW_{it-1} + \alpha_9 OPAQUE_{i,t-1} + \Sigma INDUS + \epsilon_{it} \quad (5)$$

Column (1) Dependent = *NCSKEW*			Column (2) Dependent = *CRASH*			Column (3) Dependent = *VOL*		
NCSKEW	**Coef.**	**t-value**	***CRASH***	**Coef.**	**z-value**	***VOL***	**Coef.**	**t-value**
$EADOP_t$	-0.089	-4.84	$EADOP_t$	-0.612	-8.06	$EADOP_t$	-0.489	-8.42
$NCSKEW_{t-1}$	0.021	2.09	$NCSKEW_{t-1}$	0.122	3.54	$NCSKEW_{t-1}$	0.201	6.50
$DTURN_{t-1}$	-0.716	-2.67	$DTURN_{t-1}$	-3.116	-4.11	$DTURN_{t-1}$	-6.027	-7.14
$SIGMA_{t-1}$	0.010	3.53	$SIGMA_{t-1}$	0.129	14.50	$SIGMA_{t-1}$	0.349	38.83
RET_{t-1}	0.016	3.21	RET_{t-1}	0.008	0.46	RET_{t-1}	-0.028	-1.74
$SIZE_{t-1}$	0.121	20.51	$SIZE_{t-1}$	-0.078	-3.36	$SIZE_{t-1}$	-0.396	-21.35
MB_{t-1}	0.002	1.36	MB_{t-1}	0.005	1.36	MB_{t-1}	0.004	0.90
LEV_{t-1}	-0.096	-2.33	LEV_{t-1}	0.843	5.92	LEV_{t-1}	1.274	9.84
ROA_{t-1}	-0.141	-3.75	ROA_{t-1}	-1.034	-6.87	ROA_{t-1}	-1.398	-11.79
$OPAQUE_{t-1}$	0.077	3.57	$OPAQUE_{t-1}$	0.290	4.01	$OPAQUE_{t-1}$	0.586	8.66
Indus	Included		*Indus*	Included		*Indus*	Included	
Adj R2	0.035		*Pse R2*	0.104		*Adj R2*	0.262	
No. obs	12,988		*No. obs*	12,988		*No. obs*	12,988	
Prob>F	0.000		*Pro>chi2*	0.000		*Prob>F*	0.000	

This table suggests the results of the test to identify the pure effect of the early adoption of IFRS on financial stability (with the value estimated with *NCSKEW*E, *CRASH* and *VOL*) of the effect of the expansion of fair value accounting system in the regression model (9), (10) and (11). The fair value accounting system has expanded since 2011, but many firms are allowed to adopt the earlier IFRS system, and thus we attempt to segment the effect of the early adoption. To test the effect of the early adoption, we set the additional model (9), (10) and (11), and our main independent variable (EADOP) has a dummy value when the firm adopts IFRS earlier than others.

Across all the regressions, we take N=12,988 for model (9), (10) and (11) using firm-years observations from 2000 to 2013. We also suggest the results from the regression of *CRASH* and *VOL* with similar results with NCAKEW. We suggest coefficient estimates with t-value, only significant if t-value (z-value) > |2|. Column 1 shows the coefficient value, wherein the dependent variable is *NCSKEW* as the proxy of financial stability, with main independent variable EADOP, representing the expansion of fair value accounting system. Column 2 and 3 present the results from similar regression analyses as Column 1 with financial stability estimated with *CRASH* and *VOL*. All the variables are defined in the Appendix A.

Table 7 shows the results of the effect of the early adoption of K-IFRS on the financial stability. First, column (1) in Table 7 suggests the negative sign (-) between financial stability (*NCSKEW*) and the fair value accounting before 2011 (Coefficient: -0.0089, t-value: -4.84). This indicates that the early adoption enables companies to enjoy enhanced financial stability through the fair value accounting. Second, column (2) in Table 7 suggests similar results. Early adopters have less likelihood of crash risk. It can also be inferred that the fair value accounting is likely to lead to enhancement of the financial stability (Coefficient: -0.612, z-value: -8.06). Finally, column (3) in Table 7 shows that the early adoption firms are negatively (-) related with volatility (Coefficient: -0.489, t-value: -8.42). The results in Table 7 generally supports that fair value accounting decreases the firm's crash risk as well as firm's entire volatility risk. Thus, we contend that the expansion of fair value accounting improves financial stability.

7. CONCLUSION

This paper attempts to test the effect of fair value accounting via the adoption of K-IFRS in 2011 on financial stability. Fair value accounting can affect financial stability in both ways. First, fair value accounting help evaluate the fundamental firm value reliably (Youngmanm 2008; IMF, 2008). Also fair value accounting mitigates the firm's information asymmetry that may potentially exist between an insider and outside stakeholders by providing timely information. This argument supports the positive effect of fair value accounting on the financial stability. On the other hand, fair value can aggravate financial stability by increasing the volatility of the numbers in the financial statement. Ryan (2008) also supports this argument by suggesting the earnings persistence is decreased under the fair value accounting. Some prior studies have touched this topic, but most of them are only focused on financial industries. But, due to the systematic differences between financial and nonfinancial industries, results driven from prior studies cannot be generalized. Thus, we empirically examines the effect of the fair value accounting on the financial stability using nonfinancial industries.

