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경영학석사학위논문

Does Other Comprehensive Income Affect Financial Reporting Opacity and Crash Risk?

기타포괄손익이 재무보고의 불투명성과
주가급락에 영향을 미치는가

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서울대학교 대학원
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이 논문을 경영학 석사학위논문으로 제출함

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ABSTRACT

Does Other Comprehensive Income Affect Financial Reporting Opacity and Crash Risk?

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This study examines the financial reporting opacity and the crash risk of a stock price that is relating to Other Comprehensive Income (OCI) and its components. Using the three-year moving sum of absolute value of discretionary accruals as a measure of financial reporting opacity, I find out that negatively high amount of total OCI reported at the current period increases the financial reporting opacity, driven by the account of adjustment of foreign currency translation. The positively high amount of OCI also increases financial reporting opacity, but the degree of the effect is smaller than the subsample of the negative amount of total OCI. The effect of the positive amount of total OCI is driven by adjustment of pension related issues. A considerable value of total OCI decreases the crash risk of stock return,

regardless of the sign of the total amount of OCI. This phenomenon is because investors seem to react to the positive amount of OCI more sensitive, or the investors might partially fixate on the positive number so that they interpret the positive number of OCI as good news and the effect of OCI on opacity does not go directly to stock market, rather go through another factor.

Keywords: Other Comprehensive Income, Crash Risk, Earnings Management,
Financial Reporting Opacity

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1. INTRODUCTION

After the passage of Statement of Financial Accounting Standards No. 130, "Reporting Comprehensive Income" (recently codified as Accounting Standards Codification (ASC) 220-10-10-1, hereafter SFAS 130) financial statement preparers who use United States Generally Accepted Accounting Principle (US GAAP) should report Comprehensive Income in addition to Net Income. The components that provide the information which is incremental to net income arriving at comprehensive income should also be reported in the body of financial statements. According to SFAS 130, Comprehensive Income is defined as "A measure of all changes in equity of an entity that result from recognized transactions and other economic events of the period other than transactions with owners in their capacity as owners." Arriving comprehensive income from net income, the gap between the earning numbers is called, "Other Comprehensive Income (OCI)."

Financial statement users and preparers commonly concern income numbers on financial statements to measure the performance of manager of a firm and to evaluate how much the firm successfully operates for the specific period. In this study, I examined the effect of information of Other Comprehensive Income on the financial reporting transparency of reporting entity and tested its consequences in the stock market using a measure of crash risk of a stock price.

For the annual performance of a firm, the bottom line number in the income statement is the most highlighted number that managers and investors put the highest priority to analyze the company. No one may deny the greatest importance of the bottom line number, but to the what extent is the earning number inclusive to measure the value of a firm and performance of managers?

There has been long discussions and debates about how much inclusive the earnings number should be. Some researchers support the concept of all-inclusive (comprehensive) income arguing that comprehensive income concept should be consistent with the well-established valuation theory and is less subject to manipulation because the income numbers are less likely to have the shelter of some income numbers. For example, when researchers consider the Clean Surplus Relationship, which shows the relationship between the book value of equity as Ohlson (1995) presents, the following three are mainly considered: Earnings for the fiscal period, Dividend paid in that period, and Comprehensive Income (CI) rather than just Net Income (NI). If investors or researchers consider Net Income rather than Comprehensive Income, some items that bypass the Income Statement cause dissatisfaction of the relationship. If this is the case, users of financial statement information should put the majority of concern on the Dirty Surplus Relationship (DSR), and this concept would be the major issue when value a firm. On the other hand, some researchers oppose the comprehensive income concept since the some items consisting compressive income is transitory in nature, and essentially less accord to the actual performance of a manager of a firm, and the

items may be effectively used by managers to exclude bad things from net income.

Some of the prior studies related to the comprehensive income issue show the two opposite position on the all-inclusive income. Hirst and Hopkins (1998) find that disclosure of comprehensive income components helps analysts when they estimate the firm value. However, Dhaliwal et al. (1999) find that comprehensive income does not add value to the predictability of future cash flow of a firm, rather net income is the most relevant measure, concluding comprehensive income does not take a critical role in firm valuation.

Even though these debates are going on, Financial Accounting Standard Board (FASB) decided to issue SFAS 130 that requires comprehensive income and the concrete numbers from net income arriving the comprehensive income be reported in the body of financial statements rather than footnotes to make investors easily access to this information. Based on this determination by FASB, comprehensive income and the items that are consisting the numbers other than net income components (OCI) has, at least, meaning about firm valuation and the manager's performance. The Recent Movement of International Accounting Standards Board (IASB) that requires reporting entities to report comprehensive income only as one statement of comprehensive income or consecutive statement right after the net income arriving at comprehensive income prohibiting firms to report comprehensive income in the statement of change in stockholders equity. FASB also issues Accounting Standards Updates 2011-05 at the end of 2011, and also prohibits the reporting comprehensive income in the body of a statement of change

in stockholders equity.

Coming from the back to the front, the comprehensive income information becomes easier accessible number by investors, and managers may concern the comprehensive income more than before. Even though the great part of the comprehensive income is from net income, the OCI items may take a role in providing additional information to the investors and may change their decision whether they invest or not. Since the OCI components are finally become a part of the body of financial statement by issuing SFAS 130, firms may effectively use the OCI items to deliver information in addition to traditional net income.

OCI items consists of four major part: adjustment for unrealized gains and losses on available-for-sales (AFS) securities, adjustment for cash-flow hedges which is effective portion that offset the underlying hedged instrument gains or losses effectively, adjustments that is related to pension, and foreign currency translation adjustment that can arise when functional currency and reporting currency of a parent is different. Appendix presents the detailed definition of the components of OCI. These components do not affect net income amount since these are below the line numbers; reclassification adjustment process ultimately enables these items to become a part of net income in the future. When OCI items arise, these bypass net income, but goes to equity section and accumulated in a separate account, called "Accumulated Other Comprehensive Income, AOCI", and become a part of equity. AOCI is an equity, but this account represents just "adjustment" amount for certain items and not realized, so firms can not distribute

the amount of AOCI as a dividend. AOCI is a part of equity but is not a part of the dividend. When AOCI reclassified to the items of net income, then the amount of reclassified into net income finally become a source of dividend, and investors can get their money from the retained earnings accumulated during that reporting period. OCI items is not a part of the net income of the reporting period, but can be a part of net income after the reclassification. This process makes OCI as "Quasi-Current Earnings."

Since FASB issued SFAS 130, the role of OCI in financial reporting quality and the stock market has attracted the interests. Rees and Shane (2012) introduces growing number of researchers on the issues on comprehensive income and OCI, and the major part of the research is about the usefulness of OCI components (Dhaliwal et al. 1999, Barton et al. 2010, Pronobis and Zulch 2010, Chambers et al. 2007, and Campbell 2010), and prominence of OCI presentation (Hirst and Hopkins 1998, Maines and Mcdaniel 2000, Bamber et al. 2010).

With these research, some of the researchers raise a question about the possibility of using OCI items as a tool of earnings management. Rees and Shane (2012) points out that most of OCI items does not compose of the performance of core operation, and degree of persistence of them are low. Even though Rees and Shane (2012) provides that many items of OCI not be perfectly under management control regarding value determination process except items related to pension issues, at least, the timing of the recognition or derecognition of the OCI item is under management control. Using this attributes, managers may use the OCI items

as a tool of dumping ground that stores news of a firm. Recent newspaper article titled "Accounting 'Dumping Ground' Headed For Clean Up," published in Wall Street Journal in 2014, points out as follows:

"Other Comprehensive Income, which includes items initially excluded from net income in a particular accounting period, has gotten a reputation as a sort of dumping ground where companies are allowed store information that would be too damaging to earnings."

Also, the article emphasizes that OCI may distort valuation process that is commonly used by investors. Also, Yen et al. (2007) report that around 70 percent out of all letters commenting on the exposure draft of SFAS 130 pointed out the lack of clarity when comprehensive income is defined. The majority of the comment commonly says, "suggested that comprehensive income not is a good performance measure because it includes items for which the earnings process is not complete and reflects events outside of management's control" (Yen et al. 2007, 63). Also, Bamber et al. (2010) show that managers are likely to believe that Comprehensive Income (which includes OCI) affect their share based incentive and job security. If these are the case, the firms reporting OCI items may have an incentive to adjust to the extent the firm can give a good signal to the investors within permitted method by GAAP, and finally, this action may affect the transparency of financial reporting by the firm.

Transparent financial reporting helps investors decide whether they invest in the firm or not. If the financial reporting is opaque, a firm may disguise the performance of a firm, and finally, the information of financial statement may mislead the investors. Transparency of financial reporting is ultimately linked stock market and stock price. Therefore, the connection between financial reporting opacity and stock market reaction should be closely looked and researched to understand the role of income numbers. OCI as a center of this study will make a wave on financial reporting transparency, since its transitory and remeasurement nature, investors better think about the possibility of managing OCI amount of each item using manager's discretion. This might affect financial reporting opacity, resulting the crash risk of a stock return of a firm. Hutton et al. (2009) conclude that firms with the opaque financial reporting show higher crash risk of a stock market of a firm, suggesting that firms with the lower transparency of financial reporting are vulnerable to stock price crashes. Defond et al. (2015) also provide supporting evidence that more transparent financial reporting contributes to reducing crash risk of a stock return of a firm.

As I reviewed the issue of OCI, the financial reporting opacity, and the crash risk of a stock return of a firm, the three components will be connected in this study, and find how the three are related to each other.

Firstly, I examined whether the OCI information affects firms' financial reporting opacity. As most of the comment concerned, the effect on opacity issues of OCI naturally arises. The main idea of this study is not to measure the

opaqueness of OCI itself, rather to measure the effect of OCI information on the firms overall financial reporting transparency, financial reporting opaqueness measure used in variety studies is also used to measure the degree of transparency of a firm's financial reporting, and analyzed the relationship between the opaqueness and OCI information. I find that greater number in both negative and positive amount of OCI does increase the opaqueness of firms' financial reporting, but the increase effect is higher when the firm reports the negative amount of OCI than the positive amount of OCI. A Large amount of OCI information does affect on financial reporting transparency adversely, and negative amount affects much more than positive. Firms which has bad news that may decrease its net income does have the incentive to hide the bad news, and using accounting techniques within conformity with GAAP firm may dump the bad news into OCI. This technique is indirectly measured as three-year moving the sum of absolute discretionary accruals because the action that hides bad news most likely to use accrual managements as well.

Hutton et al. (2009) find that opaque financial reporting firms show higher crash risk. Since the higher amount of OCI both negative and positive amount increase the firm's opacity of financial reporting, crash risk, and OCI information may be linked somehow. To consistent with the result by Hutton et al. (2009), OCI information does increase crash risk when the amount of OCI in both negative and positive increases. The result of examination says that the negative partition of OCI amount is consistent with the expectation that firms reporting the large amount of

OCI show higher crash risk, but the even large positive amount of OCI is reported, crash risk does not increase, rather decrease. This is mainly driven by adjustment of available-for-sale securities, an adjustment that related to pension, and adjustment of foreign currency translation. This test provides the evidence that investors might not see through the real economics of OCI items, rather consider the amount itself that greater amount of reported numbers acts in a good way for a firm, since the positive amount of OCI will be realized as positive earnings as a part of net income in the future through reclassification.

