

Monitoring Abnormality in Returns Around Credit Rating Announcements

Amitesh Kapoor, Sakshi Sachdeva, Ashima Gupta

Abstract

A reliable credit rating provides creditworthiness and financial strength to a firm. Any revision to credit rating may provide signal to volatility in returns of that firm. We study the relationship between credit rating and its security return. Banks being the back bone to any economy, bonds rating provides information how many the banks are reliable and credit worthy to the investors. Using event study framework with E-Garch application, results suggest that credit rating does affect the volatility of stocks. And the effect during downgrade in credit rating is more than the effect during upgrade. Also, the banks with higher market share shows more positive returns than the banks with lower market share in case of credit rating upgrade, and vice versa trend follows in case of downgrade. This suggests that credit rating can give some abnormal returns in a specific window.

Keywords : E-Garch, event study, abnormal returns, credit rating, volatility

Credit ratings establish a link between risk and return and thus provide a yardstick against which to measure the risk inherent in any instrument. An investor uses the ratings to assess the risk level and compares the offered rate

of return with his expected rate of return (for the particular level of risk) to optimize his risk-return trade-off. The risk perception of a common investor, in the absence of a credit rating system, largely depends on his familiarity with the names of the promoters or the collaborators. It is not feasible for the corporate issuer of a debt instrument to offer every prospective investor the opportunity to undertake a detailed risk evaluation. Credit rating is of great assistance to the investors in making investment decisions. It also helps the issuers of the debt instruments to price their issues correctly and to reach out to new investors. Regulators like Reserve Bank of India (RBI) and Securities and Exchange Board of India (SEBI) use credit rating to determine eligibility criteria for some instruments. Ratings are considered to be an objective evaluation of the probability that a borrower will default on a given security issue, by the investors. Whenever a security issuer makes late payment, a default occurs. In case of bonds, non-payment of either principal or interest or both may cause liquidation of a company. In most of the cases, holders of bonds issued by a bankrupt company receive only a portion of the amount invested by them.

Credit rating of the firm not only contains the credit worthiness information of the firm. It contains information beyond the credit rating. Whether the company publish the information about its credit rating or not the negative announcement about the credit rating of the company impact its prices. For a company having AA+ credit rating having abnormal return of 10% and the date on which credit rating gets downward to A the return changes to -5.42%. Also the information about positive credit rating takes time to spread in the market. A firm with credit rating A gives negative abnormal return and when ratings revised to AA+ in the event window after the announcement up to 6 days its shows negative abnormal returns and after that returns are increasing. Rozeff suggests that, stocks with upgrades outperform stocks with downgrades for up to one year following the announcement. The differential return of stocks is mostly due to the poor performance of stocks with downgrades. The under performance of the downgrades is primarily due to the poor returns of small and low credit quality firms.

Credit ratings are important indicators of companies default probability and are widely used as measures of credit risk of a security and its issues. The three main international credit rating agencies are Moody's, S&P and Fitch. There is oligopoly in the credit rating market 80% of the credit rating market is captured by Moody's and S&P, with Fitch only market share of 15% .

Review of Literature

The relationship between the credit rating and security return varies from market to market, from company to company and also the effect varies according to credit rating agency. According to Klimaviciene , in Baltic stock market the impact of negative credit rating is several times more than that of positive credit rating. The impact of credit rating is analysed with the event study framework. The proposed framework of event study shows that the price impact on stock of negative event tends to be larger than that of positive events. Zang states that equity abnormal returns for industry portfolio can be measured with the help of information on transfer effects of bond rating downgrades. According to Becker and Milbourn with the introduction of new credit rating company Fitch leads to increased competition and downgrading of quality of credit rating with increased credit rating levels and decreasing relationship between credit rating and market yields and also effecting the speculation of the firm with creating confusion in investors mind. They explained the relationship between rating shopping and rating inflation. Companies pay high amount to credit rating companies to get more credit rating which leads to attraction of new investors. So that credit rating is not a reliable parameter for the investor to invest in particular company. The firms are downgraded then there are likely changes in the capital structure. But if the firms are relatively upgraded then there is not subsequent change in the capital structure of the firm. According to Kisgendo downgraded firms issue approximately 15%- 20% less net debt relative to net equity as a percentage of assets compared to other firms. If commercial paper is downgraded to speculative grade, then effect would be larger than the upgrading of the commercial paper. Credit rating also affects the foreign exchange markets. Downgrading of sovereign depreciate the exchange rate with respect to use and increase the volatility as stated by the Subasi .