To test the effect of fair value accounting on financial stability, we use Korean data. Korea provides a good research setting to test the effect of fair value accounting on crash risk for nonfinancial firms. Since 2011, all listed companies in Korea have to adopt IFRS, which requires all firms to apply extensive fair value accounting in estimating the value of the assets and liabilities. Since previous Korean accounting standard used historical cost accounting system, IFRS adoption could be a good research setting to test the effect of fair value accounting on financial stability, especially for nonfinancial firms.

Using the listed firms in KOSPI and KOSDAQ from 2000 to 2013, we find that the expansion of fair value accounting increases financial stability. It supports the argument that fair value accounting prohibits managers from hiding information, rather it enforces the disclosure of value-relevant information to the investors. The results are consistent with a battery of robustness checks. To remove the effect of financial crisis on the financial stability, we examine the separate period, but the main results are not changed. And when we analyze the subsample of firms that adopted IFRS voluntarily, financial stability is also improved after the adoption of IFRS. Thus, the overall results show that the expansion of fair value accounting increase financial stability.

Despite the measurement errors and correlated omitted problems, this paper contributes to the literatures as follows: First, it is the first paper that empirically examines the effect of fair value accounting on financial stability in nonfinancial firms. Second, by comparing the two different accounting system, historical cost accounting versus fair value accounting, it provides practical implication for regulators. Even though fair value accounting can be a double-edged sword, it can work as an instrument for curbing managers' opportunistic behavior.

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APPENDIX A

Variable Definitions	
Category	**Definition**
Dependent Variables	
NCSKEW	the negative skewness of firm-specific weekly returns over the fiscal year period
CRASH	an indicator variable that takes the value of one for a firm-year that experiences one or more firm-specific weekly returns falling 3.2 standard deviations below the mean firm-specific weekly returns over the fiscal year, with 3.2 chosen to generate frequencies of 0.1% in the normal distribution during the fiscal year period, and zero, otherwise.
VOL	The standard deviation of firm i weekly returns at year t
Control Variables	
DTURN	the average of firm-specific weekly trading turnover over the fiscal year period of firm j at year t-1
SIGMA	the standard deviation of firm-specific weekly returns over the fiscal year period of firm j at year t-1
RET	the mean of firm-specific weekly returns over the fiscal year period, times 100
SIZE	the log value of market value of firm j at year t-1
MB	the market value of the equity divided by the book value of equity of firm j at year t-1
LEV	total debts divided by total assets of firm j at year t-1
ROA	income divided by average total assets of firm j at year t-1
OPAQUE	the moving sum of the absolute value of discretionary accruals over the last three years (years t-1, t-2, and t-3). (Hutton et al. 2009)
Variables for Sensitivity Tests	
TIME2009	the time variable of 2009
TIME2010	the time variable of 2010
TIME2011	the time variable of 2011
EADOP	the firm that early adopts the IFRS than others

APPENDIX B

Early Adoption Firms of K-IFRS from 2009 to 2010

Panel A		
KOSPI	**Transition Day**	**Industry**
KT&G	2008.1.1	Manufacturing
STX PANOCEAN	2008.1.1	Transportation
Pulmuone Holdings	2008.1.1	Manufacturing
EAGON	2008.1.1	Manufacturing
COSMO CHEMICAL	2008.1.1	Manufacturing
YOUGJIN Pharmaceutical	2008.1.1	Manufacturing
LG	2009.1.1	Expert Service
LG Display	2009.1.1	Manufacturing
LG Life Sciences	2009.1.1	Manufacturing
LG Household & Health Care	2009.1.1	Manufacturing
LG Electronics	2009.1.1	Manufacturing
LG Innotek	2009.1.1	Manufacturing
LG U+	2009.1.1	Communication
LG Chem	2009.1.1	Manufacturing
Samsung Electronics	2009.1.1	Manufacturing
Samsung SDI	2009.1.1	Manufacturing
KOREA FLANGE	2009.1.1	Manufacturing
G II R	2009.1.1	Expert Service
Sum of KOSPI firms		**18 Firms**

Panel B		
KOSDAQ	**Transition Day**	**Industry**
PAPER COREA	2008.1.1	Manufacturing
INSUN ENT	2008.1.1	Wastewater Treatment
DISPLAYTECH	2008.1.1	Manufacturing
Palytech	2008.1.1	Manufacturing
CUBIC KOREA	2008.1.1	Manufacturing
ECOENERGY Holdings	2008.1.1	Manufacturing
GIKO&ROOTIZ	2008.1.1	Manufacturing
KOOKJE ELECTRIC KOREA	2008.4.1	Manufacturing
NEXCON Technology	2009.1.1	Manufacturing
DBK	2009.1.1	Manufacturing
ENTER TECH	2009.1.1	Manufacturing
UJU ELECTRONICS	2009.1.1	Manufacturing
EUGENE	2009.1.1	Manufacturing
CAVAC	2009.1.1	Manufacturing
Sum of KOSDAQ firms		**14 Firms**
Total (KOSPI and KOSDAQ firms)		**32 Firms**