Earnings Management and Credit Rating

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Abstract

In this study, we empirically analyzed the relationship between corporate credit rating and abnormal accruals, which revealed the degree of corporate earnings management. Specifically, the analysis of this study verifies the hypothesis that if firms' credit ratings fall below desirable levels, managers will expand their earnings management activities to raise firms' credit ratings to target levels and ensure smooth capital procurement. Ali and Zhang (2008) argue that companies use earnings management to inflate their reported profits and thereby avoid falling corporate credit ratings, a very important factor in their funding decisions. On the other hand, An, Li and Yu (2016) argue that corporate earnings management is associated with low valuations of the quality of either financial information or earnings in the market and opaque corporate management. Such low valuations can be evaluated as increasing corporate risk and thereby lower credit ratings. Our study revealed a very significant negative correlation with companies' credit ratings and degree of earnings management they engage in. This suggests that, when companies expand earnings management (a signal of low quality earnings), the capital market evaluates their bankruptcy risks as high and therefore lowers their credit ratings.

Keywords: Earnings Management, Credit Rating, Accruals, Information Quality, Earnings Quality

1. Introduction

This study empirically analyzed whether credit ratings improved when companies adopted earnings management strategies that were manipulated by abnormal accruals. We verify the hypothesis that companies with credit ratings below desired levels tend to expand their earnings management activities and thereby attempt to raise their credit ratings to target levels.

The credit ratings that credit rating agencies assign to companies have a profound effect on those companies' financial decision-makings. Graham and Harvey[1] report the results of a survey showing that managers consider credit rating agencies' ratings to be among the most important determinants of their corporate funding decisions. Hovakimian, Kayhan and Titman[2][3] also argue that companies take into account their target credit levels when making financing decisions. Furthermore, Kisgen[4] argues that companies with low credit ratings do not issue bonds more smoothly than those with high credit ratings. Indeed, companies with

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low credit ratings seek to avoid falling credit ratings or actively try to improve them. Kisgen[5] also presents empirical evidence that companies implement their capital structure policies to reverse credit rating declines. As such, credit ratings constitute an important information factor for companies signalling their bankruptcy risk in the market, and determining the success of their corporate financing policies.

Ali and Zhang[6] find that companies with high expected credit ratings implement earnings management to inflate reported profits and thereby influencing their credit ratings. Meanwhile, Ashbaugh-Skaife, Collins and LaFond[7] report positive correlations between credit ratings and accrual quality, showing that companies that engage in extensive earnings management have high credit ratings. However, according to Dechow, Sloan and Sweeney[8], although the incentives to manage earnings to maintain expected credit rating levels remain strong, capital markets now impose various regulations and sanctions to counteract companies' aggressive earnings management strategies. A positive correlation between earnings management and credit ratings means that companies can use earnings management activities to impact credit rating assessments. Credit rating agencies claim that they are not auditors, so they conduct credit rating assessments based on assumption that companies' financial statements are rationally and accurately prepared. Credit rating agencies do not have incentives to point out the earnings management activities that companies are involved in. Therefore, corporate managers can select and implement earnings management strategies such as increasing companies' reported profits, in order to favorably impact credit rating agencies' evaluations of the credit risks and default risks for their companies.

On the other hand, An, Li and Yu[9], Giannetti[10], Bhattacharya, Daouk and Welker[11] and Francis, LaFond, Olsson and Schipper[12] argue that the extent of corporate earnings management can be used to measure the quality of the information in corporate financial statements or the quality of earnings. When corporate managers use earnings management to discretionally adjust reported corporate profits, information asymmetry or agent conflicts between corporate insiders and external investors deepen, and the market evaluates the opacity in corporate management a signal of increased corporate risk. Therefore, according to agency cost theory, increased corporate earnings management increases corporate risk in the market and lowers companies' credit ratings, meaning that earnings management is negatively correlated with credit ratings.

This study first analyzed changes in companies' credit ratings in relation to their earnings management activities. We posited the following null hypothesis for verification.

H: No significant correlation exists between increased and changes in credit ratings.

The remainder of this study is organized as follows. Chapter 2 describes the research data and statistical methodology. Chapter 3 empirically verifies our hypothesis that credit rating changes are significant in companies that expand their earnings management. Chapter 4 concludes the study by providing a summary of its findings and identifying the implications of these findings for future research.

2. Sample Data and Research Models

The corporate sample were collected for this study from the KISVALUE database provided by NICE Information Service Co., Ltd. The sample period runs from 2002 to 2017, and time series cross-sectional data for each sample company was used.