Rating agencies provide valuable information to the foreign exchange markets. The effect of credit rating on security return differs from one market to another. According to Chan domestic credit rating agencies in China shows no effect on the decision of investors. According to Elisathe effect of security return shows when credit rating agency announces credit watch list, credit rating agency and post credit rating announcements. The return of the common stock not only reflected with the credit rating but also the information available in the market. As stated by MacBeth the common stock's risk return regression reflects the relation between coefficient and residuals as given by efficient market hypothesis. Chang measures the variation of return volatility in high fluctuating market. As comparison to stable market there can be different characteristics from that of volatile market. The empirical results of Chang suggest that E-Grach model provides more reliable results than Grach model in the volatile market.

With the control of credit rating the different types of debt show different return. Using a large data set of public bonds collateralized debt has higher yields than general debt. The differential returns between secured and unsecured debt, after controlling the credit rating, is larger for low credit rating, non-mortgage assets, longer maturity assets. Number of researchers' shows credit rating is inversely proportional with the return of security. Avramov presents, firms with low credit risk realize higher returns than firms with high credit risk and return is statistically and economically significant only during the periods of credit rating downgrades. John analysed the effect of credit rating announcement, preparing of credit watch list and the actual credit rating on the return of security. This paper examines daily excess bond returns associated with announcements of additions to Standard and Poor's credit watch list, and to rating changes by Moody's and Standard and Poor's credit watch list and to rating changes by Moody's and Standard and Poor's, reliably non zero average excess bond returns are observed for additions to Standard and Poor's Credit watch list when an expectations model is used to classify additions as either expected or unexpected. Bond price effects are also observed for actual downgrade and upgrade announcements by rating agencies. The stock price effects of rating agency announcements are also examined and contrasted with the bond price effects.

Subramanyam suggested analysts following are negatively related with the default risk as given by credit rating. George Foster concluded that with the change in magnitude or sign of unexpected earnings is very much dependent on the post announcements drifts which only a simple subset of earning expectation model. Rozeff said that rating of the commercial paper effects the common stock return where highly rated commercial papers shows highly positive returns but lower rated issues of commercial papers don't here they also mention that with the change in the stock prices also effects rating of the firms. Cantor told structured finance coupon spreads also shows relationship with the change in the ratings were like at the time of credit default risk or credit deterioration scope of these coupons widens. securities with higher coupon spreads in a given rating category may imply higher downgrade risk demonstrating that macroeconomic factors also influence scope of theses spreads which implies that they contains strong systematic risk.

Scope of the study

The scope of this study is to see the impact of credit rating of securities on its returns in Indian market. As it depends on market to market whether, the credit rating has impact on securities or not. Chinese credit ratings are important to the stock returns of the rated issuers in China . According to Choy the reaction is most significant in Australian stock market when the downgrade: (i) is unanticipated; (ii) is for an unregulated firm; and (iii) reduces the firm's rating by more than one category. As compared to other markets Indian market is very thin and our main purpose is to find the impact of credit rating of securities on its return when the actual rating is announced by the credit rating company and also to see the impact when a company is rated by more than one credit rating company then what would be the effect on investors and its return.

Hypothesis of the study

Null hypothesis: The credit rating does not affect the security return.

Alternative hypothesis: The credit rating affects the security return.

Data

Our data consists of rating changes for Indian banks listed in Bombay Stock Exchange rated by ICRA from a period of 2001 to 2012 for 12 banks. These banks are Andhra Bank, Bank of Baroda, Canara Bank, Central bank of India, Dena Bank, IDBI, Indian Overseas Bank, Karur Vyasa Bank, Punjab National Bank, Vijaya Bank, UCO Bank and Union bank of India. These are the banks for which credit rating is changing in our sample period. Likewise there 30 companies in the SENSEX, but the credit rating for them are not changing at all. To study the relationship between credit rating and security return there is requirement of those companies for which credit rating is changing. As banks are financial back bones of any economy and provide loans to companies and individuals as well. With the analysing the relationship between credit rating of bonds and returns of the banks provide reliable information. The ratings of bonds are available with the Capitaline. From 12 banks within sample period of 2001 to 2012 there are 42 credit rating changes. The effect of credit rating on security return is analysed by considering all banks because the bond ratings, of top 10 companies from SENSEX and NIFTY index are not changing in our sample period from 2001 to 2012.

