

**Majority Shareholder Ownership and Real Earnings Management:
A Korean Perspective**

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Abstract

This paper examines the influence of majority shareholder ownership on real earnings management. Is there a conflict or alignment between majority and minority shareholders' interests? If majority shareholders' interests are aligned with those of minority shareholders, larger majority shareholder ownership lowers real earnings management. On the other hand, majority shareholders' attempts to exploit minority shareholders will increase real earnings management.

We do not find a systematic relationship between majority shareholder ownership and real earnings management. However, real earnings management significantly decreases in the upward earnings management incentive bracket as majority shareholder ownership increases. This occurs because majority shareholders are more sensitive to upward real earnings management which has a negative impact on future performance. These results suggest that the larger ownership by majority shareholders is, the more that they play a positive role in mitigating real earnings management. In addition, these positive roles are only effective in the post-economic crisis period. The results may suggest that the economic crisis in Korea helps majority shareholders more conscious of long-term costs of real earnings management. Our findings support the convergence-of-interests hypothesis, providing some evidence by using real earnings management instead of accruals-based earnings management.

Keywords: majority shareholder ownership, real earnings management, convergence-of-interests hypothesis.

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I. INTRODUCTION

What is the role of majority shareholders in corporate governance? This study examines how majority shareholder ownership impacts real earnings management in Korea where majority shareholders heavily influence management decisions.¹ The effect of ownership structure on real earnings management is to determine whether majority shareholders act in ways detrimental to or in the interests of minority shareholders.²

As to the role of majority shareholders, whether the convergence-of-interests or the expropriation-of-the-minority-shareholders hypothesis is correct has been controversial in East Asian countries. According to the convergence perspective on the agency problem, majority shareholders play an active role in monitoring managers (Jensen and Meckling, 1976). They do this because their wealth is more influenced by the firm's operating results as their ownership increases. In contrast, the expropriation perspective is based on the notion that majority shareholders' wealth increases by acting in ways detrimental to minority shareholders (La Porta et al., 1999). This hypothesis posits that if majority shareholders can easily control managers' activities, they will attempt to transfer minority shareholders' wealth to themselves.³ These arguments are still being debated among researchers interested in corporate governance in East Asia.

This study provides additional evidence to settle this controversy. It is crucial to

¹ Johnson et al. (2000) argue that managers' business decisions are actually affected by majority shareholders in East Asia. Similarly, major agency problems in these countries are not between shareholders and managers but between majority and minority shareholders (Claessens et al. 2000). Other studies in Korea also indicate this problem. Jung et al. (2002) states that majority shareholders have sufficient ownership to govern management decisions in Korea. An et al. (2002) also provides evidence that majority shareholders in Korea have the right to control managers.

² Following Article 2 of the Korean Securities and Exchange Act, majority shareholder ownership in this study is calculated using the proportion of the shares held by the largest shareholder and his/her affiliated persons, affiliated firms, and executives of affiliated firms.

³ These opposing claims have also been made in the context of Korea. Park (2003) shows that majority shareholders tend to post accruals aggressively to transfer the wealth of minority shareholders to themselves as their ownership increases. However, Choi and Kim (2001) find that management is less likely to manage earnings as majority shareholder ownership increases.

determine the behavior of majority shareholders with real earnings management in East Asian countries, including Korea, because companies in these countries are not considered to be fully independent of majority shareholders. If majority shareholders serve only for their own selfish interests and even exploit minority shareholders' wealth, it becomes clearer that additional regulation should be adopted. In contrast, if they help increase firm value and eventually the wealth of other investors in the firm, this will affirm their positive influence on company health and profitability.

Our empirical results are as follows. First, in the whole sample, we found no systematic association between the proportion of majority shareholder ownership and real earnings management. Second, in the upward earnings management incentive bracket there is a significant negative relationship between majority shareholder ownership and real earnings management. In contrast, in the downward and ambiguous earnings management incentive brackets, majority shareholder ownership is generally not associated with real earnings management. Lastly, while following operating performance declines in the upward real earnings management bracket, majority shareholders with higher ownership attenuate this negative result. These empirical results suggest that the interests of both majority and minority shareholders are aligned as the ownership proportion curtails upward real earnings management, supporting the convergence-of-interests hypothesis. The results are also consistent with prospect theory in that the behavior of the majority shareholders is asymmetric between loss and profit.

This study contributes to the literature in at least two ways. First, this study analyzes the effect of corporate ownership on real earnings management, while most prior studies have examined its effect on accruals-based earnings management. Also, La Porta et al. (1999) shows how type II agency problem may play a role of unique ownership. Prior studies show that real earnings management is a more serious issue than accruals-based earnings management because the former affects firms' fundamental performance (Burgstahler and Dichev, 1997; Bange and De Bondt, 1998; Barber et al., 1991; Bushee, 1998). Following Roychowdhury (2006) and Cohen et al. (2008), we use real earnings management to analyze managers' opportunistic behaviors to overcome the limits of accruals-based earnings management. While accruals-based earnings management results

in accruals reversal, the real earnings management distorts business decisions and worsens actual operating performance in the long-run. Thus, real earnings management more realistically tests whether the interests of majority and minority shareholders are aligned. Second, unlike previous studies, we examine the relationship between majority shareholders' ownership and real earnings management in various brackets that have different earnings management incentives. Prior studies ignore the effects of different underlying incentives on earnings management (Klassen, 1997; La Porta et al., 1999; Choi and Kim, 2001; Park, 2003). The majority shareholders are more likely to be sensitive to upward real earnings management because it brings about worse consequences in later periods. On the other hand, the majority shareholders are potentially less careful for downward real earnings management, because it can even improve future performance.

The remainder of this paper is organized as follows: we review a theoretical background and prior studies in section II, section III develops the hypotheses, section IV describes research methods and data collection, and section V and VI report the empirical results and further analysis. Finally, section VII concludes this study.

II. BACKGROUND AND LITERATURE REVIEW

2.1 Corporate Ownership Structure and Earnings Management

Claessens et al. (2000) found that companies in East Asian countries do not have a clear separation between control and management of majority shareholders. In this unclear separation, two hypotheses to explain the agency problem between majority and minority shareholders have been proposed. The first hypothesis is the convergence-of-interests hypothesis, which claims that majority shareholders will not pursue activities that reduce the wealth of a company because they have greater interests as shareholders when the proportion of ownership held by majority shareholders is higher. The second hypothesis is the expropriation-of-the-minority-shareholders hypothesis, which expresses the exact opposite viewpoint. It claims that there is an information asymmetry exists between majority and minority shareholders, and that managers act in detriment to the wealth of minority shareholders to maximize that of majority shareholders. Although there is

evidence for both hypotheses, neither has received unequivocal support.