Overall, the result of this study provides evidence that OCI and its components affect the firms' financial reporting transparency and the firms' crash risk. The financial opacity and the crash risk are expected negatively associated with any level of OCI as Hutton et al. (2009) expected, the positive amount of OCI does act as useful information to a firms and investors in that crash risk of a stock return of a firm decreased.

The evidence of the two above supports the prior findings that OCI information matter when managers and investors value a firm, and relevant information when they decide the action using financial statement. Also, the evidence partially supports that investors fixate the positive numbers in performance statement. Even though the OCI numbers in positive amount does increase opaqueness of firms' financial reporting, investors do react to the large amount of OCI as good information, resulting decrease crash risk. Further research may prove the functional fixation phenomenon of investors.

This study is important in that this research is the first study that connects OCI information, financial reporting opacity and crash risk of a stock return. This three pieces of information represent financial information *per se*, the effect of the financial information on financial reporting quality, and the effect of the financial reporting quality on the stock market. Therefore, this study primarily shows the relationship between the OCI number, financial reporting, and the consequences in the capital market. Also, this research provides the support evidence of emphasizing the importance of OCI, which is consistent with the implication of the result of prior research on OCI. This study may help standard-setters to provide the additional evidence that supports the application of Fair-value Accounting. Fair-value accounting inevitably focuses OCI items, because the amount of fair value adjustment does not actually realized, and most the adjustment amount is buried in OCI items. If OCI items are relevant and useful to investors, fair-value accounting would be supported. Also, this research provides the linkage between OCI, financial reporting opacity, and crash risk of stock return, adding another link between financial reporting in a perspective of financial statement preparers and the stock market in a perspective of investors. The financial reporting opacity does affect stock market as Hutton et al. (2009) say, but the effect opacity that can explain by OCI may be different from the one that showed by net income numbers, and it is different as the result of study shows. Therefore, the role of OCI is similar to net income numbers in that the number is from firms' operations and ultimately become a source of dividend, but different attributes between OCI and net income

makes the different result to the stock market regarding crash risk. Standard setters might need the supporting evidence of the usefulness of OCI in various perspectives, and this can be the one that provides the usefulness of OCI information. Also, standard setters may exploit the different characteristics of each OCI item on financial reporting opacity and crash risk when they revise financial accounting standards that are related to OCI or CI disclosure.

This study is the first study that looks into the linkage between financial reporting opacity and crash risk of a stock return based on OCI reporting. Also, this study investigates whether OCI information affects financial reporting transparency that affects the stock market, and how investors react to the OCI information directly. I examined the effect of reporting OCI is analyzed in the perspective of both managers and investors. Overall, this study provides the evidence that the effect of OCI information is different as firm characteristics differ and the supporting evidence for the usefulness of OCI information. I expect this study will take a role in understanding characteristics of OCI and suggests the idea that investors may have a different interpretation on same financial statement information.

The next section provides a literature review and hypothesis development about OCI, financial reporting opacity, and crash risk. Section 3 outlines the sample selection process and Section 4 shows the research design of each hypothesis. Section 5 reports the result of the study, and Section 6 presents an additional test for the main analysis, and Section 7 concludes.

2. BACKGROUND AND HYPOTHESIS DEVELOPMENT

Traditional income numbers are still useful, and investors easily understand the characteristics of the number, but after the passage of SFAS 130, growing number of studies shows interests in comprehensive income that includes the "by-pass" items. SFAS 130 has stimulated researchers to look at the OCI items, and growing number of studies on this issues discovered the value relevance of OCI.

Dhaliwal et al. (1999) examined forecasting ability of comprehensive income and the components of OCI before the passage of SFAS 130. They find that net income numbers show higher forecasting ability for post year cash flows from operations and net income significantly show the better performance than comprehensive income does. Based on this study, OCI does not provide useful information, rather net income numbers itself takes a sufficient role that provides useful information about a firm's performance. However, after the application of SFAS 130, many researchers report that comprehensive income that includes OCI provides useful information to investors. Biddle and Choi (2006) reveal that comprehensive income defined by SFAS 130 dominates both traditional net income numbers and the broadest net income numbers defined as changes in stockholders' equity net dividends in explaining equity returns. Also, Chambers et al. (2007) provide evidence that OCI information is priced on a dollar-for-dollar basis after the application of SFAS 130 in contrast to before the application of

SFAS 130. Hodder et al. (2006) examine the volatility and risk measure using net income numbers and comprehensive income numbers of financial firms in the United States, and they report that comprehensive income with fair-value adjusted amount shows the greatest volatility and is positively associated with risk measure. In sum, OCI does not provide a dominant effect on the predictability of income compared to net income numbers, but it is still value-relevant and affects manager's attitude to financial reporting and investors' reaction to the OCI information in the stock market.

Since OCI amount is also value-relevant, and managers and investors also concern this number, OCI may affect the financial reporting quality and investors reaction in any way. The first hypothesis is about the financial reporting quality, which is from the manager's perspective. As Bamber et al. (2010) reports, managers concern the location of comprehensive income reporting. If managers do not concern this amount that much, then the manager would not have shown much concern about the location because investors may use or may not use the OCI information regardless the location of the OCI information. However, managers concern about the reporting location of comprehensive income and the items between net income and comprehensive income, which is OCI, and this means that reporting OCI item near net income number would affect investors and board of directors, and therefore managers who are closely related to share-based incentives and lower job securities reluctant to report comprehensive income numbers near net income.

Managers think users of financial statement concern the OCI numbers, and then it is likely to manage the OCI numbers as well. Making the OCI item, large positive amount makes comprehensive income look much better, and investors may think the performance of a manager is good. Therefore, managers have the incentive to manage OCI item to make significant positive amount if possible. On the other hand, if the manager has bad news that should reflect net income item, then the manager would have the incentive to hide the bad news, resulting not affecting the net income. Managers may use OCI items as a tool of the shelter of bad news since the items are not included in current earnings. For example, If a firm has equity securities that are classified as trading securities, the securities should be measured at fair value at the end of fiscal year. If the manager expects that the price of security drops down, and expect large losses would be recognized in current earnings, then manager would change the classification of the security from trading to available-for-sale security, which is also should be measured at fair value, but the change in fair value is not recognized in net income, rather OCI. Using this kind of strategy, managers may make the OCI amount large negative. OCI may take a role of dumping ground of bad news. If this is the case, it is easy to expect that if the amount of negative OCI gets larger, the financial reporting opacity also increases since the negative OCI amount would have bad news of the current period, but not reflected in net income, and this may be symptomatic of earnings management. Also, the positive OCI amount may affect the financial reporting opacity adversely, since the large amount of OCI might be evidence that

company stores too much good news in the OCI item and will use the accumulated unrealized gain later when the firm faces the hardship regarding net income. Nevertheless, I expect that the effect of OCI that increases financial reporting opacity will prevail when the OCI amount is reported at the negative amount. This is because bad news makes the adverse effect much more than good news. Firms usually want to hide bad news than good news. If the bad news were not hidden and reflected net income properly, then the current earnings would have been decreased, providing bad news to investors and board of directors who evaluate the performance of a manager. On the other hand, positive OCI presents accumulated good news since the positive OCI will ultimately become the gain in the future through reclassification adjustment process. If it is possible to reclassify the positive OCI amount, then current earnings will become better, and the manager will be happy somehow. However, GAAP does not allow the reclassification process anytime that managers want; rather conditions should be met if a manager wants to reclassify the OCI amount. Therefore, the effect of increasing financial reporting opacity will differ before and after the zero value, resulting asymmetric movement. Therefore, H1 can be set as follows:

H1: Firms reporting the negative value of Other Comprehensive Income shows higher financial reporting opacity, and increase effect is stronger for the firm than firms reporting the positive value of OCI.

The crash risk is the frequency of extreme negative stock returns and is one of the significant things that investors consider. The crash of stock price happens because of several reasons. Black (1976) and Christie (1982) point out that when share price decreases, financial leverage increased, resulting high return volatility. Pindyck (1984), French et al. (1987) and Campbell and Hentschel (1992) suggest that market volatility increases when a large amount of information comes into the capital market. If the information is classified as "bad news" to investors, the magnitude of adverse effect on a stock return is amplified, resulting negative skewness on stock return. Both explanations are plausible, but Blanchard and Watson (1982) propose another point of view on crash risk. They suggest that the crash of stock price happens when "bubbled" stock is popped out. The stock price of a firm may be overvalued in some reason during the particular period, and also, may pop out because of bad news flows to the public and recognized in the capital market. This "pop-out" phenomenon may happen when managers have hidden bad news until it is revealed to stock market somehow. Jin and Myers (2006) suggest that high opacity in financial reporting provides an incentive to managers to hide the firm-specific bad news from the public. However, the bad news can not be hidden forever, and managers are only able to suppress it up to some point. If the specific time comes that the managers can not help revealing the bad news, it flows to the public at once, and the stock price of a firm finally popped out resulting stock price crash. Hutton et al. (2009) show the relationship between the financial reporting opacity and the crash risk and find out that firms with opaque financial

reporting are more prone to stock price crashes. This result is consistent with the theory suggested by Jin and Myers (2006).

OCI accounts are inevitably related to fair value accounting, and the accounts are essentially affected by subjective evaluation based on fair value. A manager may use the OCI components effectively to hide bad market situation that affects the firm negatively, and utilizes reclassification adjustment process when the market situation comes back to normal or become positive to the firm. OCI accounts, specifically negative amount of the account, may be a significant factor that makes the financial reporting opaque, resulting in the increase in the crash risk of a stock price of a firm. Therefore, OCI may affect firms' financial reporting opacity, and the opaque financial reporting is closely linked with crash risk of the stock price of a firm.

When managers have an incentive to hide bad news for the firm, OCI components may be used as a dumping ground since the amount recognized in OCI is not a part of the profit and loss of the fiscal period. If this is the case, the OCI components that are reported in the current period is likely to have a negative amount. A bad news for a firm tends to make the bottom line number lower. However if the bad news can be recognized in OCI components, the bad news can be hidden and become a part of bottom line number when the bad news turns into good news, which makes Net Income of the firm higher through reclassification adjustment. Throughout this process, financial reporting opacity is affected. The negative amount of total OCI reported in the current period may cause a high

degree of financial reporting opacity.

As proved by prior research, the crash risk of the firm is affected by financial reporting opacity and these two have the positive relationship. The direct relationship between the amount of OCI reported in current fiscal period has not been proved yet. Based on the rationale that mentioned above, a negative amount of OCI account may increase the financial reporting opacity, resulting in higher crash risk of a stock return. A positive amount of OCI reported in the current period represents the future possible net income. Even though the OCI amount is not recognized in the current period, the amount will be a part of net income, and finally goes to the source of the dividend. The positive amount of OCI is a "good news" for a firm, and the good news may reduce the crash risk of a stock return.

Therefore, the amount of OCI and crash risk of a stock return will have negative association, and H2 can be set as follows:

H2: Firms reporting a higher amount of Other Comprehensive Income item experiences the lower crash risk of stock return of the firm.