The impact of credit rating is analysed for the banks which show change their credit rating once or twice a year. SENSEX is the market index which is varying continuously and gives daily returns. Also the CRR, SLR and Bank rate can be taken as exogenous variable to calculate the expected return because these are the rates which affect the return of banks. But these are not changing frequently and it will give the singular matrix error in Eviews. Regression is not possible with not changing values of exogenous variable.

Methodology

To analyse the effect of credit rating we have used the event study framework. The date on which the credit rating changes is denoted as the event date and the event window consist of 21 days i.e. 10 days prior to the event date and 10 days after the event date. So the event window is written as $[-10, 10]$. For calculating the expected return we have used E-Garch model in Eviews. E-Garch model is Exponential generalised autoregressive

conditional heteroskedascity model used to determine the expected return. Our focus is to examine the effect of credit rating announcement on the security return. We have used the standard event study methodology.

First, step is to decide the event date. Event date is the date on which the credit rating is announced. Event date is denoted as 0. Second, step is to select the event window. Event window consist of days before announcement of credit rating. In our paper the event window consists of 10 days pre announcement and 10 days post announcement. Event window is denoted as $[-10,10]$. The impact of announcement retains at least 10 after the announcement. Third step is to select the estimation window. Estimation window is defined as that window in which no event occurs. In our paper there is estimation window of 100 days. Fourth step is to calculate the actual return. Since, we are using E-Garch model to calculate the expected return. Then actual return is calculated by using natural log of stock price. The actual return is calculated as:

$$R = \ln_{\text{stock price}} \left(\frac{t+1}{t} \right)$$

Where R is actual return

$\ln(t+1/t)$ = ratio of natural of stock price on $t+1$ day to the t day

Fifth step is to calculate the expected return which is calculated by using E-Garch model in Eviews. Chang has applied both Grach model and E-Garch model to sample, suggesting that E-Garch model fits sample better than Garch model. By using E-Garch equation the constant and coefficient of SENSEX which we have taken as exogenous variable is calculated. And then the equation of expected return is given by:

$$E(R) = \alpha + \beta \times \ln_{\text{SENSEX}} \left(\frac{t+1}{t} \right)$$

Where $E(R)$ = expected return

α = coefficient of regression

β = regression coefficient of SENSEX

$\ln_{\text{sensex}}(t+1/t)$ = actual return of SENSEX

Next step is to calculate the abnormal return (AR). Abnormal return is used to describe the returns generated by a given security over a period of time that is different from expected rate of return the expected rate of return is estimated return based in E-Garch model.

$$AR=R-E(R)$$

Last step is to calculate the cumulative abnormal return.

Results and discussion

After calculating the cumulative abnormal return for all significant windows we have to analyse whether the statistically change in credit rating impact the return of security or not. For hypothesis testing we conducted t-test for two sample population for different variance. The confidence level for t-test is stated as 5%. (Elisa Choy, 2006).

Rating agencies frequently review their rating assessment in response to new information, both public and non-public. Such information might include earnings announcements, capital restructuring, new debt or equity issues and internal reports or forecasts. Any information that signals a potential change in a company's future prospects will attract the attention of rating agencies and might also initiate a market reaction. The extent to which the stock price reaction is attributed to the rating revision announcement and not to a confounding effect is addressed by using several control procedures, such as the exclusion of concurrent earnings announcements and other contemporaneous news releases that could contaminate the rating revision announcement.

