Do firms engage in earnings management to improve credit ratings?: Evidence from KRX bond issuers

MALI, Dafydd and LIM, Hyoung-Joo

Published version

MALI, Dafydd and LIM, Hyoung-Joo (2016). Do firms engage in earnings management to improve credit ratings?: Evidence from KRX bond issuers. Korean Corporation Management Review, 23 (1), 39-61.

한국기업경영학회
[기업경영연구] 제23권 제1호(2016) pp. 39-61 http://dx.doi.org/10.21052/KCMR.2016.23.1.03

Do Firms Engage in Earnings Management to Improve Credit Ratings? : Evidence from KRX Bond Issuers

Mali, Dafydd*, Lim, Hyoung-Joo**

〈Table of Contents〉

Abstract

In this paper, we examine the relationship between credit ratings, credit ratings changes and earnings management. Since the 1997 Asian Financial Crisis, many listed firms collapsed, leading investors to suffer losses. As a result, credit ratings have become a very important indicators of firms' financial stability for investors, government agencies and debt issuers and other stakeholders.

Firms with a similar credit rating are grouped together as firms of similar credit quality (Kisgen 2006) because credit ratings provide an 'economically meaningful role' (Boot et al. 2006). Numerous studies find that managers care deeply about their credit ratings (Graham and Harvey 2001; Kisgen 2009; Hovakimian at al. 2009). Firms that borrow equity in the form of bonds may have incentives to increase credit ratings with opportunistic earnings management. A change in a firm's credit ratings has a direct impact on a firm's profitability. Firm's benefit from better terms from suppliers, enjoy better investment opportunities and have lower cost of capital when their credit risk is lower. Firms incur a higher cost of debt and experience additional costs when their credit risk is higher. American studies find that firms use earnings management to influence credit ratings (Ali and Zhang 2008; Jung et al. 2013; Alissa et al 2013).

Credit rating agencies have stated they assume financial statements to be reasonable and accurate (Securities and Exchange Commission, 2003; Standard and Poor's, 2006) and they do not consider themselves to be auditors. They take the information in the financial statements as accurate. Therefore, there is a potential for managers to engage in

* First author, Assistant Professor, Department of Accounting, Kyungsung University
** Corresponding author, Assistant Professor, Department of Global Business Administration, Far East University

earnings management to influence credit ratings. In South Korea, there have been numerous experiments with auditor legislation because of financial collapses due to earnings management in the 2000s. Therefore, a decomposition of the relation between opportunistic earnings management and credit ratings is an important consideration for Korean accounting academia.

Previous Korean studies have examined whether credit ratings in period t are significantly related to level of earnings management in the same period; however, those studies fail to find the consistent results. It is widely known that credit rating agencies allow one year credit watch period to assess default risk before credit rating decision. Firms with an incentive to increase their credit ratings through earnings management will only realize if earnings management positively influences credit ratings in the following year. Therefore, we focus on establishing a relationship between the levels of earnings management at time t and credit ratings / changes at time t+1. Our study provides a more robust analysis by establishing if both accrual based and real earnings management in period t influences credit ratings and credit rating changes in period t+1.

Using a sample of 1,717 Korean KRX firm-years from 2002 to 2013, we find a negative relation between earnings management in period t and credit ratings in period t+1, suggesting that firms with higher credit ratings have lower levels of earnings management. Moreover, we find that firms that experience a credit ratings change in period t+1 are less likely to engage in opportunistic earnings management in period t, suggesting that firms do not have the potential to increase credit ratings. We also find that firms that experience a credit rating increase in period t+1 have a negative association with opportunistic earnings management for accruals measures. Moreover, when we split our sample into firms that experience 1) a credit rating increase, 2) decrease and 3) remaining the same, we find that firms that engage in earnings management are more likely to remain unchanged or experience a credit rating decrease. Thus, taken together, we find no evidence of relationship between opportunistic earnings management and an increase in credit ratings in the South Korean public debt market. Our results may be of interest to regulators, credit rating agencies, market participants and firms that question whether level of earnings management in current year influences credit ratings in the subsequent period.

Keywords: Credit Ratings, Accrual Based Earnings Management, Rear Earnings Management, Default Risk, Credit Risk

Ⅰ. Introduction

Credit rating agencies provide a useful appraisal of credit risk for investors, government agencies and debt issuers because firms with similar credit ratings are considered as having similar credit quality. A change in a firm's credit ratings has a direct impact on a firm's profitability. Firm's benefit from better terms from suppliers, enjoy better investment opportunities and have lower cost of capital when their credit risk is lower. Firms incur a higher cost of debt and experience additional costs when their credit risk is higher. Therefore, there is a potential that management may be motivated to take action to influence their credit ratings. Numerous studies find that firms use earnings management to influence credit ratings (Ali and Zhang 2008; Jung et al. 2013; Alissa et al 2013). In South Korea, there is mixed evidence about the relation between credit ratings and managerial opportunism. The majority of studies are based on models that suggest that earnings management in period t influence credit rating in period t. However, former Korean studies ignore the time lag between credit rating analysis and credit rating change suggested by Alissa et al. 2013. Firms that potentially face a credit rating change must experience a 1 year credit watch period; therefore, earnings management in period t is more likely to influence credit ratings in period t+1. Our paper is motivated by this caveat.

We use a sample of KRX firms that borrow public equity in the from of bonds from 2002 to 2013 to test the relationship between earnings management in period t, and its effect on credit ratings in period t+1. For our analysis, we use the residual from the Dechow et al. (1995) and Kothari et al. (2005) as proxies for accrual earnings management (AEM henceforth). Moreover, we use two proxies for real earnings management (REM henceforth). The REM models suggested by Cohen and Zarwin (2010) are a combination of the cashflow from operations, production cost and discretionary expense models suggested by Roychowdhury (2006). In all of our models, earnings management is our variable of interest.

First, we use ordered probit regression with credit rating in period t+1 as the dependent variable. We find a negative relation between credit ratings in period t+1 and earnings management in period t, suggesting that firms with higher credit ratings are less likely to engage in earnings management; moreover firms are not likely to increase credit ratings with opportunistic earnings management. Secondly, we perform multivariate OLS regression to establish if earnings management in period t influences credit ratings in period t+1. The results suggest that accrual based EM measures have significant negative association with credit rating changes, suggesting that firms with higher level of discretionary accruals are less/likely to experience a credit rating change/downgrade. However, the results for REM are not significant, suggesting REM have

a limited effect on credit rating changes. Thus, we infer that credit ratings agencies are concerned with accruals based earnings management, but do not separate abnormal real earnings management from operating activities.

Thirdly, we test the relation between credit ratings increases in period t+1 and earnings management in period t. We find a negative relation between earnings management in period t and credit ratings increases in period t+1 using logistic regression. The results suggest a negative relation between managerial opportunism and credit ratings increases. Moreover, we compare the earnings management of firms that have experienced a credit rating increase, decrease and firms with unchanged credit ratings using logistic regression. We find that firms that engage in earnings management are more likely to experience a credit rating decrease or remain unchanged. Finally, we perform a truncated regression for robustness because OLS estimates can be considered biased. Our Maximum Likelihood estimates are consistent with the results from our main analysis. Therefore, we find that opportunistic earnings management in period t is not associated with a credit rating increase in period t+1. Thus, we infer that credit rating agencies have the capability of capturing the level of earnings management during the credit watch period.