Examining the convergence-of-interests hypothesis, Watts and Zimmerman (1986) find that owner-management with smaller equity has an incentive to act in opposition to the company's value maximization to pursue private profit. Klassen (1997) finds that a higher level of majority shareholder ownership lowers the financial reporting incentive and increases the tax reporting incentive. Therefore, he concludes that profit from property disposition decreases when majority shareholder ownership increases if a company has a higher tax rate. In addition, discretionary expenses have a negative relationship to ownership concentration (Warfield et al., 1995). In Korea, Choi and Kim (2001) show that a company with lower majority shareholder ownership also has a larger absolute value of discretionary accruals. Based on this finding, they claim that management has more incentive for opportunistic earnings management when the investment of majority shareholders is small.

There is also evidence supporting the expropriation-of-the-minority-shareholders hypothesis. La Porta et al. (1999) analyzes the corporate ownership structure of large companies from 27 countries and reports that controlling shareholders act opportunistically against the interests of minority shareholders to increase their own wealth as ownership structure becomes more concentrated.

Some prior studies also show that a negative association between earnings management and majority shareholder ownership (Bange and De Bondt, 1998; Bushee, 1998). Morck et al. (1988) shows the inversed U-shaped relationship between managerial ownership and firm value. Lemmon and Lins (2003) examine that the controlling shareholders have the incentive to expropriate minority shareholders. Thomsen et al. (2006) finds a negative impact of blockholder ownership on firm performance. In contrast, studies by Demsetz and Lehn (1985) and Demsetz and Villalonga (2001) find no relation between ownership concentration and firm performance. Ali et al. (2007) shows that concentration of ownership negatively effects earnings quality. In Korea, Park (2003) shows that there is a positive relationship between majority shareholder ownership and discretionary accruals, concluding that the expropriation-of-the-minority-shareholders hypothesis is supported.

2.2 Real Earnings Management

Schipper (1989) defines earnings management as managers' intentional adjustment to gain private benefit. Accruals-based earnings management involves adjusting net income by changing accounting estimates without changing actual operations while real earnings management involves the management of operational activities (Roychowdhury, 2006). Graham et al. (2005) argues that managers prefer real earnings management because it is safer than accruals-based earnings management because it does not get as much attention from regulatory bodies and external auditors as accruals-based earnings management. For example, management can influence net income by adjusting research and development (R&D) expenses or advertisement expenses. Moreover, managers can boost sales by pricing down products or selling off securities. In this way, real earnings management directly influences firms' actual operations. Real earnings management undertaken to increase current accounting numbers, however, results in damaging long-term firm value. Therefore, it costs much more compared to accruals-based earnings management.

Most prior studies on earnings management have focused on accounting accruals. Existing studies on real earnings management focus mostly on investment or finance activity rather than operating activity (see, for example, Dechow and Sloan, 1991; Bartov, 1993; Bens et al., 2002; Bushee, 1998). Roychowdhury (2006) suggests estimation models to derive proxies for real earnings management, which include abnormal cash flow from operations (ACFO), abnormal production costs (APC), and abnormal discretionary expenses (ADE). He finds evidence that companies manage earnings utilizing ACFO, APC, and ADE to meet earnings benchmarks. Cohen et al. (2008) examines whether there are any change in earnings management behavior before and after the Sarbanes-Oxley Act (hereafter SOX). They show that real earnings management is greater in post-SOX period than pre-SOX period. They argue that managers prefer real earnings management to accruals-based earnings management under the strict accounting regulations of SOX.

2.3 Earnings Management across Incentives' Brackets

Burgstahler and Dichev (1997) examine the distribution of earnings levels and show that an exceptionally small number of companies are in the section slightly less than zero

and an abnormally large number of companies are found in the section slightly more than zero. Based on this result, they conclude that companies manage their earnings to avoid reporting losses.

Prior studies have shown that not only upward but also downward earnings management is performed to increase earnings in a later period and smooth income according to the circumstances that a company faces. DeFond and Park (1997) show that management who tries to report stable income flow reduces (or increases) profit through downward (or upward) earnings management when the current year's income is high (or low).

Healy (1985) finds that managers try to lower accounting income if reported earnings exceed a certain threshold at which their bonuses can be paid at the maximum. Managers may also lower reported earnings when it does not reach a minimum threshold to deposit current earnings for future bonuses. The direction of earnings management may correspond to managers' income smoothing incentives. However, Gaver et al. (1995), re-verifying the results of Healy (1985), reports that companies experience upward earnings management when profit is less than the minimum incentive level.⁴

To summarize prior studies, earnings management incentives move in different directions according to the level of earnings. Frank and Rego (2006) show that earnings management incentives differ according to the circumstances of the company. They investigate how management uses the valuation allowance of deferred corporate taxes for earnings management. In particular, they divide earnings management incentive into three brackets: (1) profit before earnings management slightly smaller than zero, (2) profit before earnings management much larger than zero, and (3) profit before earnings management much less than zero. They also demonstrate that earnings management moves in different directions according to earnings management incentives.

III. HYPOTHESES DEVELOPMENT

Earlier studies have shown that majority shareholders sometimes act against the interests of minority shareholders, and that this behavior changes according to the corporate ownership structure. The convergence-of-interests hypothesis claims that majority shareholders will not pursue activities that reduce the value of a company because they have a vested interest as shareholders in its success, even more so as their proportion of ownership increases. However, the expropriation-of-minority-shareholders hypothesis, which emphasizes information asymmetry between majority and minority shareholders, argues that companies tend to act in detriment to the wealth of minority shareholders as the proportion of majority shareholders grows.

The latter hypothesis can apply only to accruals-based earnings management. Majority shareholders may use discretion in their accruals to overstate short-term performance and misrepresent information to deceive minority shareholders. Regarding real earnings management, it is irrational for majority shareholders to allow real activity manipulation to raise current period net income, because it will eventually impair their own wealth as well. After upward real earnings management, majority shareholders may suffer a bigger loss in their own wealth than minority shareholders. Klassen (1997) also suggest that the more shares majority shareholders hold the more interest in cash flows rather than reported income.

Therefore, we expect that real earnings management will decrease when the proportion of ownership held by majority shareholders is higher. Thus, our first hypothesis, stated in an alternative form, is as follows:

H1: Companies with higher proportions of majority shareholder ownership reduce real earnings management.

Since Kahneman and Tversky (1979) many researchers have explained investors' behavior with the prospect theory. Shefrin and Statman (1985), for example, find that investors tend to hold the stock when price declines while they sell the stock early when

⁴ Two studies examine situations with low reported earnings: Gaver et al. (1995) report results identical to incentives for nominal zero earnings, while Healy (1985) supports the big bath argument. The results from prior studies on the two incentives are generally mixed.

return is positive. They define this asymmetric phenomenon as a disposition effect and argue that it come from investors' greater tendency to avoid losses than to realize profits. This tendency implies an increase in disutility from experiencing wealth decline is greater than that in utility from earnings profits. This asymmetric phenomenon is commonly described as the prospect theory.

The prospect theory can be applied to majority shareholders' behavior toward real earnings management. Real earnings management can be divided into upward and downward earnings management. Prior studies (Burgstahler and Dichev, 1997; Gaver et al., 1995; Lev and Sougiannis, 1996) report that upward real earnings management results in downturns in future performance. In contrast, downward real earnings management does not impair long term operating performance and may in fact improve future performance while sacrificing reported earnings in the short-run. Mizik and Jacobson (2007) find that companies using upward real earnings management show significant decreases in stock price after fund raising.