The results on the impact of change in credit rating from upgrade to downgrade and vice versa are shown in table 1, 2 and 3. The table 1 shows the significant p-value for t-test where confidence level is 5% i.e. $\alpha=0.05$. If p-value for t-test is less than α - value than we reject the null hypothesis in favour of alternative hypothesis when T-stat value is higher than 1.96 other wise null hypothesis will be rejected but not in the favour of alternate hypothesis. In table 1 there are 15 p-values for different types of credit rating change. The column shows previous credit rating and after change in credit rating is shown in row. And their respective p-values are quoted in table

(Table 1). It is clear in table that there are 15 p-values, among 12 p-values (Non highlighted values) are less than that of α -value. That means 80% of p-values are rejecting the null hypothesis and are in favour of alternative hypothesis when T-stat value is higher than 1.96. The p-value is insignificant only in 3 cases; among them 2 cases are those in which credit rating is announced but is not changing over the time. For example when previous credit rating is LAA+ and after the revision in credit rating it is not changing. In this case p-value is 0.215213 which is more than 0.05 and its accepting the null hypothesis (refer Table 1)

Table 2 and 3 shows the T-stats value and its corresponding critical T-value. T-stats value shows the area of acceptance under the normal distribution curve. If the T-stats value comes under the area of acceptance and p-value is more than that of α -value then null hypothesis is accepted or vice versa. It is clear from the table 2 and 3, among 15 values only 4 values (highlighted values) are in favour of null hypothesis. 73% of T-critical values are rejecting the null hypothesis and are in favour of alternative hypothesis.

Thus, in Indian stock market investors are likely to follow the credit rating and also it affects the return of the security.

	LAA+	AA+	LAAA	LAA	AAA	A+	BB-	AA-	AA	AA+
AA+	0.00115			0.582091	1E-05					
LAA+	0.215213	0.038535		3.32E-06		1.46E-07				1.02E-07
AAA			0.000397		0.039787					
A		0.027693								
A+						0.875906				
BB							1.43E-05			
AA(ind)								3.91E-15		
AA-									0.001826	

Table 1: showing the p value for change in credit rating from t-test. The table shows the p-value for CAR for rating changing from column to row. For example when credit rating changes from AA+ to LAA+ the p-value is 0.00115. Based on these p-values the hypothesis are accepted or rejected. If p-value is less than α -value (confidence level), then null hypothesis is rejected.

T-Stat										
	LAA+	AA+	LAAA	LAA	AAA	A+	BB-	AA-	AA	AA+
AA+	-3.58187			0.554961	5.179541					
LAA+	-1.25984	2.141541		-3.61962		6.395516				-8.0708
AAA			-3.96974		-2.13803					
A		2.332399								
A+						0.157276				
BB							0.157276			
AA(ind)								12.42378		
AA-									3.358531	

Table 2: showing the T-Stat for change in credit rating from t-test. This table shows the value of t-stats from t-test. There are total 42 event windows in our sample of 12 banks but only significant changes of 25 windows are shown for hypothesis testing.

T-Critical										
	LAA+	AA+	LAAA	LAA	AAA	A+	BB-	AA-	AA	AA+
AA+	2.039513			2.022691	2.032245					
LAA+	2.022691	2.022691		2.021075		2.022691				2.085963
AAA			2.039513		2.032245					
A		2.055529								
A+						2.028094				
BB							2.068658			
AA(ind)								2.022691		
AA-									2.026192	

Table 3: showing the T-Critical for change in credit rating from t-test. T-critical values are shown in this table. If the value of t-stats comes under the area of acceptance then we accept the null hypothesis. The results of E-Garch are shown in following tables. The expected return of banks not only depends on the credit rating, it also depends on the market share of bank. If bank with comparatively less market share is upgraded then the expected return is less as compared to bank with high market share. Indian overseas bank is having less market share than the Punjab national bank. Its credit rating is also low than that of Punjab national bank. When there is upgrade in credit rating of Indian overseas bank from AA+ to LAA+, the mean of expected return after the event date is -0.97% and when there is upgrade in Punjab national bank from AAA to LAAA then there is mean expected return after the event date is -0.0% which is much more than that of Indian overseas bank E-Garch results. Similar results are obtains in case of Dena bank and Punjab national bank. When, Dena bank is upgraded from A to AA+ then mean return after the event date is -0.37%.