Although some studies previously examined the relation between earnings management and credit ratings, our study contributes to the literature by establishing the relation in several distinctive manners. First, we focus on levels of earnings management during the credit watch period, period t to period t+1. Firms care deeply about credit ratings and have incentives to manage credit ratings. Credit rating agencies issue a 1 year credit watch period before determining credit ratings changes. Whilst other studies find a relation between earnings management at time t and credit ratings at time t, our model tests if firms that engage in earnings management can improve credit ratings in period t+1. Second, we consider both accrual based and real earnings management metrics to establish a relation between EM and credit ratings in period t+1. Previous studies find that effective monitoring agencies are capable of capturing AEM whilst REM is hard to detect. We test whether credit rating agencies can capture both AEM and REM during the credit watch period concurrently. Third, we take a battery of approach, specifically using ordered probit regression for the credit ratting continuous variable at time+1, OLS regression for credit rating difference between time t and t+1, and logistic regression for the credit rating change dummy variable. Fourth, we run a series of tests to examine whether level of earnings management are significantly related with credit rating increases, no change and decreases after partitioning our sample into 3 sub-samples. Finally, we partition our accrual based earnings management measure into income-increasing /decreasing accruals and find that

only income-increasing accruals are significantly related to credit ratings at time+1. Thus, our analysis can be considered as the most robust analysis of relation between opportunistic earnings management and credit ratings changes. We find no evidence of a relationship between opportunistic earnings management and an increase in credit ratings in the South Korean public debt market. Our results may be of interest to regulatory agencies, market participants, and other various stockholders who question whether level of earnings management influence credit ratings in the subsequent period.

The remainder of this paper proceeds as follows. In the next section, we provide a review of relevant literature and develop hypotheses. In section III, we will explain the research design and the earnings management metrics. Section IV will present details of the results; section V discusses the results of additional analysis. Finally, section VI concludes.

II. Previous Studies and hypothesis

In South Korea, credit ratings are primarily issued by Korea's four credit rating agencies, National Information & Credit Evaluation (NICE) Korea Investor Services (KIS), Korea Ratings (KR) and Seoul Credit Rating & Information (SCI). Standard and Poor's (2006) define credit risk as the possibility that a bond issuer will default by failing to make principal and interest payments under the bond's terms. Credit risk is defined by Moody's Investor Service (2009) as a relatively expected loss rate, which is the product of expected default rates and expected loss-severity rates in the case of default. Generally, there are ten categories AAA, AA, A, BBB, BB, B, CCC, CC, C, D; each category from AA to CCC is divided into subcategories with +/-. Each company may use a different symbol to the above; however, as a rule, the ordinal level is constant for all credit ratings firms. Credit ratings increases and decreases occur when a firm's credit risk increases or decreases.

Firms consider their credit rating when making decisions about equity capital. Graham and Harvey (2001) collect survey evidence from CFOs in the U.S. and Canada; they find that a firm's primary concerns when issuing debt, are financial flexibility and credit rating. Graham et al. (2005) conduct survey evidence; they find that 78% of managers would take economic actions that could have negative long-term consequences to manage earnings to meet benchmarks. Studies suggest that firms take credit ratings into account when making capital allocation decisions. Kisgen (2009) finds that in the year following a downgrade, firms issue less debt to regain a credit rating following a credit rating downgrade to avoid further downgrades. Hovakimian at al. (2009) examine how firms target their credit ratings and how the ratings targets influence corporate decisions; their research suggests that firms engineer their financial structure to achieve

their credit rating targets at the lowest possible cost of capital. Thus, the literature suggests that credit rating levels are an important consideration for managers, *ceteris paribus* managers prefer higher credit ratings.

Firms with a similar credit rating are grouped together as firms of similar credit quality (Kisgen 2006). Boot et al. (2006) argue that credit ratings provide an 'economically meaningful role' by facilitating equilibrium in bond investment. A firm's credit rating can provide an independent appraisal to the market regarding the default risk associated with a firm's debt. Whilst ratings agencies provide information about a firm's probability of default risk, rating agencies have stated they assume financial statements to be reasonable and accurate (Securities and Exchange Commission, 2003; Standard and Poor's, 2006). Therefore, given that credit rating agencies do not consider themselves to be auditors. They take the information in the financial statements as accurate. Therefore, managers may have an opportunity to improve their credit ratings by engaging in earnings management.

Hokakimain et al.(2009)'s research based on capital structure empirically test the relation between credit rating and how ratings targets influence corporate decisions. They find evidence that supports the idea that firms make corporate finance choices that offset shocks that move them away from their target capital structures.

Accounting research has focused on agency theory between managers and equity holders. Dechow and Dichev (2002) and Kothari et al. (2005) demonstrate that organizations are opportunistic in managing earnings to meet earnings benchmarks. However, whilst there is extensive research on the earnings management in the private debt market, there is limited evidence about the relation between earnings management in the public debt market.

Borrowing from Hovakimain et al.'s (2009) capital structure model, Alissa et al. (2013) suggest that firms are able to influence their credit ratings after engaging in earnings management using abnormal accruals and real earnings management. Alissa et al. (2013) find that firms utilize both types of earnings management techniques in successfully moving upward or downward towards its 'predicted' credit rating; Moreover, the level of earnings management is higher for BBB+ at the investment grade cut off level. Jung et al. (2013) test if firms within broad rating categories (AA) have differential incentives to smooth earnings compared to firms at the top or bottom of a rating category (AA+ or AA-,). They find evidence that 'top firms' (AA+) use higher levels of discretionary accruals techniques to smooth reported income compared to bottom (AA-) rated firms. Ali and Zhang (2008) also find evidence that firms engage in earnings management to influence their capital structure to influence credit ratings.

Firms are likely to use a mix of abnormal accruals and real earnings management as tools to manage their reported earnings(Kim et al., 2013; Park, 2012).

Gunny (2010) finds that firms who employ REM to meet the benchmarks have higher subsequent firm performance compared to firms that do not engage in REM and miss / just beat earnings benchmarks. Alteratively, the firm may choose between the two earnings management mechanisms using the technique that is less costly to them. Real earnings management (REM) is defined as management actions that deviate from normal business practices undertaken for purposes of achieving certain earnings thresholds (Roychowdhury, 2006). Gunny (2010) examines the relation between REM and ex-post performance. Gunny (2010) finds evidence that REM is associated with firms just meeting earnings benchmarks. Zang (2012) finds that the trade-off between the two earnings management methods is a function of their relative costs. Crabtree et al. (2014) evaluates new debt offerings and evaluates if real earnings management influences the bond rating and actual price of a new firms rating. They find the relationship between REM to bond price and rating to be negative. However, numerous studies find a positive relation between real earnings management and credit ratings levels (Ali and Zh ang 2008; Alissa et al. 2013).

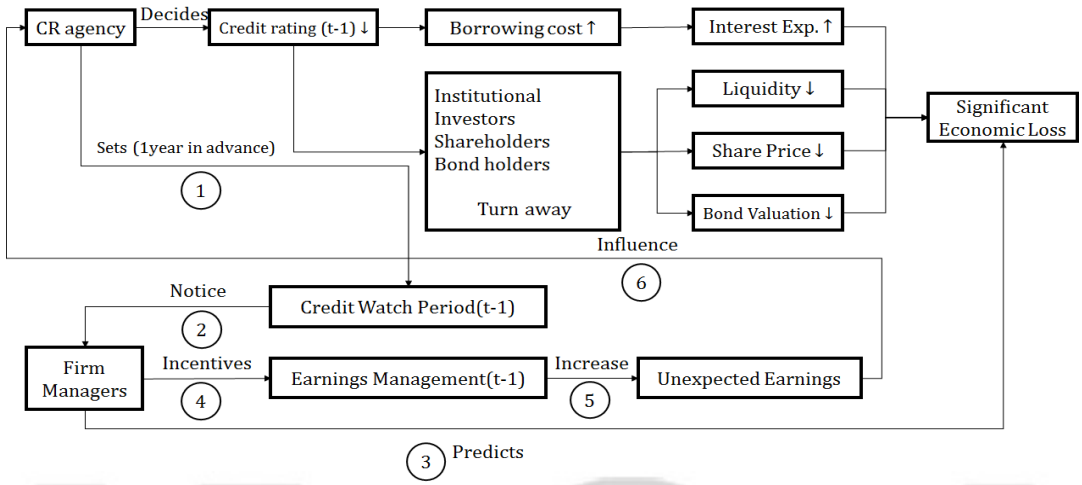
Whilst the majority of US studies find a negative relation between opportunistic earnings management at notch levels and around the investment grade level, evidence from South Korea is mixed. Oh (2005) finds that level of discretionary accruals have a positive association with level of credit ratings. Ahn and Kim (2014) find that credit ratings levels have a significantly positive correlation with abnormal CFO/abnormal production cost but have negative correlation with abnormal discretionary expenses. On the other hand, Park and Roh (2011) find that firms with lower credit ratings (hence higher default risk) engage in earnings management in the subsequent period.