Majority shareholders would be more interested in the long-term value of a company since their wealth is more affected by firm value than minority shareholders. Thus, consistent with the prospect theory, majority shareholders with larger ownership would be more sensitive to upward real earnings management resulting in worse operating performance in later periods. On the other hand, although there is an income smoothing incentive that might lead to downward earnings management, the majority shareholders with larger ownership are expected to be less interested in it. This is because downward real earnings management is likely to result in a greater operating performance in the long-run. We, therefore, hypothesize that avoidance of upward real earnings management will be stronger than that of downward real earnings management when majority shareholders have higher levels of ownership.

Insert FIGURE 1 about here

This study utilizes three earnings management incentive brackets (Frank and Rego, 2006), as shown in FIGURE 1: (1) upward earnings management, (2) downward earnings management, and (3) ambiguous earnings management. Following Burgstahler and Dichev (1997) and Phillips et al. (2003), we first assume that companies with reported earnings slightly greater than zero have a great incentive toward upward adjustment to avoid a loss, and therefore classify these companies in the upward earnings management incentive bracket. Second, companies with earnings much greater than zero have a motivation for income smoothing, and are therefore classified as being in the downward earnings management incentive bracket. Third, companies with earnings much less than zero might be tempt not only to implement a big bath, which reserves earnings to improve future, but also to reduce loss. Therefore, these companies are classified as being in the ambiguous earnings management incentive bracket. Among these three brackets, in the upward earnings management incentive bracket majority shareholders would monitor managers' opportunistic activities more closely to protect their own wealth as the proportion of ownership rises, consistent with the prospect theory.

H2a: *In the upward earnings management incentive, real earnings management decreases as majority shareholder ownership increases.*

H2b: *In the downward earnings management incentive, real earnings management is indifferent from the level of majority shareholder ownership.*

H2c: *In the ambiguous earnings management incentive, real earnings management is indifferent from the level of majority shareholder ownership.*

IV. RESEARCH DESIGN AND DATA COLLECTION

4.1 Real Earnings Management Estimation Model

Real earnings management can be divided into three categories: (1) sales, (2) production, and (3) expenses. First, from a sales perspective, management can execute abnormal promotional events and discounts and can ease credit policy to increase the accruals-based accounting profit of the current period. However, although offering

discounts will increase the accounting profit of the current period, it may damage long-term brand power and increase bad debt in the future. Second, from a production perspective, management can increase production to lower fixed overhead costs per unit, which in turn will decrease the cost of goods sold. Although this can increase accruals-based accounting earnings in the short term, the value of the company will decrease due to inventory maintenance costs and deterioration. Third, discretionary expenses are directly connected to profit and loss. Therefore, management can reduce the current period's advertising expenses, R&D expenses, education and training expenses, and fringe benefit. Although this might improve the current term's profit, it will reduce long-term brand awareness and quality of product and result in the drain of talents, thereby decreasing the quality of employees.

These changes in management activity can be measured by three variables: (1) cash flow from operations (CFO), (2) production costs (PC), and (3) discretionary expenses (DE). CFO is affected by changes in all three categories mentioned above. We adopt the Roychowdhury (2006) model to estimate real earnings management: abnormal cash flow from operations (ACFO), abnormal production costs (APC), and abnormal discretionary expenses (ADE). The abnormal portion of each variable is calculated by subtracting the estimated value from the actual value. Equations (1) through (3) are used as estimation models, and are introduced by Roychowdhury (2006) based on Dechow et al. (1998). Moreover, each model is estimated through cross-sectional analysis according to industry and year to reflect the characteristics of each industry and year.

$$\frac{CFO_t}{A_{t-1}} = \alpha_0 + \beta_1 \frac{1}{A_{t-1}} + \beta_2 \frac{S_t}{A_{t-1}} + \beta_3 \frac{\Delta S_t}{A_{t-1}} + \varepsilon_t \quad (1)$$

$$\frac{PC_t}{A_{t-1}} = \alpha_0 + \beta_1 \frac{1}{A_{t-1}} + \beta_2 \frac{S_t}{A_{t-1}} + \beta_3 \frac{\Delta S_t}{A_{t-1}} + \beta_4 \frac{\Delta S_{t-1}}{A_{t-1}} + \varepsilon_t \quad (2)$$

$$\frac{DE_t}{A_{t-1}} = \alpha_0 + \beta_1 \frac{1}{A_{t-1}} + \beta_2 \frac{S_{t-1}}{A_{t-1}} + \varepsilon_t \quad (3)$$

where CFO = Cash flow from operations;

DE = R&D + Advertising + Selling, general, and administrative (SG & A)

expenses;
 PC = Cost of goods sold + Change in inventory;
 A = Total assets; and
 S = Sales.

In the estimation model, upward earnings management will result in lower value of CFO, higher value of PC, and lower value of DE. In order to align the metrics of real activity manipulation with the same direction in equations (4)-(6), we multiply ACFO and ADE by negative one. After this operational manipulation, all the metrics representing real earnings management, namely ACFO, APC, and ADE, are positively related with upward real earnings management. In addition, to capture the combined effects of real earnings management, we compute TREM1 as the sum of the ACFO and ADE and TREM2 as the sum of APC and ADE (Cohen and Zarowin, 2010).⁵

$$ACFO_t = (-1) \times \text{Residual from the estimation model of equation (1)} \quad (4)$$

$$APC_t = \text{Residual from the estimation model of equation (2)} \quad (5)$$

$$ADE_t = (-1) \times \text{Residual from the estimation model of equation (3)} \quad (6)$$

$$TREM1_t = ACFO_t + ADE_t \quad (7)$$

$$TREM2_t = APC_t + ADE_t \quad (8)$$

4.2 Classification of earnings management

Upward earnings management can worsen the future performance of a company, while downward earnings management can improve it. Burgstahler and Dichev (1997), who report an extraordinarily high frequency of companies with earnings slightly greater than zero, interpret this phenomenon as a result of upward earnings management in companies trying to avoid reporting losses. This finding may reflect investors' tendency of being more sensitive to bad news as suggested in Shefrin and Statman (1985).

 Insert FIGURE 2 about here

⁵ Cohen and Zarowin (2010) do not combine APC and ACFO because the same abnormal decisions lead to abnormally high production costs and abnormally low CFO, avoiding double counting.

We measure earnings level by dividing net income (NI) of a total of 6,440 firm-year samples by total assets at the beginning of the period from 1991 to 2007 and then classify these observations by their earnings levels in terms of increments of 0.005 to derive their distribution. As shown in Figure 2, a great asymmetry exists between the observations with earnings slightly greater than zero and those with earnings slightly below zero. There are 69 companies in the earnings bracket of -0.01 to -0.005 and 74 in the bracket of -0.005 to zero, which is considerably lower than the number at the slightly greater earnings level than zero. Specifically, 462 companies are in the bracket of 0 to 0.005, and 485 fell into the bracket of 0.005 to 0.01. This indicates that the two groups of observations divided using the criterion of zero earnings level have considerable differences in the number of group members. Thus, consistent with Burgstahler and Dichev (1997) and Phillips et al. (2003), this supports the idea that companies with NI slightly less than zero report a surplus by using upward earnings management.