In case of downgrade the expected return for banks with higher market share is less than that of banks with lower market share. For example, in case of IDBI (Industrial development bank of India) has been downgraded from LAA+ to LAA and its mean expected return goes down from 0.94% to 0.03% and in case of Karur Vyasa bank the credit rating goes down from LAA+ to A+ and its mean expected return after the event date goes down from 0.24% to 0.15%. The difference in case IDBI bank is 0.91%¹¹ Calculation of mean return is not shown here, this calculated to test the hypothesis. and that in case of Karur Vyasa bank is 0.25%. The difference in case of IDBI bank is more than that of Karur vyasa bank. That indicates, when with higher market share is downgraded return is decreased as compare to bank either lower market share. Similar case is with the Vijaya bank and IDBI Bank. When credit rating of Vijaya bank goes down from AA to AA- the return goes down from -0.87% to -1.02%.

Variance of any company tells about the volatility in the stock in that particular time period that how stocks fluctuate in that time. Like here, if we see the effect of actual returns depend upon credit rating change. For some companies it also depends like for the case of Indian Overseas Bank Credit Rating when upgrades volatility of stocks minimized on the other hand when credit rating downgrades in that case volatility of the stock increase indicates that downgrades has much more effect than that of upgrade(refer variance graphs). And also the same pattern is followed by IDBI where when the credit rating downgrades then volatility of the stock increases because of the investors' perception company is downgrading and there would be no safer investments to do in the company. Same pattern is analysed by Elisa. Also there are some exceptional trends like as in case of Bank of Baroda when credit rating downgrades volatility increased in the stocks but when credit rating changes and again remains same as previous then also volatility of the stock increased and another trend come into discussion is of the union bank where when the credit rating of the company announced and with the up gradation of the company's credit rating at that day company's return variance is on peak which means that there would be increase in share prices on the stock at that day but for another days it remains less fluctuated.

Some other different patterns like for IDBI there is different effect comes in the consideration where if we analyse the variance volatility in the estimation window and the event window there is almost same pattern is followed which means that credit rating change does not affect IDBI bank volatility. But on the other hand maximum variance fluctuations are shown by IDBI bank which may be because of other market factors which effects the variance of stock. May be because of investors perception that as IDBI provides maximum loan to the industries and having maximum market share in whole data and investors' perception may be that IDBI always provide loans and safer investments would be there. Our results are in line with Elisa and Klimavicinethat effect of downgrade in credit rating is much more than that of upgrade in credit rating. Even upgrades and downgrades in credit rating affects in respect to banks. Banks with higher market share shows more positive results than that of lower market share when upgraded. Banks with lower market share when downgraded do not show much impact of the credit rating

Conclusion

A reliable credit rating provides creditworthiness and financial strength of a firm. Any revision to credit rating provides signal to change in returns of firm. We study the relationship between credit rating and its security return. The credit rating assigned by ICRA to the bonds of banks listed in Bombay Stock Exchange. Banks are back bones to any economy and bonds rating provide information how much the banks are reliable and credit worthy to the investors. The methodology used in this study is event study framework using E-Garch application in Eviews. Results suggest that credit rating affects the return of stocks. And the effect of downgrade in credit rating is more than that of upgrade. Also, the banks with higher market share shows more positive returns than that of lower market share banksin case of upgrade credit rating, and vice versa trend follows in case of downgrade. This suggests that credit rating contain information beyond that which is contained in those resources.