Park et al. (2012) find that firms with higher level of accrual based and real earnings management are likely to experience a credit rating decrease in period t+1, using credit ratings for corporation(Not credit ratings for bonds). Lee and Kim(2011) find that REM have negative association with credit ratings, suggesting that credit rating agencies capture level of real earnings management. Lee and Jung (2012) find that level of REM has a negative relation with credit ratings. Moreover, firms that experience a credit rating downgrade, engage in more REM, compared to firms that do not experience a credit rating change. We hypothesize, based on the U.S. literature that firms with higher credit ratings are more likely to have lower level of earnings management due to the fact that there are less incentives and higher repetitional costs for firms with higher credit ratings to influence future credit ratings changes. Therefore, we develop the following hypothesis.

H1: Earnings management is negatively associated with credit rating levels.

A report by the FTSE, London's stock exchange suggests that although Korea has yet to fully satisfy

〈Figure 1〉 Incentives for earnings management to influence credit ratings



a small minority of detailed criteria, in all essential respects, meets the definitions and standards of a developed market (Woods, 2013). Moreover, whist the Korean economy is comparable to those of most developed countries, its legal enforcement is weak (La Porta et al. 1997). However, because of numerous instances of window dressing causing financial collapses in the early 2000s, South Korean legislators have experimented with numerous audit policies to increase confidence in the South Korean economy. Therefore, the different results observed in South Korean may be explained by different legislative policies.

Our research is designed to the most robust analysis of earnings management and credit ratings by establishing a relation between CR in period t+1 and earnings management in period t, following the model established in <Figure 1>.

Credit ratings agencies predict credit ratings 1 year in advance dependent on financial data and corporate governance data. Firms care deeply about credit ratings and have incentives to manage credit ratings. The manager of firms under a credit watch period have incentives to engage in earnings management to influence credit ratings in the subsequent period. Previous studies find a relation between earnings management at time t and credit ratings at time t. However, previous studies do not consider that a time lag, firm characteristics in period t and level of earnings management may not influence credit rating change in the same period. Our research is designed to capture whether firms that engage in earnings management have the potential to improve their credit ratings at time t+1. A firm with a higher level of earnings management has the potential to benefit from an increase in credit ratings. On the other hand, CR agencies may interpret increased earnings management as

opportunistic behaviour and penalize earnings management. Firms that experience a credit rating decrease, face an increase in borrowing cost, are more likely to receive institutional investment; hence may endure larger economic loss. Therefore, based on the above, we develop the following hypotheses:

H2: Firms that engage in earnings management increase/decrease their credit ratings.

III. Research Design

3.1 Model specifications and variables descriptions

Accrual based earnings management

We measure abnormal accruals using the residual from the modified Jones model suggested by Dechow (1995) as a proxy for earnings management. $TACC$ is Net income − cashflow from operations. $Asset_{t-1}$, is total assets in period t-1. $\triangle REV$ is changes in sales, calculated at sales in period t minus sales in period t-1. $\triangle REC$, changes in accounts receivables is calculated as the changes in accounts receivable in period t and period t-1. PPE is property, plant and equipment.

Modified Jones Model (Dechow et al., 1995)

$$TAAC_{i,t}/Asset_{i,t-1} = \beta_1 1/Asset_{i,t-1} + \beta_2(\triangle REV_{i,t} - \triangle REC_{i,t})/Asset_{i,t-1} + \beta_3 PPE_{i,t}/Asset_{i,t-1} + \upsilon_{i,t} \quad (1)$$

Where,

$TACC$: Total accruals (=Net income − cashflow from operations)
$Asset_{i,t-1}$: Total Assets at time t-1
$\triangle REV$: Changes in sales ($=Sales_t - Sales_{t-1}$)
$\triangle REC$: Changes in accounts receivables ($=REC_t - REC_{t-1}$)
PPE : Property, Plant, Equipment

In addition, we use the performance adusted model, suggested by Kothari et al. (2005). We include an additional variable, ROA_{t-1} in equation (1) since Kothrai et al. (2005) suggest that the variable has the potential to decrease potential measurement error. All other variables are defined perviously.

Performance Adjusted Model (Kothari et al., 2005)

$$TAAC_{i,t}/Asset_{i,t-1} = \beta_0 + \beta_1 1/Asset_{i,t-1} + \beta_2(\triangle REV_{i,t} - \triangle REC_{i,t})/Asset_{i,t-1} + \beta_3 PPE_{i,t}/Asset_{i,t-1} + \beta_4 ROA_{i,t-1} + \upsilon_{i,t} \quad (2)$$

Where,

$ROA_{i,t-1}$: Return on assets at time t-1

Real earnings management

Our real earnings management proxies are based on Roychowdhury's model (2006). We identify three levels of abnormal 'real activities'; abnormal levels of cash flow from operations (CFO) in equation 3, production costs (Prod) in equation 4 and discretionary expenses (SGA) in equation 5. Deviations from normal levels of real activities are considered to be real earnings management (the

residual from one of the three estimation models). Positive deviations would be interpreted as earnings management for production costs (Prod). A negative deviation would be interpreted as management making upward earnings management decisions based on CFO and discretionary expenses (SGA). We multiply −1 by abnormal SGA and abnormal CFO to facilitate the interpretation.

Real Earnings Management Models

$$CFO_{i,t}/Asset_{i,t-1} = \beta_1 1/Asset_{i,t-1} + \beta_2 Sales_{i,t}/Asset_{i,t-1} + \beta_3 \triangle Sales_{i,t}/Asset_{i,t-1} + \upsilon_{i,t} \quad (3)$$

$$Prod_{i,t}/Asset_{i,t-1} = \beta_1 1/Asset_{i,t-1} + \beta_2 Sales_{i,t}/Asset_{i,t-1} + \beta_3 \triangle Sales_{i,t}/Asset_{i,t-1} + \beta_4 \triangle Sales_{i,t-1}/Asset_{i,t-1} + \upsilon_{i,t} \quad (4)$$

$$SGA_{i,t}/Asset_{i,t-1} = \beta_1 1/Asset_{i,t-1} + \beta_2 Sales_{i,t-1}/Asset_{i,t-1} + \upsilon_{i,t} \quad (5)$$

Where,

CFO : Cashflow from operation at time t

$Prod$: Production cost at time t (=Cost of sales + Changes in inventory)

SGA : Sales and general administration expenses (=General administration expenses − taxes − depreciation expenses − rent expenses − insurance expenses) + (sales expenses + research and development expenses)

$Sales_{i,t}$: Sales revenue at time t

$\triangle Sales_{i,t}$: Changes in sales revenue at time t

CFO represents Cash flow from operations in period t scaled by assets in period t-1. Prod, Production cost at time t is calculated as cost of sales plus changes in inventory scaled with assets in t-1. SGA, sales and general administration expenses, are calculated as the variable definition above. $Sales_{i,t}$ is revenue at time t and $\triangle Sales_{i,t}$ is changes in sales revenue at time t.

In order to capture the total effects of REM activities, we combine the three individual measures to calculate two comprehensive metrics of REM activities(Cohen and Zarowin, 2010)[2]. The values from equations 3, 4 and 5 are added into equations 6 and 7.