We assign the observations that use upward earnings management to avoid reporting loss to bracket EM1, where the value of NI divided by beginning of period total assets is slightly greater than zero. Specifically, we define the observations as in upward earnings management bracket when it fell into the range of 0 to 0.015.⁶

Healy (1985) demonstrates that downward earnings management occurs when the reported earnings exceed managers' upper incentive boundaries. DeFond and Park (1997) show that managers implement appropriation of negative (or positive) discretionary accruals when current performance is strong (or weak). Thus, we define the observations with high performance as those with downward earnings management incentives. The

⁶ Post- and pre-managed earnings could be criteria for classifying observations with upward earnings management incentives to avoid losses. Theoretically, it seems proper to divide the earnings management incentives according to pre-managed earnings level. However, calculating pre-managed earnings is problematic in that measurement error is a possibility, as is inaccuracy of the computation of the amount of earnings management. Moreover, when variables containing measurement errors are used as independent and dependent variables, results can indicate significant relationship even when there is none (Peasnell et al. 2005). In particular, when measurement error is present in independent variables, bias and inconsistency are highly likely to occur in the coefficient estimation procedure (Maddala 2001). Hence, a research model using this type of estimation method for pre-managed earnings is not appropriate. Therefore, following Phillips et al. (2003) and Roychowdhury (2006) this study uses post-managed earnings as the criterion to classify those observations with net profits slightly over zero as upward earnings management in this study.

bracket EM2, where the value of NI divided by total assets at the beginning of the current period is much larger than zero, is populated with the observations having an incentive for downward earnings management. Specifically, the brackets with a value of NI divided by total assets at the beginning of the current period over 0.075 are classified as downward earnings management companies, representing the top 31 percent.

We examine the earnings management incentive of the observations with earnings much less than zero. The direction of earnings management in these observations is not clear due to the two conflicting incentives, i.e., a big bath incentive that assumes maximum expenditure in the current period with the purpose of improving future performance, and another incentive to reduce the loss. Healy (1985) posits that downward earnings management occurs when the earnings are so low that they do not reach the lower boundary of bonus incentives. However, Gaver et al. (1995), which reexamine Healy (1985), find that accruals are adjusted such that earnings are increased. Thus, we decide not to predict the direction of earnings management in EM3, where the earnings are much less than zero. This implies that in this group, future corporate performance is unclear. Specifically, we define observations with an ambiguous direction of earnings management as those where the value of NI divided by the total assets at the beginning of the current period is less than -0.075, representing the bottom 9 percent. The numbers of firm-years assigned to each bracket are 1,337 (EM1), 1,995 (EM2), and 581 (EM3).⁷

4.3 Empirical model

We use model (9) to test hypothesis 1. The dependent variable of equation (9), TREM (aggregate metric of the sum of two real earnings management categories), takes into account ACFO (abnormal cash flow from operations), APC (abnormal production costs), and ADE (abnormal discretionary expenses). In this case, dependent variables that represent the real earnings management of equation (9) are the residuals that cannot be explained by the estimation model of equations (1)-(3). A main explanatory variable used to test hypothesis 1 is OWN in these equations. OWN is the proportion of the majority

⁷ We use different definitions (for example, 0.01 for EM1 or 0.065 for EM2 or -0.065 for EM3) of each incentive bracket for robustness check. The empirical results, however, are qualitatively the same.

shareholders' ownership.

In order to compare and analyze the earnings management behavior of companies under different earnings management incentives, equation (10) is used to test hypothesis 2. The dependent variables in estimation model (10) are identical to those in equation (9). The independent variables of interest are EM1, EM2, and EM3, an interaction term between each variable and OWN. We set EM1 to test hypothesis 2a with the observations whose earnings are slightly greater than zero, EM2 to test hypothesis 2b with the observations whose earnings are much greater than zero, and EM3 to test hypothesis 2c with the observations whose earnings are much less than zero. As control variables, we include natural log of total assets (SIZE), market to book ratio (MTB), leverage ratio (LEV), and profitability (NI).

$$TREM_{it} = \alpha_0 + \beta_1 OWN_{it} + \beta_2 SIZE_{i,t-1} + \beta_3 MTB_{i,t-1} + \beta_4 NI_{it} + \beta_5 LEV_{it} + \beta_{6-21} Year\ dummy_{it} + \beta_{22-28} Industry\ dummy_{it} + \varepsilon_t \quad (9)$$

$$TREM_{it} = \alpha_0 + \beta_1 OWN_{it} + \beta_2 EM1_{it} + \beta_3 EM1_{it} \times OWN_{it} + \beta_4 EM2_{it} + \beta_5 EM2_{it} \times OWN_{it} + \beta_6 EM3_{it} + \beta_7 EM3_{it} \times OWN_{it} + \beta_8 SIZE_{i,t-1} + \beta_9 MTB_{i,t-1} + \beta_{10} NI_{it} + \beta_{11} LEV_{it} + \beta_{12-27} Year\ dummy_{it} + \beta_{28-34} Industry\ dummy_{it} + \varepsilon_t \quad (10)$$

where $TREM = TREM1$ or $TREM2$;

$TREM1 = ACFO + ADE$;

$TREM2 = APC + ADE$;

$ACFO = (-1) \times$ Residual from the estimation model of equation (1);

$APC =$ Residual from the estimation model of equation (2);

$ADE = (-1) \times$ Residual from the estimation model of equation (3);

$OWN =$ % of majority shareholders' ownership;

$EM1 = 1$ in companies with NI slightly greater than 0 ($0 \leq NI \leq 0.015$), 0 otherwise;

$EM2 = 1$ in companies with NI much greater than 0 ($0.075 \leq NI$), 0 otherwise;

$EM3 = 1$ in companies with NI much less than 0 ($NI \leq -0.075$), 0 otherwise;

$SIZE =$ Natural log of total assets;

$MTB =$ Market value of equity / book value of equity;

$LEV =$ Total liability / total asset; and

$NI =$ Net income / beginning total assets.

4.4 Data Collection

We select the observations from companies listed on the Korea Stock Exchange (KSE) as of December 31, 2007 that satisfy the following criteria: (1) companies (except financial companies) listed on the Korea Stock Exchange, with their accounts closing in December; (2) companies with financial statements available for extraction using the KIS-Value database of Korea Investors Services; (3) companies with information available about majority shareholder ownership using TS2000 database of the Korea Listed Companies Association.

We use 17 years of data (1991 to 2007) from 7,358 firm-year observations satisfying the above conditions.⁸ We classify our observations into 13 groups according to industry (SIC code) to estimate real earnings management. To eliminate bias in estimation process, we exclude 918 observations that are in an industry-year group with less than 30 and 8 industry remains.⁹ Furthermore, to eliminate the effect of outlier bias, the top and bottom 1% of independent and dependent variables are winsorized. A total of 6,440 firm-year samples are used for the analyses.