References

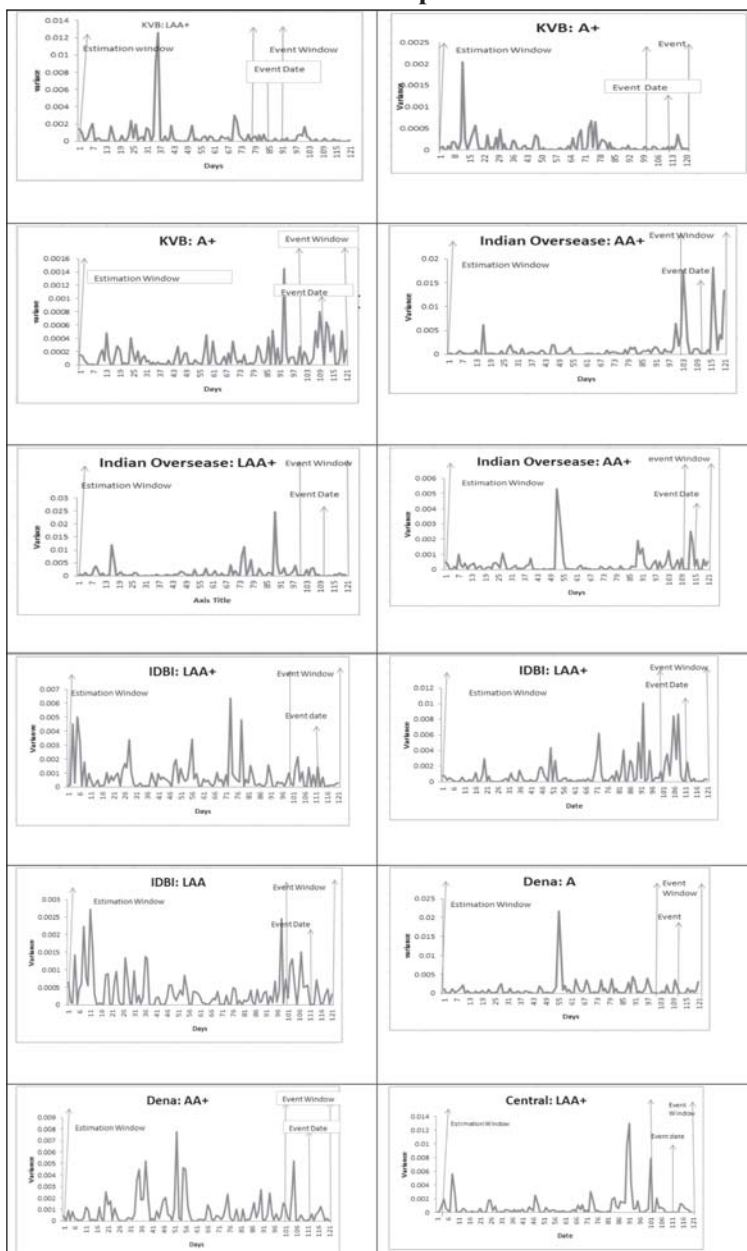
1. Avramov, D. (2007). Credit Ratings and The Cross-Section of Stock Returns.
2. Blaurock, U. (2007). Control and Responsibility of Credit Rating Agencies. *Journal of*