Total REM measures (Cohen and Zarowin, 2010)

$$TRM1: \quad REM1 = abProd + abSGA*(-1) \quad (6)$$

$$TRM2: \quad REM2 = abCFO*(-1) + abSGA*(-1) \quad (7)$$

where,

$abCFO$: Abnormal CFO calculated from the equation (3)

$abProd$: Abnormal production cost calculated from the equation (4)

$abSGA$: Abnormal discretionary expenses calculated from the equation (5)

The purpose of equation 8 is to establish if opportunistic behaviour proxied by credit rating in period t influences credit ratings in period t+1. Our dependent variable is defined previously as an ordinal level representing a firm's credit rating. Our

2) We do not combine $abCFO$ and $abProd$, since the same activities that lead to high $abProd$, also lead to high $abCFO$, hence double counting(Cohen and Zarowin, 2010).

independent variable of interest, EM are numerous earnings management metrics calculated in equation 1, 2, 6 and 7. A negative relation between credit ratings and EM would suggest that firms with lower credit ratings would have higher levels of earnings management; therefore, in equation 8, we expect EM to be negative.

The purpose of equation 9 is to establish if earnings management in period t has the potential to change credit ratings in period t+1. Changes is defined as CR in period t+1 minus credit ratings in period t. Whilst we predict a negative sign for equation 8, equation 9 has the potential to have positive or negative coefficients. Statistically significant positive EM coefficients would suggests that opportunistic earnings management has the potential to influence credit ratings. Negative or no relation would suggest that opportunistic earnings management does not influence credit ratings. Equation 10 captures the different levels of earnings management of firms that increase their credit ratings in period t+1. A positive EM coefficient suggests that firms that experience a credit rating increase have been able to increase their credit ratings in period t+1 through opportunistic behaviour. A negative, or no results suggests that firms are not able to use opportunistic behaviour to increase credit ratings. D_Changes is a dummy variable that takes a value of 1 if credit ratings increases from t to t+1, or 0 otherwise.

Research Models

$$CR_{t+1} = \beta_0 + \beta_1 EM_{i,t,k=1,2,3,4} + \beta_2 Size_{i,t} + \beta_3 Lev_{i,t} + \beta_4 Grw_{i,t} + \beta_5 ROA_{i,t} + \beta_6 CPS_{i,t} + \beta_7 Loss_{i,t} + ID + YD + \epsilon_{i,t} \quad (8)$$

$$Changes = \beta_0 + \beta_1 EM_{i,t,k=1,2,3,4} + \beta_2 Size_{i,t} + \beta_3 Lev_{i,t} + \beta_4 Grw_{i,t} + \beta_5 ROA_{i,t} + \beta_6 CPS_{i,t} + \beta_7 Loss_{i,t} + ID + YD + \epsilon_{i,t} \quad (9)$$

$$D\_Changes = \beta_0 + \beta_1 EM_{i,t,k=1,2,3,4} + \beta_2 Size_{i,t} + \beta_3 Lev_{i,t} + \beta_4 Grw_{i,t} + \beta_5 ROA_{i,t} + \beta_6 CPS_{i,t} + \beta_7 Loss_{i,t} + ID + YD + \epsilon_{i,t} \quad (10)$$

Where,

Dependent Variables

CR_{t+1} : Credit ratings at time t+1

$Changes$: Changes in credit ratings (= $CR_{t+1} - CR_t$)

$D\_Changes$: Dummy variable that takes 1 if credit rating increased from t to t+1 period, 0 otherwise

Variables of Our Interest

EM_1: ABMJ (=Abnormal accruals computed from the modified Jones model, suggested by Dechow et al.(1995)

EM_2: ABKW (=Abnormal accruals computed from the performance adjusted model, suggested by Kothari et al.(2005)

EM_3: TRM1 (= $REM1 = abProd + abSGA^*(-1)$)

EM_4: TRM2 = $REM2 = abCFO^*(-1) + abSGA^*(-1)$)

Control Variables

$Size$: Natural logarithm of total assets at time t-1

Lev : Debt ratio

Grw : Sales growth ratio

ROA : Return on assets

CPS : Cashflow from operation scaled by total outstanding shares

$Loss$: Dummy variable that takes 1 if a firm experienced loss at time t-1, 0 otherwise

ID & YD : Industry & Year fixed effect

〈Table 1〉 Audit fee sample selection by credit ratings

Panel A: Audit fee and CR sample from 2002-2013					
Initial CR Sample			2,480		
Excluding Post periods			(739)		
Potential Sample			1,741		
Excluding firms with no financial data available			(24)		
Final Sample			1,717		
Panel B: Sample selection by credit ratings					
CR scores	*CR*	*Obs*	*CR sores*	*CR*	*Obs*
17	AAA	87	8	BBB-	168
16	AA+	69	7	BB+	73
15	AA	80	6	BB	73
14	AA-	156	5	BB-	72
13	A+	158	4	B+	44
12	A	172	3	B	32
11	A-	193	2	B-	17
10	BBB+	155	1	Below B-	32
9	BBB	136	Total		1,717

Our EM variables are previously defined. Size, the natural logarithm of total assets at time t-1 is expected to be positive because larger firms tend to be more mature. Lev is a proxy for risk, firms with higher leverage tend to be riskier because any shock to the organization can have a dramatic effect on a firms future profitability, or even existence. Therefore lower leverage is expected to have a positive relation with credit rating. Grw, growth is calculated as the growth ratio; the sign is not

predicted. ROA, return on assets and CPS, cash flow from operations per share are proxies for performance, both are expected to be positive. Loss, is a dummy variable designed to capture financial loss. ID, industry effect and YD, year effect are included.

3.2 Sample selection

All credit rating data is collected from TS2000 and financial data is collected from FN guide. We select a sample period from 2002 to 2013. This sample period has been selected because financial performance of firms' reporting is considered more robust after the Asian Financial Crisis (1997).

<Table 1> illustrates our sample selection process. Our initial sample was 2,480, 739 post period firms were excluded, and an additional 24 firms with no financial data were excluded, leaving a total of 1,717 observations.

CR, our main variable of interest represents the credit rating levels of all the firms that borrow equity through public debt in South Korea over our sample period 2002-2013. Credit ratings are collected from

〈Table 2〉 Descriptive Statistics and Pearson Correlations

Panel A: Descriptive Statistics

Var	Obs	Mean(Med)	Max(Min)	S.D.
CR_t+1	1717	10.59(11)	17(1)	3.81
DAMJ	1717	0.00(0.00)	0.26(-0.28)	0.08
DAKW	1717	0.00(0.00)	0.20(-0.19)	0.07
TRM1	1717	-0.03(-0.02)	0.53(-0.90)	0.21
TRM2	1717	-0.02(-0.02)	0.41(-0.52)	0.14
Size	1717	20.71(20.62)	24.39(17.61)	1.61
Lev	1717	0.52(0.54)	0.93(0.08)	0.18
Grw	1717	0.08(0.07)	1.03(-0.71)	0.25
ROA	1717	0.03(0.03)	0.18(-0.32)	0.08
CPS	1717	5.63(1.93)	83.77(-11.76)	13.94
Loss	1717	0.15(0)	1(0)	0.36

Panel B: Pearson Correlation

	1.	*2.*	*3.*	*4.*	*5.*	*6.*	*7.*	*8.*	*9.*	*10.*
1. CR_t+1	1									
2. DAMJ	-0.06***	1								
3. DAKW	-0.06**	0.81***	1							
4. TRM1	-0.21***	0.06***	0.13***	1						
5. TRM2	-0.23***	0.32***	0.45***	0.85***	1					
6. Size	0.52***	0.02	-0.06**	-0.12***	-0.17***	1				
7. Lev	-0.43***	0.13***	0.05**	0.14***	0.16***	0.02	1			
8. Grw	0.03	0.09***	0.08***	-0.04	-0.06***	0.06**	0.04	1		
9. ROA	0.38***	0.38***	0.02	-0.14***	-0.16***	0.19***	-0.39***	0.23***	1	
10. CPS	0.31***	-0.16***	-0.27***	-0.21***	-0.32***	0.30***	-0.21***	0.04*	0.19***	1
11. Loss	*-0.32****	-0.26***	-0.04	0.07***	0.09***	-0.11***	0.32***	-0.20***	-0.65***	-0.16***