V. EMPIRICAL RESULTS

5.1 Descriptive statistics

We present the descriptive statistics of the variables used in the analyses in TABLE 1. The majority shareholders' ownership of all companies is about 30 percent on average.

Insert TABLE 1 & 2 about here

TABLE 2 shows the correlations between variables. OWN has significantly

⁸ This study covers observations up to year 2007 to avoid the effect of worldwide financial crisis occurred in 2008.

⁹ Our observations by industry are composed as follows: food and kindred products (8%), textile mill products (7%), chemicals (23%), metal products (9%), machinery and auto manufacturing (25%),

negative relationships with TREM1 while it has negative but insignificant relationships with TREM2. This result is consistent with the idea that when the majority shareholder ownership is higher, a company generally reduces real earnings management using ACFO and/or ADE. Next, we use multivariate analyses to examine the effect of majority shareholder ownership on real earnings management according to earnings management incentive brackets.

Insert TABLE 3 about here

5.2 Multivariate results

5.2.1 Test of hypothesis 1

TABLE 3 shows whether majority shareholder ownership is associated with real earnings management. A negative (positive) OWN coefficient implies that a company avoids (conduct) real earnings management when majority shareholder ownership level is high. The result shows that OWN is negative but not significant with TREM1. Also, we are not able to find evidence of monitoring by majority shareholder ownership with TREM2. These results generally suggest that there is no systematic relationship between the ownership and real earnings management. SIZE, MTB, and NI are significantly negative in all models.

Insert TABLE 3 about here

5.2.2 Test of Hypothesis 2

When we test hypothesis 1, we find no systematic relationship between the majority shareholders' ownership and real earnings management. However, majority shareholders have differential incentives in monitoring real earnings management if their sensitivity to

construction (8%), retail (9%), and transportation, communications, and other services (11%).

real earnings management related to future performance is different as the prospect theory assumes. That is, monitoring by majority shareholders may only be effective in the upward earnings management bracket since it causes low operating performance in the future, which is unlike downward real earnings management. Thus, to test hypothesis 2, we investigate the effects of the majority shareholders' ownership on real earnings management according to earnings management incentives. TABLE 4 shows the results of the test of hypothesis 2, and confirms that the results can differ according to their incentives.

Insert TABLE 4 about here

Hypothesis 2a refers to EM1, which includes observations with upward earnings management incentive. All the coefficients of EM1 are significantly positive, and $EM1 \times OWN$ is significantly negative related with both TREM1 and TREM2. Positive sign of EM1 indicates that these companies practice upward real earnings management to avoid loss. In addition, negative sign of $EM1 \times OWN$ suggests self-control of real earnings management when the majority shareholders' ownership is high. In other words, majority shareholders resist making a decision that will decrease the company's long-term performance. This result supports the convergence-of-interests hypothesis i.e. the interests of the majority shareholders and those of the minority shareholders are convergent (Jensen and Meckling, 1976; Klassen, 1997).

Hypothesis 2b refers to EM2, which includes observations with downward earnings management incentive. All the coefficients of EM2 are significantly negative, but none of the $EM2 \times OWN$ variables are significantly related with TREM1 and TREM2. This implies that downward real earnings management occurs regardless of the level of majority shareholders' ownership. We interpret this result as evidence that majority shareholders do not feel the need to block downward real earnings management because it does not damage long-term operating performance. When we compare the upward real earnings management, this result is congruent with the prospect theory illustrating that investors including

majority shareholders are more interested in evading loss than in pursuing profit.

Hypothesis 2c refers to EM3, which contains observations without obvious earnings management incentive. The signs of EM3 in TABLE 4 are not significant. Furthermore, none of the EM3×OWN variables are significant. This result indicates that managers with large losses do not conduct real earnings management consistently, and the monitoring for real earnings management of majority shareholders is not apparent regardless of their ownership level.

The results with control variables are similar to those obtained when testing hypothesis 1. That is, real earnings management decreases when firms are larger (SIZE), growth opportunities (MTB) are greater, and operating performance (NI) is better while it increases when leverage (LEV) is greater.

VI. FURTHER ANALYSIS

6.1 Impact of earnings management in pre- vs. post-economic crisis period

We conduct an additional analysis to assess the impact of the proportion of majority shareholders between the pre- and post-economic crisis period. Korean companies went through dramatic structural changes during the International Monetary Fund (IMF) bailout period in 1997. IMF demanded the Korean government to undertake a series of reforms, affecting not only legal environment but also shareholders' and managements' view in dealing with investment opportunities (Yoo, 2000; Joo et al., 2000; Chang et al., 2007). Ultimately, value-based management practices became prevalent in long term values due to the economic crisis.

TABLE 5 shows the difference in the effect of majority shareholder ownership on real earnings management in pre- and post-economic crisis period.¹⁰ All the coefficients of EM1 in each model are significantly positive in TABLE 5. This implies that these companies practice upward real earnings management to avoid loss. In addition, only for the post-economic crisis, the significant negative sign of EM1×OWN reflects self-control

¹⁰ In this analysis, observations are reduced from 6,440 to 5,731 since we exclude year 1997 and 1998 which are directly affected by financial crisis.

of real earnings management as the majority shareholders' ownership grows. In other words, majority shareholders resist making a decision that will decrease the company's long-term value after the crisis when we compare with the pre-economic crisis period. This result suggests that majority shareholders who have significant influence over management decisions became more concerned with long-term firm value than before possibly because of reduced opportunities to pursue personal benefits at the expense of minority shareholders as a result of increased monitoring and/or strengthened governance (Yoo, 2000). However, we are not able to find significant results with EM2×OWN and EM3×OWN.

 Insert TABLE 5 about here

6.2 Impact on future performance

We perform another additional analysis to assess the impact of the proportion of majority shareholders on long-term performance using the following empirical model. While real earnings management lowers future performance, the magnitude of detriment may decline as majority shareholder ownership increases because of better convergence of interests with minority shareholders (Klassen, 1997; Warfield et al., 1995). As control variables, we include natural log of total assets (SIZE), book to market ratio (BTM), return on assets (ROA), and stock return for 12 months (RET).

$$\begin{aligned}
 CAROA_{i,t+1\sim3} = & \alpha_0 + \beta_1 OWN_{it} + \beta_2 TREM_{it} + \beta_3 OWN_{it} \times TREM_{it} + \\
 & \beta_4 SIZE_{it} + \beta_5 BTM_{it} + \beta_6 ROA_{it} + \beta_7 RET_{it} + \\
 & \beta_{8-20} Year\ dummy_{it} + \beta_{21-27} Industry\ dummy_{it} + \varepsilon_t
 \end{aligned} \tag{11}$$

where $CAROA$ = Cumulative abnormal return on assets for next 3 years;

OWN = % of majority shareholders' ownership;

$TREM$ = $TREM1$ or $TREM2$;

$TREM1$ = $ACFO$ + ADE ;

$TREM2$ = APC + ADE ;

$ACFO$ = $(-1) \times$ Residual from the estimation model of equation (1);

APC = Residual from the estimation model of equation (2);

ADE = $(-1) \times$ Residual from the estimation model of equation (3);

SIZE = Natural log of total assets;
BTM = Book value of equity / market value of equity;
ROA = Return on assets; and
RET = Stock return for 12 months.