The analysis model used in this study was based on McNichols[13], Beneish[14], and Moka Vinod and Krishna Prasad[15] who used abnormal discretionary accruals as substitutes for earnings management. We obtained abnormal accruals using the modified Jones model[16] mentioned in Louis and Robinson[17] and Praveen Kumar[18]. The modified Jones model[16] uses total accruals as a dependent variable, and the total accruals are the amount of operating cash flow deducted from net profits before special profits. Jones[16] and Dechow, Sloan and Sweeney[8], Hymavathi, Jayasri, Jang and Shanshan[19] establish the following models, claiming that companies' total accruals (TACC) are proportional to changes in their sales (REV) and amounts of property, plants, and equipments (PPE). These variables are scaled by total assets (TA).

$$\frac{TACC_{i,t}}{TA_{i,t-1}} = \beta_{0i} \frac{1}{TA_{i,t-1}} + \beta_{1i} \frac{\Delta REV_{i,t}}{TA_{i,t-1}} + \beta_{2i} \frac{PPE_{i,t}}{TA_{i,t-1}} + \epsilon_{i,t}$$

The expected value obtained by estimating the above model is non-discretionary or normal accruals, and the residual value is discretionary accruals or abnormal accruals. Therefore, discretionary or abnormal accruals, which managers can adjust at their discretion, are presumed to represent the extent of earnings management. We conducted a statistical test on the earnings management of corporate managers in relation to credit ratings. What significant effects can discretionary or abnormal accruals have on corporate credit ratings? Answering this question is the major aim of our research.

The main regression model in this study identified the corporate credit rating Rate as the

dependent variable, and the main independent variable AAC represented discretionary or abnormal accruals. In the regression model below, the control variables include debt ratio *Lv*, total asset return *ROA*, market price to book value ratio *MKBK*, corporate size *Size* measured by the log value of total assets, interest compensation ratio *ICov*, and current asset ratio *Currnt*. Ultimately, we used the following regression model in our analysis.

$$Rate_{i,t} = \alpha_{0i} + \alpha_{1i} AAC_{i,t} + \alpha_{2i} Lv_{i,t} + \alpha_{3i} ROA_{i,t} + \alpha_{4i} MKBK_{i,t} + \alpha_{5i} Size_{i,t} + \alpha_{6i} ICov_{i,t} + \alpha_{7i} Currnt_{i,t} + v_{i,t}$$

In the next chapter, we conducted statistical test and an analysis of the significant correlation between corporate earnings management behavior and credit rating by running regression models.

3. Research Results

In this study, statistical analyses were performed on sample firms collected from Korea's securities market. The sample period ranges from 2002 to 2017.

[Table 1] shows the descriptive statistics of the variables used in our statistical analysis model. The average of the credit rating variable *Rate* for the sample companies is 4.98, and its standard deviation is 1.92. The average of the discretionary or abnormal accruals variable *AAC* is 0.128, and its standard deviation is 0.248. The average of debt ratio variable *Lev* is 122.05 and its standard deviation is 254.09. The average of total asset returns variable *ROA* is 0.026 and its standard deviation is 0.124.

[Table 1] Descriptive Statistics

Variable	N	Average	Standard Deviation	Minimum Value	Maximum Value
Rate	7,931	4.989	1.920	0	10.0
abs_AAC	7,931	0.1288	0.248	4.97E-7	7.46
Lev	7,931	122.05	254.09	0	8887
ROA	7,918	0.0269	0.124	-3.47	3.36
MKBK	7,397	16.767	55.990	0.150	1,740
Size	7,918	26.611	1.500	22.61	32.92
IntCov	7,931	2941.06	137293.1	-36981	10492037
Currnt	7,931	316.239	1982.85	0	102156

*Note: *Rate* is a credit rating variable. *abs_AAC* is an absolute discretionary accrual, an earnings

management variable. Lev is the ratio of financial leverage, ROA is the ratio of total asset returns, and MKBK is the ratio of the common stock market to book value. Size is the logarithm of total assets, a corporate size variable. IntCov is the interest compensation ratio and Currnt is the current asset ratio.

[Table 2] shows the results of an OLS analysis conducted to determine how corporate earnings management behavior affects credit rating. The absolute value of abnormal accruals (abs_AAC), a substitute for companies' earnings management, the main independent variable, and the credit rating variable (Rate), the dependent variable, were included. The control variables are debt ratio (Lev), total asset return (ROA), market to book value (MKBK), firm size variable (Size), interest compensation ratio (IntCov) and current asset ratio (Currnt). As the results of the OLS estimation in [Table 2] show, the coefficient estimates of absolute value of abnormal accruals (abs_AAC) is -0.671 and its standard error is 0.071. The absolute value of abnormal accruals (abs_AAC) has a very significant negative effect on the credit rating variable (Rate). This result suggests that a higher degree of earnings management lowers the quality of earnings and leads to skeptical evaluations of management transparency, causing credit rating agencies to assess corporate risks as higher. The estimation results for the control variables are consistent. The coefficient estimates of the debt ratio variable (Lev) and the interest compensation ratio variable (IntCov) show negative signs for the credit rating variable (Rate). In particular, the debt ratio variable (Lev) shows a very significant negative coefficient estimate. Meanwhile, the total asset return variable (ROA), the market to book value ratio variable (MKBK) and the current asset ratio variable (Currnt) show very significant positive coefficient estimates for the credit rating variable (Rate).