[INSERT FIGURE 1 ABOUT HERE]

3. SAMPLE SELECTION AND VARIABLES

3.1 Sample Selection

To construct the sample, I combine firms' weekly stock return data obtained from Center for Research in Security Prices (CRSP) with annual financial data from COMPUSTAT. Weekly stock returns are assigned to each firms' fiscal year to match the period of its reported financial data. CRSP does not provide a weekly return, rather daily return or monthly return. Therefore weekly return is calculated by compounding daily return from the beginning of the week to the end of the week. The sample period begins with the fiscal year 2004, which is the first year that COMPUSTAT provides the full information about OCI including the reported amount of each component of OCI. Of course, the reporting of OCI item in the body of financial statement starts from the fiscal year of 1998, COMPUSTAT provides comprehensive income information from 2001, and fully available from 2004. It is possible that OCI and its component amount can be inferred using the data other than OCI that COMPUSTAT provides. However, I do not use the inferred numbers because Chambers et al. (2007) report that the inferred number ('as-if' number) is not relevant when researcher study about OCI since there has been measurement error when 'as-if' data is used. The final period of the sample is the fiscal year of 2014, which is the most recent fiscal year end that COMPUSTAT provides the complete set of financial data.

Sample development begins with all firm-years on COMPUSTAT between

2004 and 2014, and this consists of 122,721 firm-years. I exclude low-priced stocks that show the average price for the year is less than \$2.50, and firm-years that have less than 26 weeks of stock-return data, excluding 60,774 firm-years. This process follows Hutton et al. (2009). Firm-years with insufficient financial data to calculate dependent and independent variables (5,363 firm-years) and firm-years with insufficient financial data to calculate control variables (29,303 firm-years) are also excluded, remaining 27,281 firm-years.

The sample includes 49 of the 49 Fama-French industry definitions, and the sample is approximately evenly distributed over the sample period. Table 1, Panel A shows the sample development process, Table 1, Panel B reports sample classification based on Fama and French industry classification, and Table 1, Panel C presents yearly sample distribution.

[INSERT TABLE 1 ABOUT HERE]

3.2 Variables

Other Comprehensive Income and Its Components

The variables of interest are the amount of Other Comprehensive Income and its component. From 2004, COMPUSTAT provides the amount that a firm reported as a component of Other Comprehensive Income for the period of the fiscal year, and this amount is the number that a firm reported in the 10-K report. As Chambers et al. (2007) point out that "as-reported" data is relevant and has less measurement

error than "as-if" data that is calculated from aggregated amount of comprehensive income and other information provided in footnotes of the 10-K report. COMPUSTAT data from 2004 provides "as-reported" data, and this value is used in the analysis throughout this study.

Adjustment for fair value changes on available-for-sale securities disclosed as a part of Other Comprehensive Income reported in a current fiscal year is lettered as "AFS." This variable is named as "CISECGL" by COMPUSTAT, and the value is deflated by total asset measured at the beginning of the fiscal year.

The effective portion of gain or losses on derivative instruments that qualify as cash-flow hedges is lettered as "HDG." This variable is named as "CIDERGL" by COMPUSTAT, and the value is deflated by total asset measured at the beginning of the fiscal year.

Adjustment for pension and post-retirement plans is lettered as "PEN." Before the passage of SFAS 158, which is applied after the fiscal year ending after December 15, 2006, this amount represents minimum pension adjustment reported after net income to arrive at net comprehensive income or loss. After the SFAS 158 adoption, this variable represents the prior year service cost and gains or losses on pension and post-retirement plans. This variable is named as "CIPEN" by COMPUSTAT, and the value is deflated by total asset measured at the beginning of the fiscal year.

Adjustment for foreign currency translation reported in Other Comprehensive Income section is lettered as "FCT." This variable is named as "CICURR" by

COMPUSTAT, and the value is deflated by total asset measured at the beginning of the fiscal year.

The total amount of Other Comprehensive Income disclosed in a current fiscal year equates the sum of AFS, HDG, PEN, and FCT, and this value is lettered as "TOCI" in this study.

To examine the effect of the OCI information on financial reporting opacity and crash risk, I look at the coefficient ahead of TOCI. In addition to the effect of the total amount of OCI, TOCI is replaced by the sum of each component, and the effect of each component on financial reporting opacity and crash risk is also examined.

Measuring Opacity of Financial Reporting

Financial reporting opacity may be defined in a various way. Among the various measure, this study uses the opacity measure that is developed and used in Hutton et al. (2009).

Firm performance can be measured by either net income or comprehensive income. However, conventionally, net income is used in most cases. Therefore, managers may have the incentive to manage their earnings using various techniques conforming GAAP. Departure from the GAAP is not allowed and captured by auditors; managers are less likely to have the incentive to manage their earnings with violation of GAAP. Instead, to increase or decrease their earnings within GAAP, managers can use accruals or deferrals effectively, since the

financial accounting is under accrual accounting system.

Accruals, of course, is not always bad items. Under accrual accounting system, accruals and deferrals are essential. However, if some accruals or deferrals deviate from the normal level that is expected in regular operation, then the investors or the user of financial statements can rationally doubt that the deviation may be a part of the evidence of accrual earnings management by the managers. This deviation part is known as "discretionary accruals."

Accrual earnings management by managers may make the financial reporting of a firm more opaque since the earnings itself does not provide the true value of a firm, but managed number in the financial statement. As mentioned earlier, managers also consider comprehensive income as their performance measure, and sometimes they think that investors may concern the comprehensive income numbers when the investors value a firm (Bamber et al. 2010). OCI itself does not affect the net income numbers, but if a firm tends to manage their accrual accounts to make-up their current earnings, it is likely to dump the bad news that would have been in the net income item to OCI accounts so that the bad news does not affect current period of net income anymore.

The Sum of accruals over the life of a firm must be zero since the accruals eventually are realized as inflow or outflow of cash. Like accruals, the sum of OCI over the life of a firm (that equates Accumulated Other Comprehensive Income reported in the equity section of the balance sheet) should be zero since the AOCI amount is ultimately realized and reclassified to net income item. This similar

characteristic of accruals and OCI make the timing issues of recognition, and accrual earnings management and earnings management using OCI may have a connection.

Therefore, financial reporting opacity measure that incorporate discretionary accruals does not necessarily irrelevant, rather a measure can show the propensity of managers that manages earnings. In various researches, discretionary accruals have been used as a proxy for earnings management (Dechow and Schrand 2004).

To measure the opacity of financial reporting, firstly I divide the accruals into normal and discretionary accruals. I employed the modified Jones model (Dechow et al. 1995). Especially, I estimate the following cross-sectional regression equation using the firms in each Fama and French industry for each fiscal year period between 2004 and 2014. This process is done by Hutton et al. (2009), and I follow the methodology:

$$\frac{TOTACC_{i,t}}{AT_{i,t-1}} = \alpha_0 \frac{1}{AT_{i,t-1}} + \beta_1 \frac{\Delta SALE_{i,t}}{AT_{i,t-1}} + \beta_2 \frac{PPE_{i,t}}{AT_{i,t-1}} + \epsilon_{i,t} \quad (1)$$

where $TOTACC_{j,t}$ denotes total accruals for firm i during fiscal year t, $AT_{j,t-1}$ denotes total assets for firm i at the end of fiscal year t, $\Delta SALE_{j,t}$ denotes a change in sales for firm i in year t, and $PPE_{j,t}$ denotes property, plant, and equipment for firm i at the end of fiscal year t. $TOTACC_{j,t}$ equals income before extraordinary items("IBC" on COMPUSTAT) less cash flow from operating

activities adjusted for extraordinary items and discontinued operations ("OANCF - XIDOC" in COMPUSTAT). Discretionary accruals which are a fraction of total assets measured at the beginning of the fiscal year for firm i during fiscal year t ($DA_{i,t}$) are then calculated using the parameter estimates from equation (1):

$$DA_{i,t} = \frac{TOTACC_{i,t}}{AT_{i,t-1}} - \left(\hat{\alpha}_0 \frac{1}{AT_{i,t-1}} + \hat{\beta}_1 \frac{\Delta SALE_{i,t} - \Delta RECT_{i,t}}{AT_{i,t-1}} + \hat{\beta}_2 \frac{PPE_{i,t}}{AT_{i,t-1}} \right) \quad (2)$$

where $\Delta RECT_{i,t}$ denotes the change of total receivables, and hats over the coefficients denote estimated values from regression (1). Dechow et al. (1996) modified the model that developed by Jones (1991) adding $\Delta RECT_{i,t}$ to capture the extent to which a change in sales is due to an aggressive recognition of questionable sales (Hutton et al. 2009).

Hutton et al. (2009) highlighted that Dechow et al. (1996) report that firms that manage their earnings from one to three years before being detected and overstated accruals of these firms typically reverse fairly quickly, with negative discretionary accruals following the prior positive ones in the years immediately following the periods of earnings management. Based on this rationale, Hutton et al. (2009) developed the financial reporting opacity measure as three-year moving sum of the absolute value of annual discretionary accruals as follows:

$$OPAQUE_{i,t} = abs(DA_{i,t-1}) + abs(DA_{i,t-2}) + abs(DA_{i,t-3}) \quad (3)$$

where $abs(DA_{i,t})$ is the absolute value of discretionary accrual calculated by equation (2) for firm i in fiscal year t .

To justify that the measure above represents the opacity of firm's financial reporting, Hutton et al. (2009) tested the association between the measure above and firms' restatement of an financial statement, and shows the positive association. Therefore, the interpretation of the variable above is that large number of $OPAQUE_{i,t}$ represents the lesser transparent firm in financial reporting.

Measuring Crash Risk

A crash risk of a stock return of a firm may be measured in many ways. Among various measures, this study uses the measure that suggested by Chen et al. (2001). The measure used in this study is lettered "*NCSKEW*" meaning "negative coefficient of skewness" as Chen et al. (2001) named. This variable is based on skewness that is the third moment scaled by the second moment and calculated as following:

$$NCSKEW_{i,t} = - \frac{\left[n(n-1)^{\frac{3}{2}} \sum W_{i,w}^3 \right]}{\left[(n-1)(n-2) \left(\sum W_{i,w}^2 \right)^{\frac{3}{2}} \right]} \quad (4)$$

where n is the number of observations on firm-specific weekly returns during the fiscal year t . Following Hutton et al. (2009), $W_{i,w}$ is defined as firm-specific

weekly return to firm i during week w , which is calculated as the natural logarithm of one plus the residual return of following expanded index model regression based on Dimson (1979) and Jin and Myers (2006):

$$r_{i,w} = \alpha_i + \beta_{1,i}r_{m,w-1} + \beta_{2,i}r_{m,w} + \beta_{3,i}r_{m,w+1} + \beta_{4,i}r_{i,w-1} + \beta_{5,i}r_{i,w} + \beta_{6,i}r_{i,w+1} + \epsilon_{i,t} \quad (5)$$

where $r_{i,w}$ is the return on stock i in week w , $r_{m,w}$ is the return on the U.S. value-weighted market index provided by CRSP, and $r_{j,w}$ is the Fama and French value-weighted market index.