TABLE 6 shows the differential impact on the firm's future performance according to majority shareholder ownership.¹¹ While the coefficients of *TREM1* and *TREM2* are significantly negative, *OWN*×*TREM1* and *OWN*×*TREM2* are significantly positive. This result also suggests that majority shareholders with higher ownership keep management from making decisions detrimental to future performance. The results together imply that high levels of majority shareholders effectively control their managers not to implement myopic management decisions that are harmful to future performance, confirming the hypothesis of convergence-of-interests between majority and minority shareholders. In particular, majority shareholders' asymmetric roles across different earnings management incentive brackets may come from their loss aversion and is consistent with the prospect theory.

Insert TABLE 6 about here

VII. CONCLUSIONS AND LIMITATIONS

To examine the convergence-of-interests or the expropriation-of-minority-shareholder hypotheses, this study adopts real earnings management instead of prior studies' accruals-based earnings management. Although majority shareholders allow accruals-based earnings management even with greater ownership, they may be more careful for real earnings management. It is because real earnings management has a more direct influence on the firm's actual operating performance. Thus, conclusions just with accruals-based earnings management may be

¹¹ Comparing to main test, we eliminate 1,397 observations of year 2007, 2006, and 2005. This reduction is inevitable because *CAROA* variable reflects cumulative business performance at least for next three years.

limited, so we utilize real earnings management to test this controversial issue.

Moreover, based on prospect theory, we analyze the differential effect of majority shareholder ownership on real earnings management according to earnings management incentives brackets. Prospect theory argues that investors are more interested in avoiding a loss than pursuing a profit. Consistent with the theory, majority shareholders are expected to be more reluctant to upward real earnings management.

We first find that, in the whole sample, there is no difference in real earnings management across different level of majority shareholder ownership. Second, only in the bracket where earnings are suspect to be upwardly managed real earnings management varies depending on equity ownership by majority shareholders. The more shares majority shareholders have, the more they prevent their companies from real earnings management. On the other hand, there is no difference in earnings management in the downward and ambiguous earnings management brackets across different level of majority shareholder ownership. Third, we analyze whether the role of majority shareholders' ownership differs in the before and after Asian economic crisis. We find majority shareholder ownership mitigates upward real earnings management only in the post-economic crisis period, resulting from value-based management triggered by the change in business practices.

The results of this study suggest that the higher the proportion of majority shareholders is, the more they avoid upward real earnings management that may damage not only firm's operating performance but also their own wealth. This implies that majority shareholders tend to make less myopic decisions as they have more shares in their companies, which support the convergence-of-interests hypothesis, i.e. the interests of the majority shareholders are aligned with those of the minority shareholders. Our finding is also consistent with the prospect theory in that the behavior of majority shareholders is asymmetric between loss and profit. They are more interested in monitoring managers' upward real earnings management causing loss than downward real earnings management related to profit.

Our study defines earnings management incentive bracket only based on earnings level. However, it is known that managers have incentives to manage earnings under various corporate events such as seasoned equity offerings, executive turnover, newly

introduce accounting regulation, and so on. If future studies investigate the effect of majority shareholders on real earnings management in these various incentives, their role to reduce agency cost will be further clarified.

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FIGURE 1
Classification of Brackets for Hypothesis 2

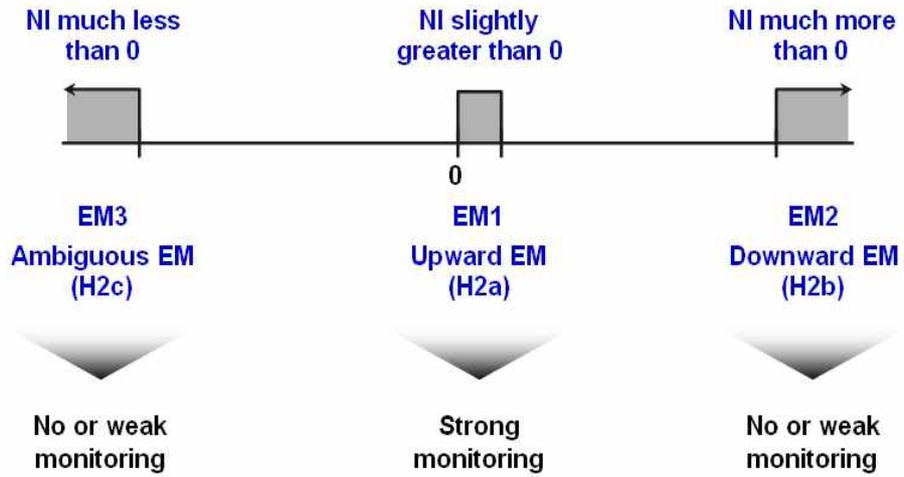


FIGURE 2
Distribution of Net Income

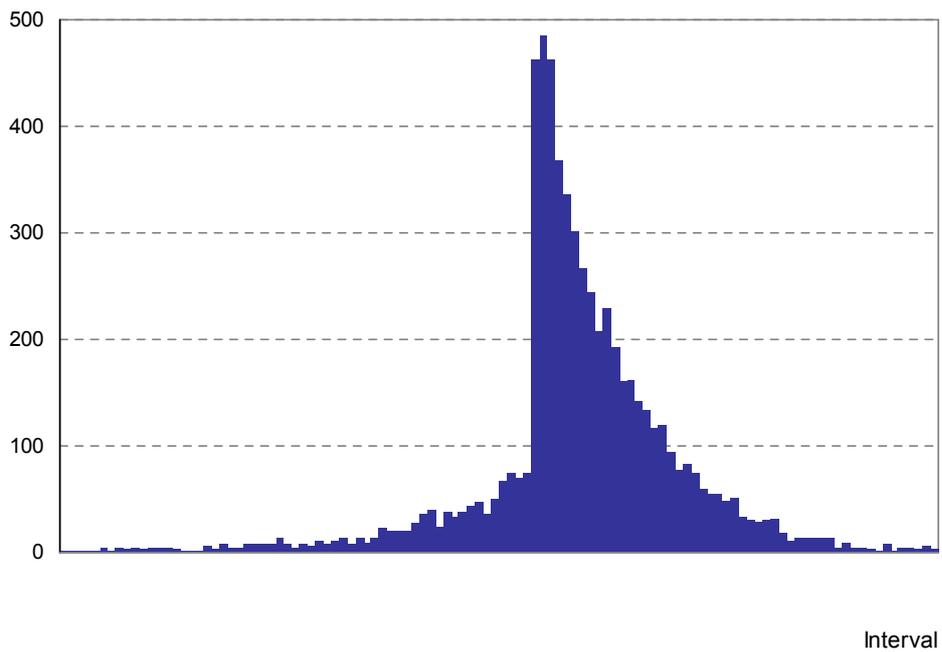


TABLE 1
Descriptive Statistics
(N = 6,440)