Note) ① Variable Definitions

CR_{t+1} : Credit ratings at time t+1
DAMJ : Abnormal accruals computed from the modified Jones model, suggested by Dechow et al.(1995)
DAKW : Abnormal accruals computed from the performance adjusted model, suggested by Kothari et al.(2005)
TRM1 : $REM1 = abProd + abSGA^*(-1)$
TRM2 : $REM2 = abCFO^*(-1) + abSGA^*(-1)$
$Size$: Natural logarithm of total assets at time t-1
Lev : Debt ratio
Grw : Sales growth ratio+
ROA : Return on assets
CPS : Cashflow from operation scaled by total outstanding shares
$Loss$: Dummy variable that takes 1 if a firm experienced loss at time t-1, 0 otherwise
ID : Industry fixed effect
YD : Year fixed effect
Note) ② ***, **, * indicate significance level at 1%, 5%, 10% respectively.

KIS, KR, NICE and SCI. All four credit ratings agencies have different methods of calculating credit ratings on a calendar year basis. Therefore, we run a numerous mean-difference test, comparing all of the credit ratings issued by different credit ratings agencies. The results suggest that there is a statistically insignificant mean difference for all four credit rating agencies. Therefore the combination of

all the credit ratings for all four credit ratings agencies is a homeogenous group. We exclude the results for brevity. Thus, CR is a combination of the highest credit rating level for all four of the largest credit ratings firms in South Korea; KIS, KR, NICE and SCI. The credit ratings take an ordinal score from 1 to 17. The value of 17 represents the highest credit ratings levels of KIS, KR, NICE and SCI in a single calendar year, AAA. Other credit rating scores are coded with an ordinal score from 16(AA)+ to 2(B-). All firms below CCC+ are given an ordinal score of 1. We base this approach on Alissa et al. (2013). The coding values are illustrated in <Table 1> which shows that the credit rating levels of firms are relatively normally distributed.

IV. Empirical Results

4.1 Descriptive Statistics and Pearson Correlations

<Table 2> Panel A shows our descriptive statistics. The average levels of earnings management are close to zero. However, our results show a variation in our DAM J, DAKW, TRM1 and TRM2 variables. The average credit rating is 10.59, between the investment grade cut off point between BBB+ and A-. The number of loss firms over our sample period is 15%.

<Table 2> Panel B shows our Pearson Correlations. All EM measures are negatively correlated with credit ratings at time t+1, implying that firms do not increase credit ratings using by inflating earnings using EM as an opportunistic tool; moreover, firms with higher credit ratings have lower levels of earnings management. The correlations suggests that credit rating agencies may have the expertise to capture both AEM and REM. Size, ROA and CPS are significantly positively correlated with credit ratings at t+1, suggesting that firms that are bigger, better performing with more cashflow are likely to have better credit ratings in the subsequent period. On the other hand, Lev, Loss are significantly negatively correlated with credit ratings at time t+1, implying that firms that have higher default risk (higher debt ratio and had a loss at time t) are likely to have lower credit ratings at time t+1, consistent with previous findings.

4.2 Multivariate Analysis results

<Table 3> illustrates the results of the ordered probit regression with credit rating in period t+1 as the dependent variable. The majority of our control variables accept for growth are statistically significant at the 1% level and show the correct sign. A positive relation between EM in period t and a credit rating in period t+1 would suggest that managers use earnings management to increase credit ratings in period t+1. Our results for both AEM show negative signs, with DAMJ showing statistically significant signs at the 1% level. Our REM proxies are negative and statistically significant at the 1% level. Thus, our results suggest that there is a negative association between earnings

〈Table 3〉 Ordered Probit Regression Analysis (DV: Credit Ratings in t+1 period)

Model : $CR_{t+1} = \beta_0 + \beta_1 EM_{i,t,k=1,2,3,4} + \beta_2 Size_{i,t} + \beta_3 Lev_{i,t} + \beta_4 Grw_{i,t} + \beta_5 ROA_{i,t} + \beta_6 CPS_{i,t} + \beta_7 Loss_{i,t} + ID + YD + \epsilon_{i,t}$

	Sign	Model 1	Model 2	Model 3	Model 4
DAMJ	-	-0.81(-2.47)**			
DAKW	-		-0.22(-0.59)		
TRM1	-			-0.57(-4.75)***	
TRM2	-				-0.71(-3.86)***
Size	+	0.42(23.39)***	0.42(23.33)***	0.42(23.21)***	0.42(23.10)***
Lev	-	-2.84(-17.55)***	-2.81(-17.49)***	-2.78(-17.18)***	-2.78(-17.16)***
Grw	?	-0.14(-1.39)	-0.14(-1.35)	-0.15(-1.53)	-0.16(-1.60)
ROA	+	1.71(3.70)***	1.36(3.10)***	1.23(2.81)***	1.26(2.87)***
CPS	+	0.01(2.68)***	0.01(3.11)***	0.01(2.69)***	0.01(2.37)**
Loss	-	-0.34(-3.82)***	-0.34(-3.77)	-0.35(-3.93)***	-0.35(-3.92)***
ID		*Included*	*Included*	*Included*	*Included*
YD		*Included*	*Included*	*Included*	*Included*
Chi2		1232.97***	1109.19***	1131.40***	1123.78***
Pseudo R2		0.1345	0.1210	0.1234	0.1226
Obs		1717	1717	1717	1717

〈Table 4〉 Multivariate OLS Regression Analysis (DV: Change)

Model : $Changes = \beta_0 + \beta_1 EM_{i,t,k=1,2,3,4} + \beta_2 Size_{i,t} + \beta_3 Lev_{i,t} + \beta_4 Grw_{i,t} + \beta_5 ROA_{i,t} + \beta_6 CPS_{i,t} + \beta_7 Loss_{i,t} + ID + YD + \epsilon_{i,t}$

	Sign	Model 1	Model 2	Model 3	Model 4
DAMJ	+/-	-0.89(-1.97)**			
DAKW	+/-		-0.67(-1.95)*		
TRM1	+/-			0.33(1.25)	
TRM2	+/-				0.22(0.85)
Size	+	-0.02(-0.85)	-0.02(-0.85)	-0.02(-0.75)	-0.02(-0.79)
Lev	-	0.02(0.08)	0.03(0.12)	-0.01(-0.06)	0.00(0.02)
Grw	?	0.06(0.39)	0.06(0.47)	0.06(0.41)	0.06(0.41)
ROA	+	2.19(3.46)***	1.83(3.02)***	1.88(3.12)***	1.84(3.04)***
CPS	+	-0.00(-0.87)	-0.00(-0.71)	-0.00(-0.09)	-0.00(-0.17)
Loss	-	-2.89(-2.30)**	-0.29(-2.30)**	-0.27(-2.18)**	-0.27(-2.21)**
ID		*Included*	*Included*	*Included*	*Included*
YD		*Included*	*Included*	*Included*	*Included*
f value		6.58***	6.25***	6.58*-**	6.12***
R2		0.0263	0.0250	0.0262	0.0245
Obs		1717	1717	1717	1717

Note) ① Variable Definitions

$Changes$: Changes in credit ratings (= $CR_{t+1} - CR_t$)

For other variables, refer to <Table 1>

Note) ② ***, **, * indicate significance level at 1%, 5%, 10% respectively.