4. RESEARCH DESIGN

4.1 Other Comprehensive Income and Financial Reporting Opacity

To test H1, which concerns the association between OCI information and financial reporting opacity, I regress the financial reporting opacity measure on total amount of OCI of current fiscal year, along with a set of control variables:

$$OPAQUE_{i,t} = \alpha_0 + \alpha_1 TOCI_{i,t} + \alpha_2 NI_{i,t} + \alpha_3 CFO_{i,t} + \alpha_4 SIZE_{i,t} + \alpha_5 LEV_{i,t} + \alpha_6 SALE_{i,t} + \epsilon_{i,t} \quad (6)$$

$NI_{i,t}$, $CFO_{i,t}$, $SIZE_{i,t}$, $LEV_{i,t}$, and $SALE_{i,t}$ are used as control variables, and detailed definition of these variables are in Appendix.

Also, to find out what component of OCI drives the effect of total amount of OCI on financial reporting opacity, variable $TOCI_{i,t}$ is replaced by sum of components of OCI and equation (6) becomes as follows:

$$\begin{aligned}
 OPAQUE_{i,t} = & \alpha_0 + \alpha_1 AFS_{i,t} + \alpha_2 HDG_{i,t} + \alpha_3 PEN_{i,t} + \alpha_4 FCT_{i,t} \\
 & + \alpha_5 NI_{i,t} + \alpha_6 CFO_{i,t} + \alpha_7 SIZE_{i,t} + \alpha_8 LEV_{i,t} \\
 & + \alpha_9 SALE_{i,t} + \epsilon_{i,t}
 \end{aligned} \tag{7}$$

The variables of interest are the coefficient of the variable $TOCI_{i,t}(\alpha_1)$ in equation (6), and the coefficient of the variable $AFS_{i,t}(\alpha_1)$, $HDG_{i,t}(\alpha_2)$, $PEN_{i,t}(\alpha_3)$, and $FCT_{i,t}(\alpha_4)$. These variables of interest capture the incremental effect of the total amount of OCI or its components of the opacity of financial reporting. A positive (negative) coefficient of these listed represents that financial reporting opacity increases (decreases) as the amount of OCI increases. In other words, transparency of financial reporting of a firm decreases (increases) as OCI amount increases (decreases).

4.2 Other Comprehensive Income and Crash Risk

To test H2, which concerns the association between OCI information and crash risk of a stock return of a firm, I regress the crash risk measure on total amount of

OCI of current fiscal year, along with a set of control variables:

$$\begin{aligned}
NCSKEW_{i,t} = & \mu_0 + \mu_1 TOCI_{i,t} \\
& + \mu_2 DTURN_{i,t-1} + \mu_3 NCSKEW_{i,t-1} + \mu_4 SIGMA_{i,t-1} \\
& + \mu_5 PCTRET_{i,t-1} + \mu_6 SIZE_{i,t-1} + \mu_7 MB_{i,t-1} + \mu_8 LEV_{i,t-1} \\
& + \mu_9 ROA_{i,t-1} + \mu_{10} ABSDA_{i,t-1} + \epsilon_{i,t}
\end{aligned} \tag{8}$$

Following Chen et al. (2001) and Defond et al. (2015), $DTURN_{i,t-1}$, $NCSKEW_{i,t-1}$, $SIGMA_{i,t-1}$, $PCTRET_{i,t-1}$, $SIZE_{i,t-1}$, $MB_{i,t-1}$, $LEV_{i,t-1}$, $ROA_{i,t-1}$, and $ABSDA_{i,t-1}$ are used as control variables and detailed definition of these variables are in Appendix.

Also, to find out what component of OCI drives the effect of total amount of OCI on crash risk of a stock return of a firm, variable $TOCI_{i,t}$ is replaced by sum of components of OCI and equation (6) becomes as follows:

$$\begin{aligned}
NCSKEW_{i,t} = & \mu_0 + \mu_1 AFS_{i,t} + \mu_2 HDG_{i,t} + \mu_3 PEN_{i,t} + \mu_4 FCT_{i,t} \\
& + \mu_5 DTURN_{i,t-1} + \mu_6 NCSKEW_{i,t-1} + \mu_7 SIGMA_{i,t-1} \\
& + \mu_8 PCTRET_{i,t-1} + \mu_9 SIZE_{i,t-1} + \mu_{10} MB_{i,t-1} + \mu_{11} LEV_{i,t-1} \\
& + \mu_{12} ROA_{i,t-1} + \mu_{13} ABSDA_{i,t-1} + \epsilon_{i,t}
\end{aligned} \tag{9}$$

The variables of interest is the coefficient on the variable $TOCI_{i,t}(\mu_1)$ in equation (8), and the coefficient on the variable $AFS_{i,t}(\mu_1)$, $HDG_{i,t}(\mu_2)$, $PEN_{i,t}(\mu_3)$, and $FCT_{i,t}(\mu_4)$. These variables of interest capture the incremental effect of the total amount of OCI or its components on a crash risk of a stock return of a

firm. A negative (positive) coefficient of these listed represents that crash risk decreases (increases) as the amount of OCI increases.

5. RESULTS

5.1 Descriptive Statistics

Table 2 reports descriptive statistics for the firm-year observations for the years from 2004 to 2014. The total number of observations of full sample is 27,281 firm-years. The mean value of total OCI is around zero, and the components of OCI is also around zero. Most of the firms regardless reporting OCI or not presents zero value of OCI accounts on average. The median value of total OCI and its component commonly zero, and AFS, HDG, PEN, and FCT presents zero value both first quartile and third quartile. The "%non-zero" column shows that 80 percent of sample firms report nonzero total OCI account, which means 80 firms out of 100 firms report at least one component of OCI item. 34 percent of samples report AFS item, 33 percent of samples report HDG item, 34 percent of sample report PEN, and 55 percent of samples report FCT item, which is above the half. The data distribution of AFS and HDG is around symmetric since the absolute value of P1 and P99 value quite similar. Among the OCI components, FCT is the most frequently reported item, and this means that around half of sample has, at least, one or more foreign business units or subsidiaries. OPAQUE has meant the

value of 1.602, but the median value is below the value, which is 0.289. The distribution of OPAQUE is somewhat skewed to the large value, confirming Q3 and the P99 number is quite a large number compared to the median. NCSKEW shows near symmetric distributions since mean and median is very close and the absolute value of Q1 and Q3 is similar, and P1 and P99 are also similar. ABSDA is somewhat skewed to large numbers since the mean value is 0.575 and the median value is 0.069. This result may mean that firms tend to have some amount of discretionary accruals.

[INSERT TABLE 2 ABOUT HERE]

Table 3 reports correlations between independent and dependent variables. Pearson correlations are above the diagonal and Spearman correlations are below the diagonal. For univariate analysis for the H1, TOCI and OPAQUE has a significant negative association (-0.025) in Pearson correlation, and this is confirmed again in univariate analysis in Section 5.2. Spearman correlation, however, does not show the significant relationship. Other control variables should be used when multivariate analysis, and the multivariate analysis result shows the negative associations for the full sample. This point will be discussed in Section 5.2 in detail. Each component of OCI also does not show any significant relationship between the component itself and OPAQUE. In this case, however, control variables take a role to capture the other effect other than the OCI effect,

and this result is presented in Section 5.2 as well. NI and NCSKEW have the significant negative association. NI is the mostly used performance measure, and a large number of net income provides a good signal to the investors and makes the crash risk lower. OPAQUE and ABSDA has positive and significant associations as expected. A large amount of discretionary accruals either positive and negative take a role in increasing opacity of financial reporting. For the univariate test for the H2, TOCI and NCSKEW has significant negative association both in Pearson correlation and Spearman correlation. This phenomenon is confirmed in Section 5.3 again, and the result is same as the univariate analysis.

[INSERT TABLE 3 ABOUT HERE]

5.2 Other Comprehensive Income and Financial Reporting Opacity

The first hypothesis predicts that if the amount of negative OCI gets larger, the financial reporting opacity also increases since the negative OCI amount would have bad news of the current period, but not reflected in net income, and this may be symptomatic of earnings management. Also, the positive OCI amount may affect the financial reporting opacity adversely, but the effect is not that much compared to the opposite.

I test this hypothesis using entire sample first and test again after the partitioning of the full sample based on the sign of OCI. As I expected, a negative

section of OCI shows the steeper slope than the positive section of OCI, meaning one unit of TOCI increase in a negative way increases financial reporting opacity larger than the increase of one unit of TOCI in a positive way.

[INSERT FIGURE 2 ABOUT HERE]

The test with full sample shows the negative association between TOCI amount and financial reporting opacity, meaning that increase in TOCI decreases financial reporting opacity. This result can be explained by the fact that smaller amount of OCI does not provide good news; rather firms might use OCI items as a tool of dumping ground. This dumping ground effect can be confirmed when the full sample is partitioned into two groups based on the sign of OCI. Column (3) and (4) of Table 4 shows the effect of OCI on financial reporting opacity when the TOCI is reported in a negative value. As I expected, the level of TOCI is increased in a negative way, financial reporting opacity is decreased, and FCT drives this. The much negative value of FCT occurs when the US dollar is highly appreciated, or the foreign business units show bad performance, resulting the retained earning section of the foreign business unit financial statement is small. In this situation, the parent company that is consolidating the subsidiary may have the incentive to manage their earnings by another method, such as managing accruals, and this finally makes the firm's financial reporting opacity worse.

When a company reports TOCI as a positive value, as I expected, the opacity

of financial reporting is increased, but the magnitude is smaller than the negative TOCI partition, and also less significant than the coefficient of negative TOCI partition. PEN drives this increase effect. The PEN account is the most vulnerable to manager's discretion since the account is highly based on manager's assumption on the interest rate that discounts the Projected Defined Obligation (PBO) and assumptions on expected return on plan assets. Of course, the process of calculation of plan assets and projected defined obligation is done by the actuary, the firm does the final decision making of the adequacy of the assumption and calculation. Therefore, the PEN account is the most vulnerable account to the manager's control, and managers could increase or decrease the value of PEN account easier compared to other accounts. In the case of PEN, accumulated amount of PEN item is subject to corridor approach of pension accounting. To briefly explain, the amount of PEN can not become a net income if the amount is between the top ceiling and bottom line of limitation amount - it looks like a corridor - and if and only if the accumulated amount of PEN is above the limitation, then the amount can become a net income. Since this accounting treatment, managers would have the incentive to increase the accumulated amount of PEN to penetrate the limitation and recognize the amount as a net income. As Table 4 Column (6) says, the coefficient of PEN is so high. This result means that firms reporting the positive value of TOCI shows a symptomatic of opaque financial reporting, and PEN account drives this phenomenon.

[INSERT TABLE 4 ABOUT HERE]

5.3 Other Comprehensive Income and Crash Risk

The second hypothesis predicts that if the amount of OCI increase, the crash risk is likely to decrease because the higher amount of OCI items provides the good news to investors, and this good news is already reflected in the stock price, assuming efficient market hypothesis, and the risk of sudden crash on stock price decreases.

[INSERT FIGURE 3 ABOUT HERE]

Positive association of TOCI and crash risk can be explained by the fact that TOCI takes a role as pre-disclosure of future earnings and investors recognize this information into stock price during the reporting period. Therefore, the more information on TOCI, the less crash risk of a stock return is.