Variables	Mean	Standard Deviation	Min	25%	Median	75%	Max
<i>ACFO</i>	0.000	0.084	-0.236	-0.048	-0.001	0.048	0.245
<i>APC</i>	0.001	0.116	-0.402	-0.055	0.012	0.073	0.255
<i>ADE</i>	0.002	0.065	-0.286	-0.016	0.010	0.038	0.131
<i>TREM1</i>	0.002	0.110	-0.370	-0.056	0.008	0.070	0.267
<i>TREM2</i>	0.004	0.170	-0.683	-0.066	0.021	0.108	0.358
<i>OWN</i>	0.301	0.166	0.000	0.176	0.287	0.410	0.736
<i>SIZE</i> _{<i>t</i>-1}	17.808	1.537	14.991	16.742	17.540	18.604	22.721
<i>MTB</i> _{<i>t</i>-1}	0.989	0.879	-0.050	0.425	0.763	1.251	5.528
<i>NI</i>	0.027	0.076	-0.304	0.006	0.025	0.061	0.259
<i>LEV</i>	0.550	0.199	0.107	0.408	0.565	0.700	0.952

Notes:

1) Variable definition

ACFO = (-1) × residual from the estimation model of equation (1);

APC = Residual from the estimation model of equation (2);

ADE = (-1) × residual from the estimation model of equation (3);

TREM1 = *ACFO* + *ADE*;

TREM2 = *APC* + *ADE*;

OWN = Percentage of majority shareholders' ownership;

SIZE = Natural log of total assets;

MTB = Market value of equity / book value of equity;

NI = Net income / beginning total assets; and

LEV = Net income / beginning total assets.

TABLE 2
Correlation Matrix
(N = 6,440)

	<i>TREM2</i>	<i>EM1</i>	<i>EM2</i>	<i>EM3</i>	<i>OWN</i>	<i>SIZE_{t-1}</i>	<i>MTB_{t-1}</i>	<i>NI</i>	<i>LEV</i>
<i>TREM1</i>	0.684 (<.0001)	0.095 (<.0001)	-0.262 (<.0001)	0.172 (<.0001)	-0.052 (<.0001)	-0.154 (<.0001)	-0.132 (<.0001)	-0.296 (<.0001)	0.125 (<.0001)
<i>TREM2</i>		0.075 (<.0001)	-0.193 (<.0001)	0.103 (<.0001)	-0.001 (0.965)	-0.114 (<.0001)	-0.170 (<.0001)	-0.197 (<.0001)	0.040 (0.001)
<i>EM1</i>			-0.343 (<.0001)	-0.161 (<.0001)	-0.119 (<.0001)	-0.015 (0.217)	-0.081 (<.0001)	-0.130 (<.0001)	0.239 (<.0001)
<i>EM2</i>				-0.211 (<.0001)	0.143 (<.0001)	0.186 (<.0001)	0.114 (<.0001)	0.634 (<.0001)	-0.379 (<.0001)
<i>EM3</i>					-0.080 (<.0001)	-0.145 (<.0001)	0.033 (0.008)	-0.687 (<.0001)	0.178 (<.0001)
<i>OWN</i>						-0.049 (<.0001)	-0.061 (<.0001)	0.152 (<.0001)	-0.206 (<.0001)
<i>SIZE_{t-1}</i>							0.311 (<.0001)	0.194 (<.0001)	-0.085 (<.0001)
<i>MTB_{t-1}</i>								0.033 (0.009)	0.106 (<.0001)
<i>NI</i>									-0.337 (<.0001)

Notes:

1) Numbers in the parentheses are p-values.

2) See TABLE 1 for variable definitions.

EM1 = 1 in companies with NI slightly greater than 0 ($0 \leq NI \leq 0.015$), and 0 otherwise;

EM2 = 1 in companies with NI much more than 0 ($0.075 \leq NI$), and 0 otherwise; and

EM3 = 1 in companies with NI much less than 0 ($NI \leq -0.075$), and 0 otherwise.

TABLE 3
Effect of majority shareholder ownership on real earnings management

$$TREM_{it} = \alpha_0 + \beta_1 OWN_{it} + \beta_2 SIZE_{i,t-1} + \beta_3 MTB_{i,t-1} + \beta_4 NI_{it} + \beta_5 LEV_{it} + Industries_{it} + Years_{it} + \varepsilon_{it}$$

Variables	Pred. sign	TREM1		TREM2	
		Estimate	t-stat.	Estimate	t-stat.
Intercept	?	0.122	6.46***	0.141	4.72***
<i>OWN</i>	–	-0.013	-1.63	0.021	1.63
<i>SIZE</i> _{<i>t</i>-1}	–	-0.006	-6.86***	-0.005	-3.52***
<i>MTB</i> _{<i>t</i>-1}	–	-0.015	-9.11***	-0.035	-13.18***
<i>NI</i>	–	-0.376	-20.13***	-0.426	-14.37***
<i>LEV</i>	+	0.035	4.48***	-0.006	-0.52
Industry dummy	?	Included		Included	
Year dummy	?	Included		Included	
Adjusted <i>R</i> ²		0.113		0.033	
F-stat.		31.54***		9.23***	
# of observations		6,440		6,440	

Notes:

- 1) *, **, *** represent significance at the 10, 5, and 1 percent levels, respectively, with 2-tailed test.
- 2) See TABLE 1 for variable definitions.

TABLE 4

Effect of majority shareholder ownership on real earnings management in each earnings management bracket

$$TREM_{it} = \alpha_0 + \beta_1 OWN_{it} + \beta_2 EM1_{it} + \beta_3 EM1_{it} \times OWN_{it} + \beta_4 EM2_{it} + \beta_5 EM2_{it} \times OWN_{it} + \beta_6 EM3_{it} + \beta_7 EM3_{it} \times OWN_{it} + \beta_8 SIZE_{i,t-1} + \beta_9 MTB_{i,t-1} + \beta_{10} NI_{it} + \beta_{11} LEV_{it} + Industries_{it} + Years_{it} + \varepsilon_{it}$$