<Table 5> Logistic Regression Analysis (Positive Change vs Non-Positive Change)

Model : $Pos\_Cha_{t+1} = \beta_0 + \beta_1 EM_{i,t,k=1,2,3,4} + \beta_2 Size_{i,t} + \beta_3 Lev_{i,t} + \beta_4 Grw_{i,t} + \beta_5 ROA_{i,t} + \beta_6 CPS_{i,t} + \beta_7 Loss_{i,t} + ID + YD + \epsilon_{i,t}$

	Sign	Model 1	Model 2	Model 3	Model 4
DAMJ	+/-	-2.06(-2.37)**			
DAKW	+/-		-2.01(-2.01)**		
TRM1	+/-			0.43(1.37)	
TRM2	+/-				0.19(0.40)
Size	+	0.13(3.15)***	0.13(3.17)***	0.14(3.20)***	0.13(3.15)***
Lev	-	0.48(1.18)	0.49(1.24)	0.44(1.09)	0.48(1.18)
Grw	?	-0.09(-0.34)	-0.06(-0.22)	-0.08(-0.32)	-0.09(-0.34)
ROA	+	3.71(2.74)***	2.79(2.16)**	2.98(2.28)**	2.90(2.22)**
CPS	+	-0.01(-1.51)	-0.01(-1.46)	-0.00(-0.72)	-0.00(-0.82)
Loss	-	-0.43(-1.64)	-0.44(-1.68)*	-0.39(-1.52)	-0.41(-1.56)
ID		*Included*	*Included*	*Included*	*Included*
YD		*Included*	*Included*	*Included*	*Included*
Chi2		37.90***	36.28***	34.13***	32.37***
Pseudo R2		0.0233	0.0223	0.0210	0.0199
Obs		1717	1717	1717	1717

Note) ① Variable Definitions

$Pos\_Changes$: Dummy variable that takes 1 if credit rating increased from t to t+1 period, 0 otherwise

For other variables, refer to <Table 1>

Note) ② ***, **, * indicate significance level at 1%, 5%, 10% respectively.

management in period t and credit ratings in period t+1. Therefore, we find that firms with higher credit ratings are less likely to engage in earnings management. Moreover, we find evidence that firms may not have the potential to increase credit ratings using EM as an opportunistic tool. We infer that credit rating agencies have the capability of capturing the level of earnings management during the credit watch period (in time t period).

<Table 4> shows results of multivariate OLS regression. The dependent variable, Changes is a continuous variable, calculated by subtracting credit rating scores at time t from credit ratings at time t+1. The results suggest that accrual based EM measures have significant negative association with credit rating changes, suggesting that firms with higher level of discretionary accruals are less/likely to experience in a credit rating change/downgrade. We interpret that credit rating agencies effectively monitor the level of AEM and discount credit ratings for firm that opportunistically engage in earnings management. However, REM measures show insignificant signs when regressed with credit ratings changes, suggesting that REM has a limited effect on credit rating changes. We infer that credit rating agencies may not separate abnormal CFO/production cost/discretionary expenses, proxies of real earnings management or as part of a firm's operational activities.

As an additional test, we replace TRM measures with abnormal CFO, abnormal production cost and

〈Table 6〉 Logistic Regression Analysis (3 sub-groups comparisons)

Model

D_Cha or $\neg\_Cha_{t+1} = \beta_0 + \beta_1 EM_{i,t,k=1,2,3,4} + \beta_2 Size_{i,t} + \beta_3 Lev_{i,t} + \beta_4 Grw_{i,t} + \beta_5 ROA_{i,t} + \beta_6 CPS_{i,t} + \beta_7 Loss_{i,t} + ID + YD + \epsilon_{i,t}$

		Positive vs Negative				Positive vs No change				Negative vs No change			
	Sign	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9	Model 10	Model 11	Model 12
DAMJ	-	-3.19** (-2.10)				-1.95** (-2.21)				0.83 (0.68)			
DAKW	-		-2.55* (-1.89)				-1.96* (-1.94)				0.26 (0.18)		
TRM1	-			-0.29 (-0.48)				0.46 (1.48)				0.58 (1.17)	
TRM2	-				-0.98 (-1.09)				0.26 (0.56)				0.93 (1.27)
Size	+	0.05 (0.68)	0.05 (0.64)	0.04 (0.57)	0.04 (0.50)	0.14*** (3.33)	0.14*** (3.35)	0.14*** (3.41)	0.14*** (3.35)	0.11* (1.81)	0.11* (1.83)	0.12* (1.90)	0.11* (1.93)
Lev	-	-0.56 (-0.69)	-0.63 (-0.76)	-0.66 (-0.81)	-0.63 (-0.77)	0.55 (1.36)	0.56 (1.42)	0.51 (1.26)	0.54 (1.36)	1.17** (1.99)	1.16** (1.98)	1.12* (1.91)	1.10* (1.87)
Grw	?	0.49 (0.90)	0.51 (0.93)	0.44 (0.80)	0.44 (0.81)	-0.14 (-0.51)	-0.10 (-0.38)	-0.13 (-0.47)	-0.13 (-0.48)	-0.60 (-1.50)	-0.62 (-1.54)	-0.60 (-1.51)	-0.58 (-1.46)
ROA	+	7.63*** (2.74)	6.33*** (2.37)	6.05** (2.27)	6.03** (2.28)	3.32** (2.46)	2.46* (1.91)	2.65** (2.04)	2.58** (1.98)	-1.54 (-1.12)	-1.17 (-0.93)	-1.08 (-0.86)	-1.12 (-0.89)
CPS	+	-0.00 (-0.33)	-0.00 (-0.16)	0.00 (0.30)	0.00 (0.04)	-0.01 (-1.57)	-0.01 (-1.51)	-0.00 (-0.80)	-0.00 (-0.87)	-0.01 (-0.95)	-0.01 (-1.05)	-0.01 (-0.98)	-0.01 (-0.79)
Loss	-	-0.75* (-1.90)	-0.72* (-1.82)	-0.69* (-1.78)	-0.70* (-1.79)	-0.34 (-1.29)	-0.35 (-1.32)	-0.31 (-1.16)	-0.32 (-1.19)	0.60** (2.16)	0.59** (2.15)	0.61** (2.20)	0.62 (2.21)**
ID		*Included*	*Included*	*Included*	*Included*	*Included*	*Included*	*Included*	*Included*	*Included*	*Included*	*Included*	*Included*
YD		*Included*	*Included*	*Included*	*Included*	*Included*	*Included*	*Included*	*Included*	*Included*	*Included*	*Included*	*Included*
Chi2		56.45***	54.23***	52.22***	53.19***	32.90***	31.75***	30.19***	28.26***	40.11***	39.69***	41.05***	41.28***
Pseudo R2		0.1059	0.1017	0.0980	0.0998	0.0209	0.0202	0.0192	0.0180	0.0465	0.0460	0.0476	0.0479
Obs		441	441	441	441	1588	1588	1588	1588	1405	1405	1405	1405

Note) ① Variable Definitions

$D\_Changes$ for model 1, 2, 3, 4 : Dummy variable that takes 1 if credit rating increased from t to t+1 period, 0 if decreased.

$D\_Changes$ for model 5, 6, 7, 8 : Dummy variable that takes 1 if credit rating increased from t to t+1 period, 0 if unchanged.

$D\_Changes$ for model 9, 10, 11, 12 : Dummy variable that takes 1 if credit rating decreased from t to t+1 period, 0 if unchanged.

For other variables, refer to <Table 1>

Note) ② ***, **, * indicate significance level at 1%, 5%, 10% respectively.