On the first hypothesis, it is easy to think that since the large positive amount of TOCI makes the financial reporting more opaque, crash risk increases when the TOCI value increases in a positive way. This is the rational expectation, and the second hypothesis means this case. However, the empirical result is not consistent with my expedition, resulting the crash risk continuously decreases as the amount of TOCI increases regardless the sign of TOCI. Table 6 column (1) says crash risk decreases when TOCI amount increases. However, this is mainly driven by the positive TOCI partition. Table 5 Column (3) presents the coefficient on TOCI is insignificant, whereas Table 5 Column (5) reports the coefficient on TOCI is

significant and negative. If the opacity story is right, it is easy to expect that when opacity of financial reporting increases, the crash risk of stock return should also increase. However Table 5 is not consistent with this expectation, and PEN account mainly drives this inconsistency. FCT account in Table 4 takes a role of decreasing financial reporting opacity and decreasing crash risk in Table 5 Column (2) is consistent. However, PEN in Table 4 takes a role of increasing financial reporting opacity but decreasing the crash risk of a stock return. Even though the PEN account the adverse effect on financial reporting quality, investors do not react to this fact, and investors look like fixate on good numbers on any account OCI.

When TOCI is negative, the effect of TOCI on crash risk is not significant. Even though the managers think the investors may concern the amount of TOCI regardless the sign of TOCI, the investors do not react to the negative value of TOCI as the managers' expectation. Investors do not put much concern when the firm reports negative TOCI. Investors pay attention more on the positive amount of TOCI then on the negative amount of TOCI. This phenomenon deviates from the managers expectation. This result suggests the idea that the financial reporting opacity resulting OCI does not goes directly into stock market rather pass another factor. Therefore, information asymmetry may occur when managers use the PEN account effectively, and investors should be cautious when to interpret the OCI components, especially PEN account.

[INSERT TABLE 5 ABOUT HERE]

6. ADDITIONAL TESTS

6.1 Partitioning Sample Based on Firm Size

The partitioning of the sample may be done based on the firm size. Not all firms report the OCI items as I discussed in Section 5.1. When firm size is big, the firm likely to have various account items that should be related to OCI items. Based on this assumption, I partitioned the sample into three groups - small, medium, and large firms - and I repeat the analysis for the H1 and H2.

[INSERT TABLE 6 ABOUT HERE]

Table 6, Column (1) shows the result of the full sample as reported in Table 4, Table 6, Column (2), (3), and (4) displays the result of the partitioned sample based on firm size. Large firms drive the effect of increasing opacity of financial reporting by PEN in the full sample, and also is the effect of increasing opacity by FCT. Small and medium firms, however, does not show any significant relationship between the OCI items and financial reporting opacity. This result suggests that large firms possibly use OCI items as one of the tools of earnings managements compared to the small and medium firms. In contrast, crash risk effect of full sample is driven by small firms, as Table 6, Column (5) and (6) shows. Small firms mainly drive incremental effect of OCI information that affects crash risk. This suggests that investors investing small firms highly concerns the information on

OCI, and the greater amount of OCI information itself effectively affects the investors, and the crash risk of stock return of small firms decrease because the OCI information takes a role of pre-disclosure information, and this information is already reflected in the stock price of a small firm. In the case of small firms, the information disclosed to the investors may not many. The number of analysts following small firms may be smaller than the number of analysts following large firms. Therefore, investors pay much more attention to OCI information when they invest small firms.

6.2 Alternative Measure of Crash Risk

To test the result is robust, I repeat the analysis in Table 5 using an alternative measure of crash risk. Chen et al. (2001) provide another measure of crash risk, which is named DUVOL - down-to-up volatility. DUVOL for stock i in current fiscal year t is calculated as follows:

$$DUVOL_{i,t} = \ln \left\{ \frac{(n_u - 1) \sum_{DOWN} W_{i,w}^2}{(n_d - 1) \sum_{UP} W_{i,w}^2} \right\} \quad (10)$$

where n_u and n_d are the number of up and down days, respectively, and $\sum_{UP} W_{i,w}^2$

and $\sum_{DOWN} W_{i,w}^2$ is the sum of the squared value of firm-specific weekly return for

stock i in week w for down days and up days over the current fiscal year period t , respectively. If firm-specific weekly return for stock i in week w ($W_{i,w}$) is below (above) the current year period mean, then the week is designated as down (up) day.

Not tabulated, the regression analysis is highly consistent, and the result of H2 is robust.

6.3 Non-zero Samples of TOCI, AFS, HDG, PEN, and FCT

As discussed in Section 5.1, not 100 percent disclose the TOCI item, rather approximately 80 percent of a firm report the TOCI. Also, in the case of AFS, HDG, and PEN account, only 33 to 34 percent of the sample report non-zero values. Even though FCT value is reported above the half of the sample, this account also has a high portion of zero values.

Since this zero value issues, some might argue that zero-value samples drive the result of this study. To rule out this possible argument, I repeat the test with samples that does not have zero-values. Not tabulated, the result is strongly consistent with the previous result, and the analysis is robust.

7. CONCLUSION

Income numbers are the most conclusive when to measure the performance of managers and performance of a firm. The income, however, has long been a target of debate about current operation earnings versus all inclusive earnings. This long discussion seems to end by the SFAS 130 that requires the reporting comprehensive income, and all-inclusive income concept appeared to win. However, the items arriving comprehensive income after the net income still does not have specific attributes and seems like ad-hoc. Since nature characteristics of OCI, it is easy to be used as a tool of earnings management, and this might affect firms' financial reporting transparency, and consequently would affect the stock market.

This study examined the relationship between the OCI information and financial reporting opacity in a perspective of managers and crash risk in a perspective of investors. OCI information takes a role in enhancing the transparency of firm's financial reporting transparency only when the large negative amount is approaching to zero. Both large amount of negative TOCI and a large amount of positive TOCI contributes to the high degree of opacity of financial reporting, resulting managers who tend to manage their earnings might use the OCI as a tool of dumping ground for bad news or the storage of future gain. Also, TOCI takes a role in decreasing the crash risk of stock return of a firm. This effect occurs regardless of the sign of TOCI. A Large amount of positive TOCI also

decreases the crash risk, inconsistent with the manager's expectation. This result suggests that investors are partially fixated on positive numbers since the positive numbers on performance statement means good news.

This study provides additional evidence that investors recognize the OCI information, and OCI is valued-relevant. Also, this study suggests the idea that the effect of OCI to financial reporting (in manager's perception) affect investors, but they may perceive the effect of OCI information differently. The standard setters, such as FASB may use the result of this study when they revise financial reporting standard on comprehensive income reporting.

The limitation of this study is that this study does not consider the change of accounting standard that happened in 2011. Accounting Standard Update (ASU) 2011-05 prohibits the reporting comprehensive income on the Statement of Change in Stockholders Equity, and the location effect might affect the financial reporting opacity and the crash risk as well. This effect can be done in the future research by hand-collecting the reporting location of each firm. Another limitation of this study is that sample period starts from 2004, rather 1998. SFAS 130 is issued at the end of 1997 and applied to all firms the year ended after 15 December 1997. If it were possible to collect the complete set of data from 1997, the result of this study would be more robust. The future research may test with the set of hand-collected data from 10-K report through Electronic Data Gathering, Analysis, and Retrieval (EDGAR) provided by SEC, and see whether the result of this study is robust.

APPENDIX

Detailed Variable Definitions

Variables of Interest

- TOCI_t*** The total amount of Other Comprehensive Income disclosed in current fiscal year. This variable equates sum of following variables used in this study: *AFS_t*, *HDG_t*, *PEN_t*, and *FCT_t*.
- AFS_t*** Adjustment for Fair value changes of Available-for-sale securities disclosed as a part of Other Comprehensive Income reported in the current fiscal year. This variable is deflated by total asset measured in beginning of the fiscal year.
- HDG_t*** The effective portion of gains or losses on derivative instruments that qualify as cash-flow hedges.
- PEN_t*** Adjustment for pension and post-retirement plans. Before the passage of SFAS 158, which is applied after the fiscal year ending after December 15, 2006, this amount represents minimum pension adjustment reported after net income to arrive at net comprehensive income or loss. After the SFAS 158 adoption, this variable represents the prior year service cost and gains or losses on pension and post-retirement plans.
- FCT_t*** Adjustment for foreign currency translation reported in Other Comprehensive Income section, arriving at total comprehensive income.

Dependent Variables

- OPAQUE_t*** Moving sum of absolute value of discretionary accruals throughout the prior three consecutive years. Technically,

$$OPAQUE_t = abs(DA_{t-1}) + abs(DA_{t-2}) + abs(DA_{t-3}),$$

where DA_t is measured using the Modified Jones Model.

NCSKEW_t Negative skewness of firm-specific weekly returns for stock *i* over the fiscal-year period *t* calculated as follows:

$$NCSKEW_{i,t} = - \frac{\left[n(n-1) \frac{3}{2} \sum W_{i,w}^3 \right]}{\left[(n-1)(n-2) \left(\sum W_{i,w}^2 \right)^{\frac{3}{2}} \right]}$$

The firm-specific weekly return for stock *i* in week *w* ($W_{i,w}$) is defined as natural log of (1+residual), where the residual is from the following expanded index model regression based on Dimson (1979) and Jin and Mayers (2006)

$$r_{i,w} = \alpha_i + \beta_{1,i} r_{m,w-1} + \beta_{2,i} r_{m,w} + \beta_{3,i} r_{m,w+1} + \beta_{4,i} r_{j,w-1} + \beta_{5,i} r_{j,w} + \beta_{6,i} r_{j,w+1} + \epsilon_{i,t},$$

where $r_{i,w}$ is the return on stock *i* in week *w*; $r_{m,w}$ is the return on the U.S. value-weighted market index provided by CRSP, and $r_{j,w}$ is the Fama and French value-weighted market index.

DUVOL_t Down-to-up volatility for stock *i* in current fiscal year *t*, calculated following Chen et al. (2001) as follows:

$$DUVOL_{i,t} = \ln \left\{ \frac{\left(n_u - 1 \right) \sum_{DOWN} W_{i,w}^2}{\left(n_d - 1 \right) \sum_{UP} W_{i,w}^2} \right\}$$

where n_u and n_d are the number of up and down days, respectively, and $\sum_{UP} W_{i,w}^2$ and $\sum_{DOWN} W_{i,w}^2$ is the sum of the squared value of firm-specific weekly return for stock *i* in week *w* for down days and up days over the current fiscal year period *t*, respectively. If firm-specific weekly return for stock *i* in week *w* ($W_{i,w}$) is below (above) the current year period mean, then the week is designated as down (up) day.

Control Variables

DTURN_t Average share turnover measured monthly during the current fiscal year period less the average share turnover measured monthly during the previous fiscal year period. The monthly share turnover is measured as the sum of daily trading volume over each month divided by the total number of shares outstanding during the month.

<i>NI_t</i>	Net income before extraordinary items scaled by total assets of a firm measured at the end of the current fiscal year.
<i>CFO_t</i>	Cash flows from operations of current fiscal year period, deflated by total assets measured at the end of last fiscal year (lagged total assets).
<i>SALE_t</i>	Total sales revenue of current fiscal year period, deflated by total assets measured at the last fiscal year end (lagged total assets).
<i>SIGMA_t</i>	The standard deviation of firm-specific weekly returns over current fiscal year period
<i>PCTRET_t</i>	Average of firm-specific weekly returns over the current fiscal year period, multiplied by 100.
<i>SIZE_t</i>	The natural log of the market value of equity at the end of the current fiscal year.
<i>LEV_t</i>	The ratio of the total long-term debt to total assets measured at the end of the current fiscal year.
<i>MB_t</i>	The ratio of the market value of equity to the book value of common equity measured at the end of the current fiscal year.
<i>ROE_t</i>	Income before extraordinary items deflated by the book value of common equity measured at the end of the current fiscal year.
<i>ROA_t</i>	Income before extraordinary items deflated by total assets measured at the end of the current fiscal year.