Variables	Pred. sign	TREM1				TREM2			
		Model 1		Model 2		Model 1		Model 2	
		Estimate	t-stat.	Estimate	t-stat.	Estimate	t-stat.	Estimate	t-stat.
Intercept	?	0.119	6.53***	0.122	6.42***	0.159	5.49***	0.142	4.70***
<i>OWN</i>	-			0.005	0.46			0.057	2.80***
<i>EM1</i>	+	0.009	2.52**	0.022	3.16***	0.010	1.92*	0.041	3.66***
<i>EM1</i> × <i>OWN</i>	-			-0.048	-2.22**			-0.107	-3.07***
<i>EM2</i>	-	-0.021	-5.27***	-0.018	-2.49**	-0.031	-4.81***	-0.019	-1.70*
<i>EM2</i> × <i>OWN</i>	-/?			-0.013	-0.70			-0.037	-1.26
<i>EM3</i>	?	-0.001	-0.15	0.011	1.08	0.001	0.12	0.005	0.33
<i>EM3</i> × <i>OWN</i>	-/?			-0.045	-1.56			-0.014	-0.31
<i>SIZE</i> _{<i>t-1</i>}	-	-0.006	-6.80***	-0.006	-7.02***	-0.005	-3.70***	-0.005	-3.74***
<i>MTB</i> _{<i>t-1</i>}	-	-0.013	-7.64***	-0.013	-7.60***	-0.032	-11.81***	-0.031	-11.72***
<i>NI</i>	-	-0.303	-9.33***	-0.296	-9.04***	-0.302	-5.88***	-0.313	-6.02***
<i>LEV</i>	+	0.027	3.46***	0.027	3.33***	-0.020	-1.62	-0.019	-1.52
Industry dummy	?	Included		Included		Included		Included	
Year dummy	?	Included		Included		Included		Included	
Adjusted <i>R</i> ²		0.120		0.120		0.076		0.077	
F-stat.		30.30***		26.99***		18.76***		16.95***	
# of observations		6,440		6,440		6,440		6,440	

Notes:

- 1) *, **, *** represent significance at the 10, 5, and 1 percent levels, respectively, with 2-tailed test.
- 2) See TABLE 1 for variable definitions.

TABLE 5
Effect of majority shareholder ownership on real earnings management in pre- vs. post-economic crisis period

$$TREM_{it} = \alpha_0 + \beta_1 OWN_{it} + \beta_2 EM1_{it} + \beta_3 EM1_{it} \times OWN_{it} + \beta_4 EM2_{it} + \beta_5 EM2_{it} \times OWN_{it} + \beta_6 EM3_{it} + \beta_7 EM3_{it} \times OWN_{it} + \beta_8 SIZE_{i,t-1} + \beta_9 MTB_{i,t-1} + \beta_{10} NI_{it} + \beta_{11} LEV_{it} + Industries_{it} + Years_{it} + \varepsilon_{it}$$

Variables	Pred. sign	TREM1				TREM2			
		Pre-economic crisis		Post-economic crisis		Pre-economic crisis		Post-economic crisis	
		Estimate	t-stat.	Estimate	t-stat.	Estimate	t-stat.	Estimate	t-stat.
Intercept	?	0.125	3.67***	0.114	4.7***	0.070	1.32	0.119	3.01***
<i>OWN</i>	-	0.009	0.38	0.003	0.20	0.114	3.07***	0.030	1.15
<i>EM1</i>	+	0.027	2.67***	0.027	2.44**	0.040	2.56**	0.056	3.10***
<i>EM1</i> × <i>OWN</i>	-	-0.053	-1.44	-0.067	-2.15**	-0.078	-1.37	-0.163	-3.19***
<i>EM2</i>	-	-0.024	-1.59	-0.020	-2.13**	0.009	0.38	-0.038	-2.52**
<i>EM2</i> × <i>OWN</i>	-/?	0.050	1.15	-0.023	-1.01	-0.035	-0.52	-0.018	-0.50
<i>EM3</i>	?	0.020	0.89	0.011	0.77	0.006	0.19	-0.002	-0.10
<i>EM3</i> × <i>OWN</i>	-/?	-0.017	-0.27	-0.075	-2.09**	0.036	0.37	-0.022	-0.39
<i>SIZE</i> _{<i>t-1</i>}	-	-0.007	-4.39***	-0.005	-4.60***	0.002	0.84	-0.005	-2.68***
<i>MTB</i> _{<i>t-1</i>}	-	-0.005	-1.63	-0.017	-7.57***	-0.016	-3.29***	-0.039	-10.78***
<i>NI</i>	-	-0.367	-4.71***	-0.292	-7.19***	-0.634	-5.24***	-0.277	-4.21***
<i>LEV</i>	+	0.024	1.54	0.025	2.52**	-0.160	-6.54	0.025	1.55
Industry dummy	?	Included		Included		Included		Included	
Year dummy	?	Included		Included		Included		Included	
Adjusted <i>R</i> ²		0.084		0.138		0.062		0.101	
F-stat.		8.59***		24.73***		6.47***		17.74***	
# of observations		1,884		3,847		1,884		3,847	

Notes:

- 1) *, **, *** represent significance at the 10, 5, and 1 percent levels, respectively, with 2-tailed test.
- 2) See TABLE 1 for variable definitions.
- 3) Sample size is reduced as a result of dropping 709 observations from years 1997 and 1998 because these years were transition period around the crisis.

TABLE 6
Interaction effect between majority shareholder ownership and real earnings management on future performance

$$CAROA_{i,t+1\sim3} = \alpha_0 + \beta_1 OWN_{it} + \beta_2 TREM_{it} + \beta_3 OWN_{it} \times TREM_{it} + \beta_4 SIZE_{it} + \beta_5 BTM_{it} + \beta_6 ROA_{it} + \beta_7 RET_{it} + Industries_{it} + Years_{it} + \varepsilon_{it}$$

Variables	Pred. sign	TREM1				TREM2			
		Model 1		Model 2		Model 1		Model 2	
		Estimate	t-stat.	Estimate	t-stat.	Estimate	t-stat.	Estimate	t-stat.
Intercept	?	-0.312	-6.79***	-0.374	-7.93***	-0.352	-7.63***	-0.413	-8.74***
<i>OWN</i>	+			0.123	5.92***			0.127	6.06***
<i>TREM1</i>	-	-0.327	-10.07***	-0.449	-6.94***				
<i>OWN</i> × <i>TREM1</i>	+			0.445	2.28**				
<i>TREM2</i>	-					-0.086	-4.12***	-0.211	-4.8***
<i>OWN</i> × <i>TREM2</i>	+							0.415	3.14***
<i>SIZE</i>	+	0.017	6.96***	0.018	7.48***	0.019	7.85***	0.020	8.31***
<i>BTM</i>	-	-0.007	-3.34***	-0.008	-3.6***	-0.008	-3.68***	-0.008	-3.89***
<i>ROA</i>	+	1.315	28.55***	1.275	27.55***	1.388	30.33***	1.346	29.23***
<i>RET</i>	+	0.075	12.27***	0.075	12.2***	0.078	12.67***	0.078	12.63***
Industry dummy	?	Included		Included		Included		Included	
Year dummy	?	Included		Included		Included		Included	
Adjusted R^2		0.268		0.273		0.255		0.262	
F-stat.		74.89***		71.41***		70.34***		67.62***	
# of observations		5,043		5,043		5,043		5,043	

Notes:

1) *, **, *** represent significance at the 10, 5, and 1 percent levels, respectively, with 2-tailed test.

2) See TABLE 1 for variable definitions.

CAROA = Cumulative abnormal return on assets for next 3 years;

BTM = Book value of equity / market value of equity;

ROA = Return on assets; and

RET = Stock return for 12 months.

3) Sample size is reduced as a result of dropping 1,397 observations from years 2007, 2006, and 2005. This elimination is necessary in computing *CAROA* since the sample covers up to 2007.