〈Table 7〉 Truncated Regression Analysis (Positive DA vs Negative DA)

Model : $CR_{t+1} = \beta_0 + \beta_1 EM_{i,t,k=1,2,3,4} + \beta_2 Size_{i,t} + \beta_3 Lev_{i,t} + \beta_4 Grw_{i,t} + \beta_5 ROA_{i,t} + \beta_6 CPS_{i,t} + \beta_7 Loss_{i,t} + ID + YD + \epsilon_{i,t}$

	Sign	Model 1	Model 2	Model 3	Model 4
Pos_MJ	+/-	-4.85(-2.94)***			
Pos_KW	+/-		-0.91(-2.45)**		
Neg_MJ	+/-			0.86(0.45)	
Neg_KW	+/-				2.95(1.27)
Size	+	1.22(20.53)***	1.23(20.03)***	1.12(16.44)***	1.12(17.07)***
Lev	-	-7.64(-13.65)***	-7.25(-12.13)***	-7.94(-12.44)***	-8.11(-13.45)***
Grw	?	-0.26(-0.77)	-0.33(-0.91)	-0.53(-1.15)	-0.38(-0.88)
ROA	+	3.23(1.66)*	4.94(2.59)**	6.02(3.27)***	4.19(2.48)**
CPS	+	0.05(0.65)	0.02(2.65)***	0.01(1.96)*	0.01(1.45)
Loss	-	-0.97(-2.58)**	-0.87(-2.65)***	-0.88(-2.59)**	-1.06(-2.82)***
ID		*Included*	*Included*	*Included*	*Included*
YD		*Included*	*Included*	*Included*	*Included*
Wald Chi2		785.51***	747.38***	779.19***	795.42***
Obs		875	845	842	872

Note) ① Variable Definitions
CR_{t+1} : Credit ratings at time t+1
Pos_MJ : Income-increasing abnormal accruals separated from the modified Jones model
Pos_KW : Income-increasing abnormal accruals separated from the performance adjusted model
Neg_MJ : Income-decreasing abnormal accruals separated from the modified Jones model
Neg_KW : Income-decreasing abnormal accruals separated from the performance adjusted model
For other variables, refer to <Table 1>
Note) ② ***, **, * indicate significance level at 1%, 5%, 10% respectively.

abnormal discretionary expenses as suggested by Roychowdhury (2006). The untabulated results suggest that non of the above REM proxies are significantly related with credit rating changes, consistent with the results in <table 4>.

IV. Additional Analysis

Firms that acquire equity in the form of bonds have incentives to increase their credit ratings. Therefore, managers have an incentives to engage in earnings management. In our primary additional analysis, we establish a relation between level of earnings management and a credit ratings changes. The results suggest that firms that engage in opportunistic earnings management are less lively to experience a credit rating change. In <Table 5>, we test whether firms can successfully increase their credit ratings in the subsequent period by engaging earnings management during the credit watch period. Our results, suggest that engaging in positive earnings management fail to increase their credit

ratings. We find a negative relation between AEM measures and credit rating upgrades at the 5% level, suggesting that firms with high level of earnings management are more likely to decrease their credit rating or remain at an unchanged level. Thus, REM metrics are found not to influence credit ratings increases. However, credit ratings have the potential to 1) increase, 2) remain unchanged or 3) decrease depending on the firm's level of default risk.

In our second additional analysis, we partition our sample into 3 sub-samples 1) positive change, 2) no change, and 3) negative change and compare one each change scenario using adummy variable approach. Our results suggest that AEM measures are significantly negatively related with D_Change for the positive vs negative and the positive vs no change model, suggesting that firms that engage in high level of AEM during the credit watch period, have a higher probability to experience a credit rating decrease or remain with unchanged credit ratings in the subsequent period, than experience a credit rating increase. None of REM measures are found significant for all models.

<Table 7> illustrates the results of our truncated regression analysis. The purpose of our study is to find whether firms engage in earnings management to increase credit ratings. Firms have an incentive to use income-increasing accruals to increase their reported earnings to affect their credit ratings.

In our third additional analysis, we establish a relation between income-increasing / income-decreasing discretionary accruals and credit ratings at time t+1. Since past literatures report that the OLS estimates are generally biased when a sample is truncated, we estimate a ML(maximum likelihood) truncated regression(Greene, 2000; Myer et al., 2003; Chi et al., 2009). We find a significantly positive relation between income-increasing accruals and credit ratings in period t+1, suggesting that firms that may implement income-increasing accruals to influence credit ratings during the credit watch period, are likely to experience lower credit ratings, consistent with the previous findings. However, we find that income-decreasing accruals do not influence credit ratings at time t+1.

V. Conclusions

In the U.S., numerous studies have found a relation between opportunistic earnings management to influence credit ratings. In South Korea, studies have found mixed results. However, Korean studies have generally considered that the effect of earnings management in period t influences credit ratings in period t; thus, Korean studies ignore the influence of the credit watch period and the lag between the analysis of credit ratings in period t and credit ratings changes in period t+1. Our research offers a more robust model by including the credit ratings agency's credit watch period.

Our results suggest that there is a negative relation between credit ratings in period t+1 and real and accruals earnings management in period t,

suggesting that firms that engage in earnings management are less likely to experience credit ratings changes in future periods. Moreover, we find that firms with higher credit ratings are less likely to participate in earnings management. We establish a negative relation between opportunistic earnings management in period t and change in period t+1 for accrual earnings management and find no relation between REM and credit rating change. The results suggest that credit ratings agencies are more likely to experience a positive change credit ratings in period t+1 when earnings management is negative in period t. Moreover, using a dummy variable approach we test the difference between the levels of earnings management in period t for firms that increase their earnings management in the subsequent period. We find a negative relation between opportunistic earnings management and subsequent credit ratings increases. We further split our change sample into positive change, negative change and no change. We find that firms that firms that engage in high levels of AEM during the credit watch period, have a higher probability to experience a credit rating decrease or remain with unchanged credit ratings in the subsequent period, compared to firms experience a credit rating increase. For robustness we conduct a regression using Maximum likelihood. The results are consistent with out main findings. Taken together, our results suggest that firms that engage in earnings management in period t do not experience a credit rating change in period t+1; rather, these firms are more likely to experience a rating decrease.

However, our study might have some limitations. We focus on establishing a relationship between earnings management during the credit watch period and credit ratings/credit rating changes using abnormal accruals as proxies for earnings management. Although an extensive previous literature justify abnormal accruals as a plausible proxy, the proxy may yield potential econometric bias. Future studies may extend the literature by including additional lagged earnings management variables, and additional control variables to explain credit risk.

〈References〉

Ahn, Soo-Kyung and Kwang-Yong Kim(2014), "Relationship of earnings and credit rating before and after IFRS," *Journal of Digital Convergence*, 12(11), 99-112.

Ali, A. and W. Zhang(2008), "Proximity to Broad Credit Rating Change and Earnings Management," Working Paper.

Alissa, W., S. B. Bonsall, K. Koharki and M .W. Penn(2013), "Firms' use of accounting discretion to influence the credit rating,". *Journal of Accounting and Economics*, 55(1), 129-147.

Boot, Arnoud W. A., T. T. Milbourn and S. Anjolein Schmeits(2006), "Credit ratings as coordination mechanisms," *Review of Financial Studies*, 19, 81-118.

Chi, W., H. Huang, Y. Liao and H. Xie(2009), "Mandatory Audit Partner Rotation, Audit Quality, and Market Perception: Evidence from Taiwan," *Contemporary Accounting Research*, 26(2), 329-358.

Cohen, A. D. and P. Zarowin(2010), "Accria;-based and real earnings management activities around seasoned equity offerings," *Journal of Accounting and Economics*, 50(1), 2-19.

Crabtree, A., J. J. Maher and H. Wan(2014), "New debt issues and earnings management," *Advances in Accounting: incorporating Advances in International Accounting* 30: 116-127.

Dechow, P. M., R. G. Sloan and A. P. Sweeney(1995), "Detecting Earnings Management." *The Accounting Review*, 70: 193-225.

Dechow, P., M. and I. Dichev(2002), "The quality of accruals and earnings: The role of accrual estimation error," *The Accounting Review*, 77(4), 35-59.