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TABLE 1
Sample development, industry membership, and fiscal year sample

Panel A: Sample Development

All COMPUSTAT firm fiscal years (2004-2014)	122,721
Excluding firm fiscal years:	
With insufficient stock return data	(60,774)
With insufficient financial data to calculate dependent and independent variable	(5,363)
With insufficient financial data to calculate control variables	(29,303)
Final Sample	27,281

Panel B: Number of Firm-Years by Each Fama and French industry Class

Industry	Number of firm-years	Industry	Number of firm-years
Agriculture	88	Defense	70
Food Products	505	Precious Metals	203
Candy & Soda	76	Non-Metallic and Industrial Metal Mining	190
Beer & Liquor	80	Coal	92
Tobacco Products	24	Petroleum and Natural Gas	1,427
Recreation	155	Utilities	1,063
Entertainment	377	Communication	822
Printing and Publishing	169	Personal Services	391
Consumer Goods	423	Business Services	1,529
Apparel	418	Computers	629
Healthcare	562	Computer Software	2,305
Medical Equipment	1,016	Electronic Equipment	1,960
Pharmaceutical Products	1,549	Measuring and Control Equipment	720
Chemicals	636	Business Supplies	366
Rubber and Plastic Products	169	Shipping Containers	94
Textiles	84	Transportation	1,000
Construction Materials	541	Wholesale	921
Construction	333	Retail	1,604
Steel Works Etc	340	Restaurants, Hotels, Motels	556
Fabricated Products	52	Banking	151
Machinery	1,086	Insurance	321
Electrical Equipment	513	Real Estate	149
Automobiles and Trucks	465	Trading	493
Aircraft	193	Almost Nothing	293
Shipbuilding, Railroad Equipment	78	Total	27,281

Panel C: Observations in Each Fiscal Year

Fiscal year	Number of observations
2004	2,988
2005	2,863
2006	2,785
2007	2,686
2008	2,448
2009	2,276
2010	2,375
2011	2,340
2012	2,259
2013	2,168
2014	2,093
Total	27,281

Panel A shows the sample selection process, resulting final sample of 27,281 which used in the regression analysis throughout this study.

Panel B represents industry composition of the sample used in this study. The industry classification follows 49 Fama-French industry classification, and the source of industry composition data is following website: <http://mba.tuck.dartmouth.edu/pages/faculty/ken.french>.

Panel C provides the year composition of the sample, evenly distributed throughout the sample period of 2004-2014.

TABLE 2
Descriptive Statistics for Firm-year Observations for the Years 2004-2014

Variable	Mean	Median	St. Dev	P1	Q1	Q3	P99	%non-zero
<i>TOCI_t</i>	-0.001	0.000	0.015	-0.060	-0.002	0.002	0.041	80%
<i>AFS_t</i>	0.000	0.000	0.002	-0.007	0.000	0.000	0.007	34%
<i>HDG_t</i>	0.000	0.000	0.003	-0.010	0.000	0.000	0.009	33%
<i>PEN_t</i>	-0.001	0.000	0.009	-0.036	0.000	0.000	0.021	34%
<i>FCT_t</i>	0.000	0.000	0.011	-0.040	0.000	0.000	0.033	55%
<i>OPAQUE_t</i>	1.602	0.289	12.184	0.025	0.143	0.617	17.494	100%
<i>NCSKEW_t</i>	0.047	-0.002	0.895	-2.194	-0.436	0.462	2.775	100%
<i>DTURN_t</i>	0.004	0.001	0.096	-0.288	-0.029	0.033	0.319	100%
<i>NI_t</i>	0.022	0.043	0.145	-0.571	-0.002	0.088	0.310	100%
<i>CFO_t</i>	0.084	0.091	0.133	-0.439	0.042	0.147	0.383	100%
<i>SALE_t</i>	1.104	0.927	0.802	0.009	0.540	1.451	3.943	99%
<i>NCSKEW_{t-1}</i>	0.032	-0.011	0.800	-1.899	-0.428	0.428	2.468	100%
<i>SIGMA_{t-1}</i>	0.048	0.043	0.025	0.012	0.030	0.060	0.133	100%
<i>PCTRET_{t-1}</i>	-0.146	-0.091	0.176	-0.877	-0.179	-0.045	-0.007	100%
<i>SIZE_t</i>	6.525	6.507	1.816	2.652	5.252	7.781	10.579	100%
<i>SIZE_{t-1}</i>	6.485	6.465	1.776	2.686	5.249	7.698	10.510	100%
<i>LEV_t</i>	0.196	0.140	0.221	0.000	0.000	0.309	0.950	76%
<i>LEV_{t-1}</i>	0.173	0.127	0.186	0.000	0.000	0.285	0.750	76%
<i>MB_{t-1}</i>	2.817	2.084	3.655	-3.799	1.345	3.391	16.673	100%
<i>ROA_{t-1}</i>	0.026	0.045	0.154	-0.592	0.001	0.091	0.337	100%
<i>ABSDA_t</i>	0.575	0.069	7.019	0.001	0.026	0.176	4.296	100%

This table covers 27,281 firm-years for the sample period 2004-2014. Q1 and Q3 are the first and third quartile values, and P1 and P99 are the top 1 percent of the value and top 99 percent of the sample, respectively. %non-zero represents the percentage of the sample that does not have zero values out of total 27,281 firm-years. See Appendix for detailed variable definitions.

TABLE 3
Correlation among Independent and Dependent Variables

	<i>TOCI_t</i>	<i>AFS_t</i>	<i>HDG_t</i>	<i>PEN_t</i>	<i>FCT_t</i>	<i>OPAQUE_t</i>	<i>NCSKEW_t</i>	<i>DTURN_t</i>	<i>NI_t</i>	<i>SIGMA_{t-1}</i>	<i>PCTRET_{t-1}</i>	<i>SIZE_{t-1}</i>	<i>LEV_{t-1}</i>	<i>MB_{t-1}</i>	<i>ABSDA_t</i>
<i>TOCI_t</i>	0.186 <.0001	0.220 <.0001	0.687 <.0001	0.791 <.0001	-0.025 <.0001	-0.034 <.0001	0.015 <.0001	0.077 <.0001	-0.062 <.0001	-0.019 <.0001	-0.016 <.0001	-0.019 <.0001	-0.016 <.0001	-0.016 <.0001	-0.049 <.0001
<i>AFS_t</i>	0.266 <.0001	0.021 <.0001	0.028 <.0001	0.028 <.0001	0.000 <.0001	-0.017 <.0001	0.008 <.0001	0.019 <.0001	-0.015 <.0001	0.010 <.0001	0.017 <.0001	0.007 <.0001	0.010 <.0001	-0.017 <.0001	-0.004 <.0001
<i>HDG_t</i>	0.223 <.0001	0.010 <.0001	0.723 <.0001	0.024 <.0001	0.943 <.0001	0.004 <.0001	0.179 <.0001	0.002 <.0001	0.236 <.0001	0.109 <.0001	0.005 <.0001	0.005 <.0001	0.005 <.0001	0.005 <.0001	0.530 <.0001
<i>PEN_t</i>	0.446 <.0001	0.025 <.0001	0.091 <.0001	0.236 <.0001	0.511 <.0001	0.461 <.0001	0.602 <.0001	0.046 <.0001	0.402 <.0001	0.813 <.0001	0.434 <.0001	0.434 <.0001	0.434 <.0001	0.434 <.0001	0.439 <.0001
<i>FCT_t</i>	0.719 <.0001	0.048 <.0001	0.009 <.0001	0.151 <.0001	0.224 <.0001	0.001 <.0001	0.857 <.0001	0.063 <.0001	-0.049 <.0001	-0.009 <.0001	-0.016 <.0001	-0.009 <.0001	-0.009 <.0001	-0.016 <.0001	-0.027 <.0001
<i>OPAQUE_t</i>	0.010 <.0001	-0.010 <.0001	0.011 <.0001	0.008 <.0001	0.012 <.0001	0.008 <.0001	0.015 <.0001	-0.023 <.0001	0.018 <.0001	0.011 <.0001	-0.004 <.0001	0.004 <.0001	0.004 <.0001	0.504 <.0001	0.034 <.0001
<i>NCSKEW_t</i>	0.103 <.0001	0.090 <.0001	0.058 <.0001	0.203 <.0001	0.042 <.0001	0.164 <.0001	0.013 <.0001	0.000 <.0001	0.003 <.0001	0.070 <.0001	0.504 <.0001	0.504 <.0001	0.504 <.0001	0.504 <.0001	0.034 <.0001
<i>DTURN_t</i>	-0.025 <.0001	-0.015 <.0001	-0.001 <.0001	-0.015 <.0001	-0.013 <.0001	0.484 <.0001	-0.062 <.0001	0.069 <.0001	0.000 <.0001	0.062 <.0001	0.039 <.0001	0.039 <.0001	0.039 <.0001	0.039 <.0001	-0.012 <.0001
<i>NI_t</i>	-0.026 <.0001	-0.033 <.0001	-0.032 <.0001	-0.013 <.0001	-0.014 <.0001	0.012 <.0001	0.027 <.0001	-0.108 <.0001	0.093 <.0001	0.011 <.0001	0.032 <.0001	0.040 <.0001	0.040 <.0001	0.040 <.0001	0.018 <.0001
<i>SIGMA_{t-1}</i>	0.028 <.0001	-0.004 <.0001	0.003 <.0001	0.035 <.0001	0.017 <.0001	0.039 <.0001	0.062 <.0001	-0.283 <.0001	0.248 <.0001	0.231 <.0001	0.004 <.0001	0.004 <.0001	0.004 <.0001	0.004 <.0001	0.025 <.0001
<i>PCTRET_{t-1}</i>	0.074 <.0001	0.006 <.0001	0.007 <.0001	0.077 <.0001	0.064 <.0001	0.226 <.0001	-0.109 <.0001	-0.141 <.0001	-0.275 <.0001	-0.939 <.0001	-0.095 <.0001	-0.095 <.0001	-0.095 <.0001	-0.095 <.0001	-0.014 <.0001
<i>SIZE_{t-1}</i>	-0.074 <.0001	-0.006 <.0001	-0.007 <.0001	-0.077 <.0001	-0.064 <.0001	-0.226 <.0001	0.099 <.0001	0.140 <.0001	0.274 <.0001	0.419 <.0001	0.049 <.0001	0.049 <.0001	0.049 <.0001	0.393 <.0001	0.020 <.0001
<i>LEV_{t-1}</i>	-0.048 <.0001	0.002 <.0001	0.007 <.0001	0.086 <.0001	-0.037 <.0001	-0.165 <.0001	0.065 <.0001	0.033 <.0001	0.279 <.0001	-1.000 <.0001	0.590 <.0001	0.195 <.0001	0.195 <.0001	0.149 <.0001	0.012 <.0001
<i>MB_{t-1}</i>	-0.013 <.0001	0.001 <.0001	0.043 <.0001	-0.060 <.0001	-0.007 <.0001	-0.110 <.0001	-0.012 <.0001	0.047 <.0001	-0.105 <.0001	-0.204 <.0001	0.204 <.0001	0.271 <.0001	0.271 <.0001	-0.066 <.0001	0.112 <.0001
<i>ABSDA_t</i>	-0.036 <.0001	-0.025 <.0001	-0.015 <.0001	-0.001 <.0001	-0.034 <.0001	0.086 <.0001	0.057 <.0001	0.083 <.0001	0.311 <.0001	-0.101 <.0001	0.100 <.0001	0.317 <.0001	0.317 <.0001	0.096 <.0001	0.004 <.0001
	-0.004 <.0001	0.008 <.0001	-0.010 <.0001	-0.006 <.0001	-0.004 <.0001	0.397 <.0001	-0.003 <.0001	0.031 <.0001	-0.021 <.0001	0.154 <.0001	-0.154 <.0001	-0.133 <.0001	-0.099 <.0001	0.052 <.0001	0.509 <.0001
	0.498 <.0001	0.200 <.0001	0.096 <.0001	0.362 <.0001	0.545 <.0001	0.570 <.0001	0.001 <.0001	0.001 <.0001	0.001 <.0001	0.001 <.0001	0.001 <.0001	0.001 <.0001	0.001 <.0001	0.001 <.0001	0.001 <.0001

This table represents correlation matrix among the major independent and dependent variables used in the regression analysis throughout this study. Pearson correlations are above the diagonal and Spearman correlations are below the diagonal. *p-values* appear below correlations. See Appendix for detailed variable definitions.