[Table 2] Effect of Earnings Management on Credit Rating: OLS Analysis - Dependent Variable: Rate (Credit Rating)

Variable	DF	Coefficient Estimate	Standard Error	t-Val	Pr> t
Intercept	1	9.588	0.31	30.89	<.0001
abs_AAC	1	-0.671	0.071	-9.32**	<.0001
Lev	1	-0.207	0.007	-27.93**	<.0001
ROA	1	367.02	-14.26	25.73**	<.0001
MKBK	1	0.628	0.014	41.99**	<.0001
Size	1	-0.168	0.012	-14.07	<.0001
IntCov	1	-9.14E-7	0.00023	0.001	0.99
Currnt	1	0.006	0.00081	7.46	0.0012

*Note: Rate is a credit rating variable. abs_AAC is an absolute discretionary accrual, an earnings

management variable. Lev is the ratio of financial leverage, ROA is the ratio of total asset returns, and MKBK is the ratio of the common stock market to book value. Size is the logarithm of total assets, a corporate size variable. IntCov is the interest compensation ratio and Currnt is the current asset ratio.

[Table 3] shows the results of a panel analysis conducted to verify the statistical robustness of our analysis. We tested the effect of the absolute value of abnormal accruals (abs_AAC) on the credit rating variable (Rate) in the regression model. Panel analysis is very effective in dynamic statistical analysis of time-series and cross-sectional data samples. The absolute value of abnormal accruals (abs_AAC) representing the extent of companies' earnings management is -0.345 for the credit rating variable (Rate) and its standard error is 0.059, showing a very significant negative correlation between earnings management and credit rating. This is consistent with the OLS analysis results. It seems that corporate earnings management negatively impacts credit rating, when credit rating agencies evaluate the quality of information or earnings in corporate financial statements as low, they assess corporate risks as high. The panel analysis estimation results for the control variables shown in [Table 3], are also consistent with those in the OLS analysis shown in [Table 2].

[Table 3] Effect of Earnings Management on Credit Rating: PANEL Analysis - Dependent Variable: Rate (Credit Rating)

Variable	DF	Coefficient Estimate	Standard Error	t-Val	Pr> t
Intercept	1	9.643	0.51	18.55	<.0001
abs_AAC	1	-0.345	0.059	-5.86**	<.0001
Lev	1	-0.113	0.006	-18.74**	<.0001
ROA	1	233.89	11.13	21.00**	<.0001
MKBK	1	0.587	0.021	27.44**	<.0001
Size	1	-0.171	0.019	-8.79	<.0001
IntCov	1	-0.00021	0.00017	-1.19	0.233
Currnt	1	0.0022	0.00069	3.24	0.0012

*Note: Rate is a credit rating variable. abs_AAC is an absolute discretionary accrual, an earnings management variable. Lev is the ratio of financial leverage, ROA is the ratio of total asset returns, and MKBK is the ratio of the common stock market to book value. Size is the logarithm of total assets, a corporate size variable. IntCov is the interest compensation ratio and Currnt is the current asset ratio.

4. Conclusion

In this study, the effects of companies' earnings management strategies on their credit ratings

were empirically analyzed. The relationship between corporate earnings management and credit rating has been controversial in both academic and business circles. Graham and Harvey[1], Kisgen[5], and Ying, Zhipeng, Yan, and Bing[20] argue that companies use earnings management strategies to try to achieve their target credit ratings, and that desirable credit ratings enable them to employ their financial policies smoothly. In this case, the degree of earnings management is expected to have a positive correlation with credit rating. On the other hand, according to Giannetti[10], Bhattacharya, Daouk and Welker[11], Francis, LaFond, Olsson and Schipper[12], and Burgstahler and Dichev[21], earnings management leads credit rating agencies to evaluate the quality of information in corporate financial statements as low, and these agencies view this low quality of information as a signal of increased management opacity and corporate risk. Thus, the degree of earnings management will be negatively correlated with credit rating.

The results of this study showed that the absolute value of abnormal accruals (a substitute for corporate earnings management) had a negative impact on the credit rating variable. These results indicated that credit rating agencies valued the quality of information and earnings in corporate financial statements of companies that engaged in earnings management as low, leading them to assess corporate risks as higher and companies' credit ratings as lower.

This study confirmed that corporate managers who employed earnings management strategies behaved in a disadvantageous way for their companies. Earnings management increases companies' bankruptcy risk in the capital markets. From the perspectives of capital markets and credit rating agencies, earnings management increases corporate risk. A notable contribution of this study is that it provides a basis for considering earnings management behavior an important evaluation factor in the corporate credit rating processes of creditors, investors, and credit rating agencies in the future.

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