Graman. J. R, and C. R. Harvey(2001), "The theory and practice of corporate finance: evidence from the field," *Journal of Financial Economics*, 60: 187-243

Graham, J. R., C. R. ,Harvey and S. Rajgopal(2005), "The economic implications of corporate financial reporting," *Journal of Accounting and Economics*, 40(1-3), 3-73.

Greene, W. H.(2000), "Econometrics Analysis," Englewood Cliffs, NJ: Prentice Hall.

Gunny, K.(2010), "The relation between earnings management using real activities manipulation and future performance: Evidence from meeting earnings benchmarks," *Contemporary Accounting Research*, 27(3), 855-888.

Hovakimian, A., A. Kayhan and S. Titman (2009), "Credit Rating Targets," Working Paper.

Jones, J.(1991), "Earnings management during import relief investigations," *Journal of Accounting Research*, 29(2), 193-228.

Kim, Jin-Tae, Bae, Jong-Il, and Chung-Jin Sim(2013), "The Types of Earnings Management and Tax Avoidance: Focused on Loss Avoidance and Big Bath," *Korean Corporation Management Review*, 20(2): 61-75.

Kisgen, D.(2006), "Credit ratings and capital structure," *Journal of Finance*, 61(3), 1035-1072.

Kisgen, D.(2009), "Do firms target credit ratings or leverage levels?" *Journal of Financial and Quantitative Analysis*, 44(6), 1323-1344.

Kothari, S., A. Leone and C. Wasley(2005), "Performance matched discretionary accruals measures," *Journal of Accounting and Economics*, 39, 163-197.

Jung, B., N. Soderstrom and Y. S. Yang(2013), "Earnings smoothing activities of firm to manage credit ratings," *Contemporary Accounting Research*, 30(2), 645-76.

La Porta, R., F. Lopez-De-Silanes, A. Shleifer, A., and R. W. Vishny(1997), "Legal determinants of external

finance," *Journal of Finance*, 52(3), 1131-1150.

Lee, Jang-Hee and Seol-Hee Jung(2012), "An Influence of Credit Rating on Real Earnings Management," *Korean Corporation Management Review*, 19(6), 217-235.

Lee, Young-Han and Sung-Hwan Kim(2011), "The Effect of Real Earnings Management on Bond Grading" *Journal of Taxation and Accounting*, 12(2), 585-610.

Myers, J., L. Myers and T. Omer(2003), "Exploring the term of auditor-client relationship and the quality of earnings: A case for mandatory auditor rotation?" *The Accounting Review*, 78(3): 779-799.

Moody"s Investor service (2009), Moody's Rating Symbols and Definitions.

Oh, Hee-Jang(2005), "The Effects of Earnings Management on the Credit Rating", *Journal of Business Administration*, 20(1), 79-103.

Park, Jong-Il, Kyung-Ho Park, and Chan-Woong Park(2012), "The Effect of Accrual-based and Real Earnings Management on Corporation Credit Rating: Focused on Public and Private Firms," *Journal of Taxation and Accounting*, 13(1), 65-98.

Park, Jong-Il and Hee-Chun Roh(2011), "The Effect of the Corporate Credit Ratings on the Earnings Management: Focused on the Non-listed Firms," *Korean Journal of Business Administration*, 53(2), 273-311.

Park, Young-Gyu(2012), "Accrual Based and Real Earnings Management in Korean Films: Substitutionary or Complementary Relation?," *Korean Corporation Management Review*, 19(6): 43-58.

Roychowdhury, S.(2006), "Earnings Management through Real Activities Manipulation," *Journal of Accounting and Economics*, 42, 335-370.

SEC(2003), "Report on the Role and Function of Credit Rating Agencies in the Operation of the Securities Markets", January 24.

Standard and Poor's(2006), Evaluating Liquidity Triggers in Insurance Enterprises.

Woods, C.(2013), "Classifying South Korea as a Developed Market," White Paper Report FTSE Publications. January 2013 edition.

Zang, A.(2012), "Evidence on the trade-off between real activities manipulation and accrual based earnings management," *The Accounting Review*, 87(2), 675-703.

국문요약

기업은 신용등급을 상향조정 시키기 위하여 이익을 조정하는가?: 회사채를 발행한 한국 유가증권 상장기업을 중심으로

말리 다피드*, 임형주**

본 연구는 회사채를 발행한 유가증권 상장기업들이 보고이익을 조정하여 신용등급을 향상 시키는지를 검증한다. 1997년 외환위기 이후 수많은 기업들이 도산하였고 투자자들의 주식과 채권은 휴지조각이 된 바 있다. 이후 신용등급은 시장참여자에게 있어 매우 중요한 지표로 인지되어 왔고 기업들은 이를 유지하거나 상향 조정시키기 위하여 많은 노력을 투입하는 것으로 알려져 있다. 선행연구에서는 기업들의 이익조정행위와 신용등급의 관련성을 고찰한 바 있으나 그 결과는 혼재되어 있다. 또 대부분의 선행연구에서는 당기 이익조정과 당기 신용등급의 관련성에 초점을 맞춰왔다. 그러나 신용등급평가기관들은 기업의 신용등급을 결정하기 전에 1년간의 신용감시대상기간(credit watch period)을 설정하여 채무불이행 위험을 판단하는데, 높은 신용등급을 유지하거나 낮은 신용등급을 상향조정하려는 유인을 가진 기업들은 이 기간에 이익을 조정할 유인이 높을 것으로 판단할 수 있다. 따라서 본 연구는 t연도 기업의 이익조정 수준과 t+1연도 신용등급의 변화에 초점을 맞춤으로써 두 변수간의 명확한 관련성을 고찰하고자 하였다.

본 연구는 2002년부터 2013년까지 국내 유가증권 상장기업 중 회사채를 발행한 1,717 기업-년을 대상으로 발생액 및 실제이익조정 수준이 높은 기업들이 의도한대로 차기 신용등급을 상향 조정시키는지를 검증하였다. 연구결과, 전반적인 당기 이익조정 수준은 차기 신용등급점수와 유의한 음(-)의 관련성을 가지는 것으로 나타났다. 이는 신용등급이 높은 기업들은 전기에 이익조정을 많이 하지 않은 기업들로 설명할 수 있으며, 기업들이 이익조정에 적극적으로 개입할 경우 신용평가기관들이 이를 탐지하고 패널티를 부여하는 것으로도 해석할 수 있다. 또 신용등급의 변화(차기 신용등급점수 - 당기 신용등급점수)는 발생액을 통한 이익조정만 유의한 음(-)의 관련성을 갖는 것으로 나타났다. 이는 신용등급이 상향조정 된 기업들의 경우 전기에 발생액을 통한 이익조정을 적게 한 것을 의미한다. 추가분석에서는 본 연구 표본을 신용등급이 1) 상향조정, 2) 유지, 3) 하향조정된 경우로 분류/종속변수로 설정하여 로지스틱 분석을 수행해 보았다. 연구결과, 이익조정을 많이 한 기업은 신용등급이 하락하거나, 변화하지 않을 가능성이 상향조정될 가능성 보다 높은 것으로 나타났다. 또 재량적 발생액을 이익상향조정과 하향조정으로 분류하여 분석한 경우에도 일관적인 결과가 관찰되었다. 본 연구의 결과는 이익조정의 수준이 기업의 신용등급을 예측하는데 추가적인 정보를 제공하는 지표로써 활용될 수 있다는 것을 발견했다는 점에서 의미가 있다.

핵심 주제어: 신용등급, 발생액 이익조정, 실제 이익조정, 채무불이행위험, 신용위험.

논문접수일 2015년 08월 11일
논문수정일 2015년 09월 04일
게재확정일 2015년 10월 05일

* 경성대학교 회계학과 조교수(제1저자, dsmali@ks.ac.kr).

** 극동대학교 글로벌경영학과 조교수(교신저자, limhj@kdu.ac.kr).