TABLE 4
Association of Financial Reporting Opacity and Total Other Comprehensive
Income and its Components

Panel A: Regression analysis with full sample and with subsamples of positive and negative Total Other Comprehensive Income ($TOCI_t$).

	Pred. Sign	Dependent Variable = $OPAQUE_t$					
		Full Sample		$TOCI_t < 0$		$TOCI_t > 0$	
		(1)	(2)	(3)	(4)	(5)	(6)
Intercept	?	1.426*** <.0001	1.442*** <.0001	1.119*** <.0001	1.110*** <.0001	1.164*** <.0001	1.298*** <.0001
$TOCI_t$	(-)	-1.019 0.500		-6.934*** 0.003		5.821* 0.083	
AFS_t	?		-4.399 0.649		-2.148 0.884		-18.052 0.234
HDG_t	?		-2.917 0.695		-10.493 0.354		-1.845 0.874
PEN_t	(+)		7.302*** 0.008		-1.098 0.762		21.765*** <.0001
FCT_t	(-)		-6.629*** 0.003		-12.225*** 0.000		-1.664 0.689
NI_t	(+)	1.081*** <.0001	1.087*** <.0001	1.083** 0.013	1.095** 0.012	1.502*** 0.001	1.505*** 0.001
CFO_t	(-)	-0.897*** 0.001	-0.896*** 0.001	-0.928* 0.053	-0.957** 0.046	-1.498*** 0.001	-1.458*** 0.002
$SIZE_t$	(+)	-0.002 0.911	-0.001 0.959	0.010 0.675	0.011 0.651	0.012 0.612	0.006 0.786
LEV_t	(+)	-0.122 0.254	-0.118 0.270	-0.220 0.220	-0.206 0.258	0.103 0.561	0.063 0.723
$SALE_t$	(-)	0.023 0.452	0.024 0.435	0.034 0.529	0.036 0.516	0.035 0.499	0.018 0.725
Year fixed effects		Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed effects		Yes	Yes	Yes	Yes	Yes	Yes
Obs.		27,281	27,281	10,719	10,719	11,038	11,038
Adj. R²		0.017	0.017	0.017	0.017	0.015	0.016

Panel B: Incremental effect of Total Other Comprehensive Income ($TOCI_t$) and its components on financial reporting opacity of full sample and partitioned sample based on each variable of interests.

VAR_t	Pred. Sign	Dependent Variable = $OPAQUE_t$					
		Full Sample		$VAR_t < 0$		$VAR_t > 0$	
		(1)	(2)	(3)	(4)	(5)	(6)
$TOCI_t$	(-)	-1.019 0.500		-6.934*** 0.003		5.821* 0.083	
AFS_t	?		-4.399 0.649		-0.856 0.956		-4.993 0.725
HDG_t	?		-2.917 0.695		13.458 0.392		-23.971 0.173
PEN_t	(+)		7.302*** 0.008		3.406 0.506		19.186** 0.038
FCT_t	(-)		-6.629*** 0.003		-8.797* 0.075		-6.436 0.165
Intercept		Yes	Yes	Yes	Yes	Yes	Yes
Control Variables		Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects		Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed effects		Yes	Yes	Yes	Yes	Yes	Yes

*, **, *** Indicate statistical significance at the 10 percent, 5 percent, and 1 percent levels, respectively. p -values are below the coefficient estimates. This table presents the regression analysis of the impact of Other Comprehensive Income and its components on financial reporting opacity. Each number in the table represents the result of estimations of the following regression model:

For column (1), (3), and (5):

Model 1:

$$OPAQUE_{i,t} = \alpha_0 + \alpha_1 TOCI_{i,t} + \alpha_2 NI_{i,t} + \alpha_3 CFO_{i,t} + \alpha_4 SIZE_{i,t} + \alpha_5 LEV_{i,t} + \alpha_6 SALE_{i,t} + \epsilon_{i,t}$$

For column (2), (4), and (6):

Model 2:

$$OPAQUE_{i,t} = \alpha_0 + \alpha_1 AFS_{i,t} + \alpha_2 HDG_{i,t} + \alpha_3 PEN_{i,t} + \alpha_4 FCT_{i,t} + \alpha_5 NI_{i,t} + \alpha_6 CFO_{i,t} + \alpha_7 SIZE_{i,t} + \alpha_8 LEV_{i,t} + \alpha_9 SALE_{i,t} + \epsilon_{i,t}$$

$OPAQUE_{i,t}$ is used as a dependent variable that represents opacity of financial reporting of a firm.

The first column shows the OLS cross-sectional regression that analyzed the full sample of 27,281 firm-year observations from 2004-2014, depending on data availability from COMPUSTAT and CRSP database. The second and third column represent the OLS cross-sectional regression analysis for the group of $TOCI_{i,t}$ that has negative value, and positive value, respectively. See Appendix for variable definitions.

TABLE 5
The Average Effect of Other Comprehensive Income and Its Components
on Firm-level Crash Risk

Panel A: Regression analysis with full sample and with subsamples of positive and negative Total Other Comprehensive Income ($TOCI_t$).

	Pred. Sign	Dependent Variable = $NCSKEW_t$					
		Full Sample		$TOCI_t < 0$		$TOCI_t > 0$	
Intercept	?	-0.387*** <.0001	-0.389*** <.0001	-0.256*** 0.000	-0.259*** 0.000	-0.435*** <.0001	-0.431*** <.0001
$TOCI_t$	(-)	-1.544*** <.0001		-0.706 0.149		-3.663*** <.0001	
AFS_t	(-)		-5.987*** 0.004		-2.978 0.322		-9.981*** 0.002
HDG_t	?		-0.436 0.785		-3.252 0.161		2.183 0.368
PEN_t	(-)		-1.446** 0.015		-0.055 0.942		-5.290*** <.0001
FCT_t	(-)		-1.463*** 0.003		-1.069 0.134		-2.858*** 0.001
$DTURN_{t-1}$	(+)	0.221*** <.0001	0.221*** <.0001	0.307*** 0.001	0.305*** 0.001	0.229*** 0.006	0.222*** 0.008
$NCSKEW_{t-1}$	(+)	0.026*** <.0001	0.026*** <.0001	0.025** 0.012	0.025** 0.013	0.027*** 0.006	0.027*** 0.006
$SIGMA_{t-1}$	(+)	5.766*** <.0001	5.783*** <.0001	5.443*** <.0001	5.407*** <.0001	6.694*** <.0001	6.616*** <.0001
$PCTRET_{t-1}$	(+)	0.708*** <.0001	0.710*** <.0001	0.737*** <.0001	0.732*** <.0001	0.774*** <.0001	0.771*** <.0001
$SIZE_{t-1}$	(+)	0.038*** <.0001	0.038*** <.0001	0.024*** <.0001	0.025*** <.0001	0.044*** <.0001	0.043*** <.0001
MB_{t-1}	(+)	0.005*** 0.000	0.005*** 0.001	0.006*** 0.004	0.006*** 0.004	0.004* 0.066	0.004* 0.061
LEV_{t-1}	(-)	-0.092*** 0.001	-0.091*** 0.001	-0.065 0.143	-0.065 0.150	-0.101** 0.021	-0.114*** 0.010
ROA_{t-1}	(-)	0.186*** <.0001	0.186*** <.0001	0.191*** 0.002	0.193*** 0.002	0.098* 0.093	0.087 0.138
$ABSDA_{t-1}$	(+)	-0.001 0.465	-0.001 0.467	-0.001 0.524	-0.001 0.543	0.000 0.906	0.000 0.948
Year fixed effects		Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed effects		Yes	Yes	Yes	Yes	Yes	Yes
Observations		27,281	27,281	10,719	10,719	11,038	11,038
Adj. R ²		0.011	0.011	0.007	0.007	0.011	0.012

Panel B: Incremental effect of total Other Comprehensive Income and its components on firm-level crash risk of full sample and partitioned sample based on each variables of interests.

VAR_t	Pred. Sign	Dependent Variable = $NCSKEW_t$					
		Full Sample		$VAR_t < 0$		$VAR_t > 0$	
		(1)	(2)	(3)	(4)	(5)	(6)
$TOCI_t$	(-)	-1.544*** <.0001		-0.706 0.149		-3.663*** <.0001	
AFS_t	(-)		-5.987*** 0.004		-3.490 0.286		-8.979*** 0.010
HDG_t	?		-0.436 0.785		-2.064 0.408		2.208 0.381
PEN_t	(-)		-1.446** 0.015		-0.809 0.308		-3.665*** 0.003
FCT_t	(-)		-1.463*** 0.003		-0.994 0.217		-3.449*** 0.000
Intercept		Yes	Yes	Yes	Yes	Yes	Yes
Control Variables		Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects		Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed effects		Yes	Yes	Yes	Yes	Yes	Yes

*, **, *** Indicate statistical significance at the 10 percent, 5 percent, and 1 percent levels, respectively. *p-values* are below the coefficient estimates. This table presents the regression analysis of the impact of Other Comprehensive Income and its components on the crash risk of stock return of a firm. Each number in the table represents the result of estimations of the following regression model:

For column (1), (3), and (5):

Model 5:

$$NCSKEW_{i,t} = \mu_0 + \mu_1 TOCI_{i,t} + \mu_2 DTURN_{i,t-1} + \mu_3 NCSKEW_{i,t-1} + \mu_4 SIGMA_{i,t-1} + \mu_5 PCTRET_{i,t-1} + \mu_6 SIZE_{i,t-1} + \mu_7 MB_{i,t-1} + \mu_8 LEV_{i,t-1} + \mu_9 ROA_{i,t-1} + \mu_{10} ABSDA_{i,t-1} + \epsilon_{i,t}$$

For column (2), (4), and (6):

Model 6:

$$NCSKEW_{i,t} = \mu_0 + \mu_1 AFS_{i,t} + \mu_2 HDG_{i,t} + \mu_3 PEN_{i,t} + \mu_4 FCT_{i,t} + \mu_5 DTURN_{i,t-1} + \mu_6 NCSKEW_{i,t-1} + \mu_7 SIGMA_{i,t-1} + \mu_8 PCTRET_{i,t-1} + \mu_9 SIZE_{i,t-1} + \mu_{10} MB_{i,t-1} + \mu_{11} LEV_{i,t-1} + \mu_{12} ROA_{i,t-1} + \mu_{13} ABSDA_{i,t-1} + \epsilon_{i,t}$$

$NCSKEW_{i,t}$ is used as a dependent variable that represents the crash risk of stock return of a firm i fiscal year t . The first column shows the OLS cross-sectional regression that analyzed the full sample of 27,281 firm-year observations from 2004-2014, depending on data availability from COMPUSTAT and CRSP database. The second and third column represent the OLS cross-sectional regression analysis for the group of $TOCI_{i,t}$ that has negative value, and positive value, respectively. See Appendix for variable definitions.

TABLE 6
Cross-Sectional Regression Results for Small, Medium, and Large Firms with Opacity of Financial Reporting, Idiosyncratic Volatility and Crash Risk of Stock Return as a Dependent Variable

	<i>OPAQUE_t</i>				<i>NCSKEW_t</i>			
	Full (1)	Small (2)	Medium (3)	Large (4)	Full (5)	Small (6)	Medium (7)	Large (8)
<i>TOCI_t</i>	-1.019 0.500	1.500 0.532	-1.134 0.662	-1.036 0.704	-1.544*** <.0001	-1.630** 0.021	0.021 0.972	-0.564 0.212
<i>AFS_t</i>	-4.399 0.649	-1.705 0.880	-0.514 0.974	-14.359 0.538	-5.987*** 0.004	-5.493* 0.095	1.344 0.712	-5.507 0.151
<i>HDG_t</i>	-2.917 0.695	-3.520 0.796	-6.475 0.591	-0.206 0.988	-0.436 0.785	-5.490 0.166	0.319 0.908	2.824 0.190
<i>PEN_t</i>	7.302*** 0.008	7.175 0.104	3.165 0.515	10.602** 0.027	-1.446** 0.015	-1.926 0.139	0.242 0.827	-0.931 0.241
<i>FCT_t</i>	-6.629*** 0.003	-1.359 0.683	-3.451 0.364	-10.165** 0.017	-1.463*** 0.003	-0.924 0.339	-0.235 0.788	-0.372 0.596
Intercept	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	27,281	8,812	9,289	9,180	27,281	8,812	9,289	9,180
Adj. R² (TOCI)	0.017	0.019	0.015	0.019	0.011	0.071	0.045	0.010
Adj. R² (Comp.)	0.017	0.019	0.015	0.019	0.011	0.071	0.045	0.010

*, **, *** Indicate statistical significance at the 10 percent, 5 percent, and 1 percent levels, respectively. *p-values* are below the coefficient estimates. This table presents the cross-sectional regression analysis for small, medium, and large firms with financial reporting opacity, idiosyncratic volatility, and crash risk of a stock return. The group of each firm size is based on market value of equity measured at the end of fiscal year. Each number in the table represents the result of estimations of the model used in previous tables. For model (1) to (4), refer Table 4. For model (5) to (8), refer Table 5. For model (9) to (12), refer Table 6. See Appendix for variable definitions.

FIGURE 1

Development of Hypothesis

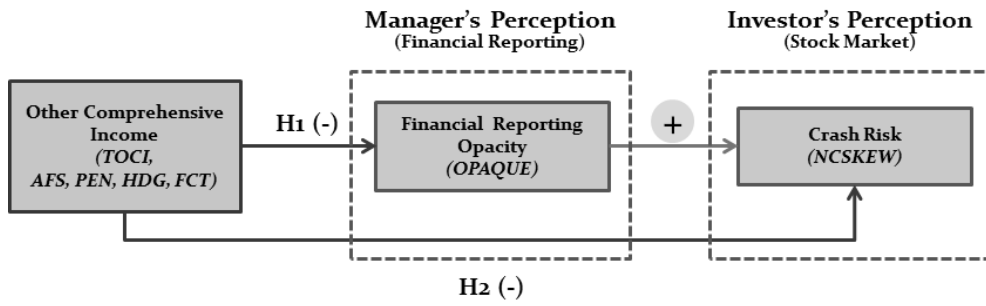
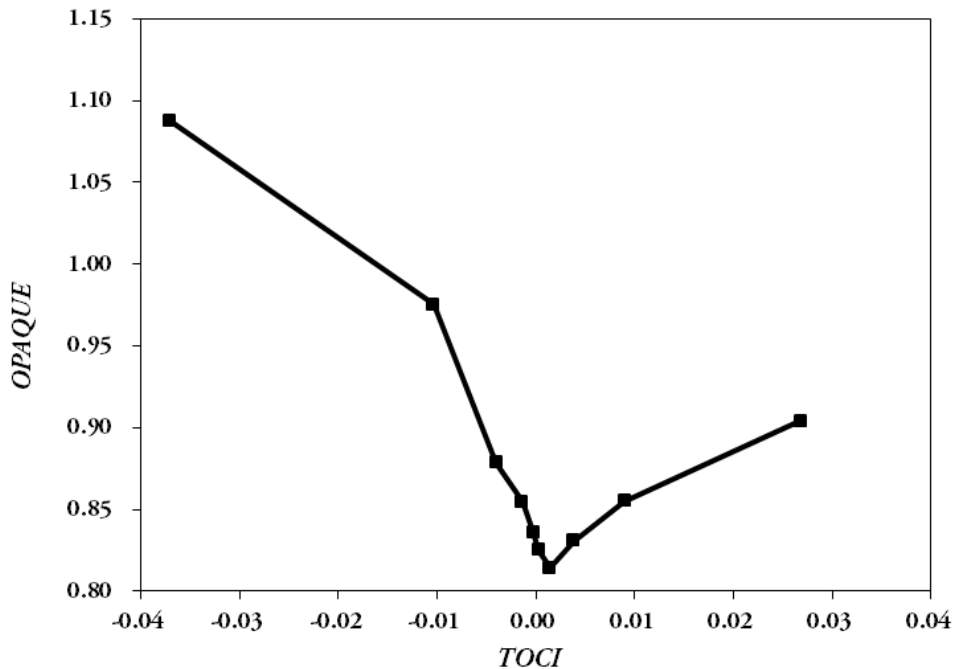


FIGURE 2

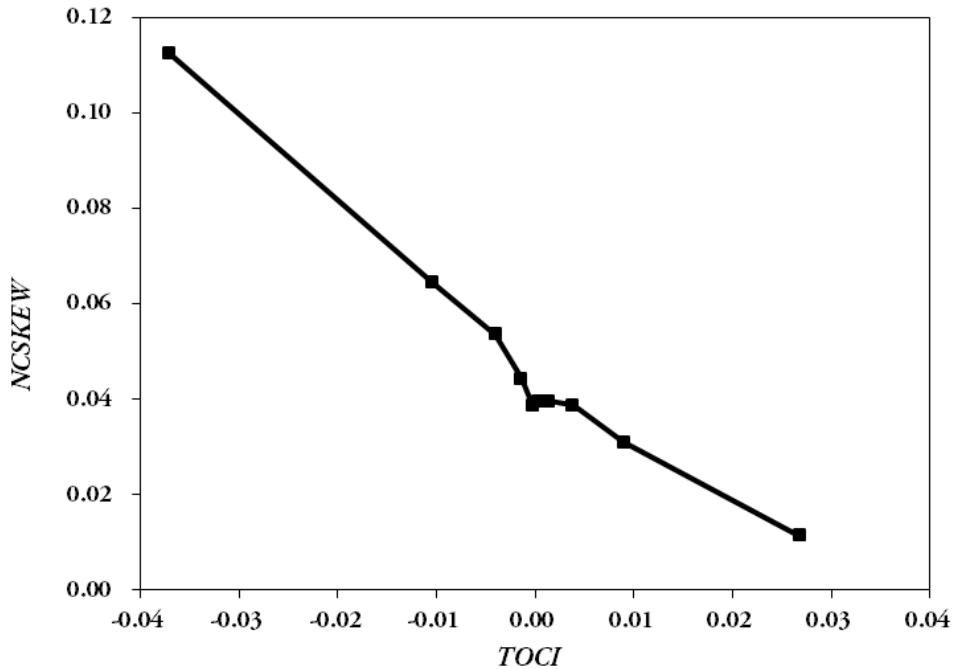
**Inferred Financial Reporting Opacity as a Function of
Level of Total Amount of Other Comprehensive Income**



The value of horizontal axis for each point on the graph represents the average amount of total amount of Other Comprehensive Income reported in the current period ($TOCI_t$) for decile portfolios formed by ranking on $TOCI_t$, which does not have zero values. The vertical axis value represents the inferred value of financial reporting opacity measured in current fiscal year ($OPAQUE_t$) from regression model 1 of Table 4, setting all right-hand-side variables equal to average values of each decile group.

FIGURE 3

**Inferred Crash Risk of Stock Return of a Firm as a Function of
Level of Total Amount of Other Comprehensive Income**



The value of horizontal axis for each point on the graph represents the average amount of total amount of Other Comprehensive Income reported in the current period ($TOCI_t$) for decile portfolios formed by ranking on $TOCI_t$, which does not have zero values. The vertical axis value represents the inferred value of crash risk of stock return of a firm measured in current fiscal year ($NCSKEW_t$) from regression model 5 of Table 6, setting all right-hand-side variables equal to their average value of each decile group.

요약(국문초록)

본 연구는 기타포괄손익과 그 구성요소와 관련하여 재무보고의 불투명성 및 주가급락 간의 관계를 살펴본다. 재무보고의 불투명성을 측정하는 지표로서 재량적 발생액의 3년간 이동 평균을 사용하였다.

연구 결과 당기에 보고된 기타포괄손익 총액이 음이고 그 금액이 많으면 재무보고의 불투명성이 증가하였다. 이 효과는 기타포괄손익 구성요소 중 외화환산손익 계정에 의하여 주도되고 있었다. 당기에 보고된 기타포괄손익 총액이 양이고 그 금액이 큰 경우에도 재무보고의 불투명성이 증가하였으나 그 효과는 기타포괄손익 총액이 음인 경우보다 작았다. 이 효과는 기타포괄손익 구성요소 중 퇴직연금과 관련된 계정에 의하여 주도되고 있었다.

당기에 보고된 기타포괄손익의 부호가 상관없이 당기에 보고된 기타포괄손익 총액이 클수록 주가급락위험은 감소하였다. 이 효과는 투자자들이 당기에 보고된 기타포괄손익의 부호가 양수인 경우에 더 민감하게 반응하거나 기타포괄손익의 수치가 양수인 것을 호재로서 해석하여 양의 수치에 고착되어있기 때문으로 보인다. 또한, 기타포괄손익이 재무보고의 불투명성에 미치는 영향이 주식시장에 직접 영향을 미치지 않고 다른 요소를 통하여 주식시장에 영향을 미치기 때문으로 보인다.

주요어: 기타포괄손익, 주가급락, 이익조정, 재무보고의 불투명성

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