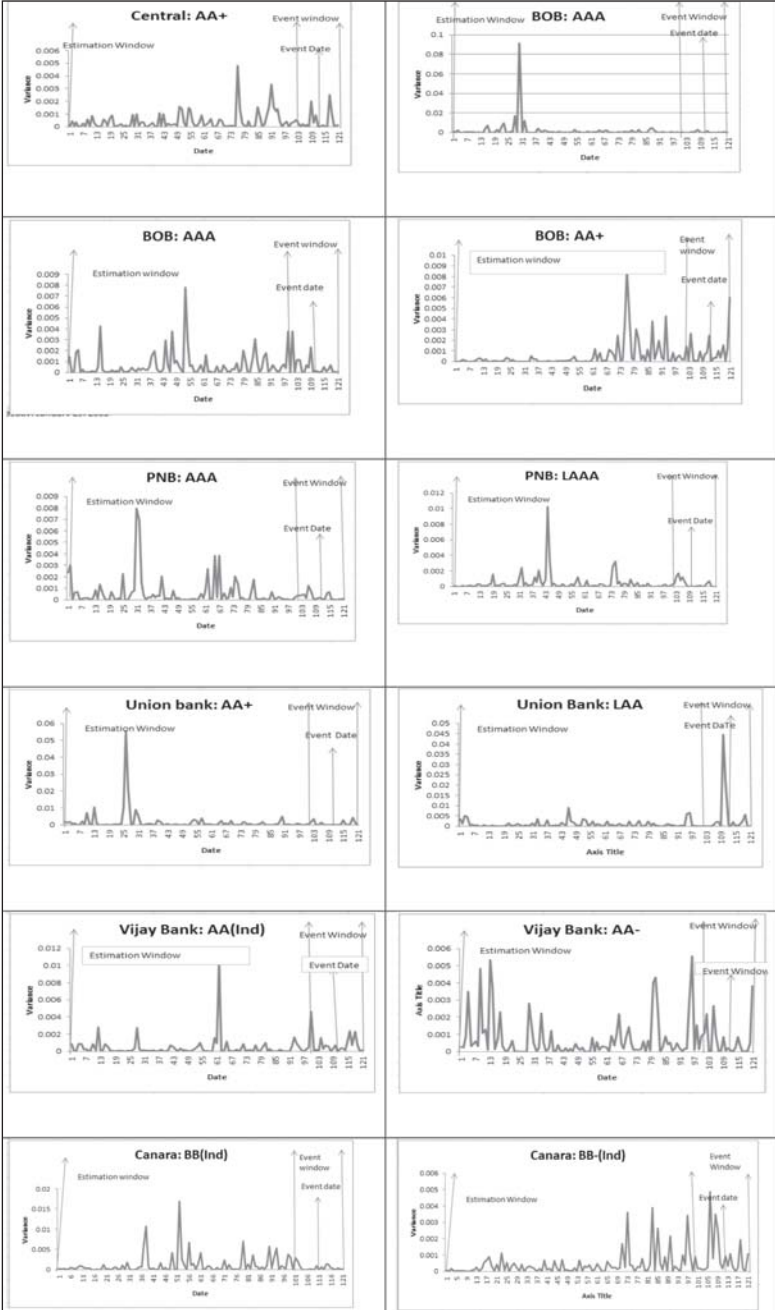
- Comparative Law*, vol. 11.3.
3. Bollerslev, T. (1986). Generalized autoregressive conditional heteroskedasticity. *Journal of econometrics*, 31,307-327.
 4. Cantor, J. H. (2005). The Relationship between Par Coupon Spreads and Credit Ratings in US Structured Finance.
 5. Chan, W. P. (2008). The Effects of Credit Ratings on Stock Returns in China. *The Chinese Economy*, vol. 41, no. 2,pp. 34–55.
 6. Danos, P. D. (1984). Bond raters' use of management financial forecast: An experiment in expert judgement. *The Accounting Review*, 59:547-573.
 7. Elisa Choy, S. G. (2006). Effect of credit rating on Australian Stock return. *Accounting and Finance*, 755–769.
 8. Engle, R. A. (1982). Autoregressive conditional heteroscedasticity with estimates of the variance united kingdom. *Econometrica*, 50,987-1007.
 9. George Foster, C. O. (1984). Earnings Releases, Anomalies, and the Behavior of Security Returns. *The Accounting Review*, pp. 574-603.
 10. John R. M, H. R. (1992). A Survey of the Issues in Consumer Credit Modelling Research. *Journal of Business*, vol.76,no.3.
 11. John R. M, H. R. (2003). A Survey of the Issues in Consumer Credit Modelling Research. *Journal of Business*, vol.76,no.3.
 12. Kisgen, D. J. (2009). Do Firms Target Credit Ratings or Leverage Levels? *Journal of Financial and Quantitative Analysis*, Vol. 44, No. 6,.
 13. Klimaviciene, A. (2011). Sovereign Credit Rating Announcements And Baltic Stock Markets. *Organizations and Markets in Emergiing Economies*, vol. 2, No. 1(3).
 14. MacBeth, E. F. (1973). Risk, Return, and Equilibrium: Empirical Tests. *The Journal of Political Economy*, Vol. 81, No. 3, pp. 607-636.
 15. Milbourn, B. B. (2010). How did increased competition affect credit.
 16. Neilson, D. B. (1991). conditional Hetrodstacity in Asset Return. 347-370.
 17. Rozeff, N. N. (1994). Ratings, Commercial Paper, and Equity returns. *The Journal of Finance*, VOL. XLIX, NO. 4.
 18. Rozeff, N. N. (1994). Ratings, Commercial Paper, and Equity Returns. *The Journal of Finance*.
 19. Su, C. (2010). Application of EGARCH Model to Estimate Financial Volatility of Daily Returns.
 20. Subasi, F. O. (2008). The Effect of Sovereign Rating Changes on Stock Returns and Exchange Rates. *International Research Journal of Finance and Economics*, ISSN 1450-2887.
 21. Subramanyam, M. C. (2008). Analyst Following and Credit Ratings. *Contemporary Accounting Research*, Vol. 25 No. 4, pp. 1007-43.
 22. Zhang, P. J. (2010). Information Transfer Effects of Bond Rating Downgrades. *The Financial Review* 45, 683–706.

Appendix

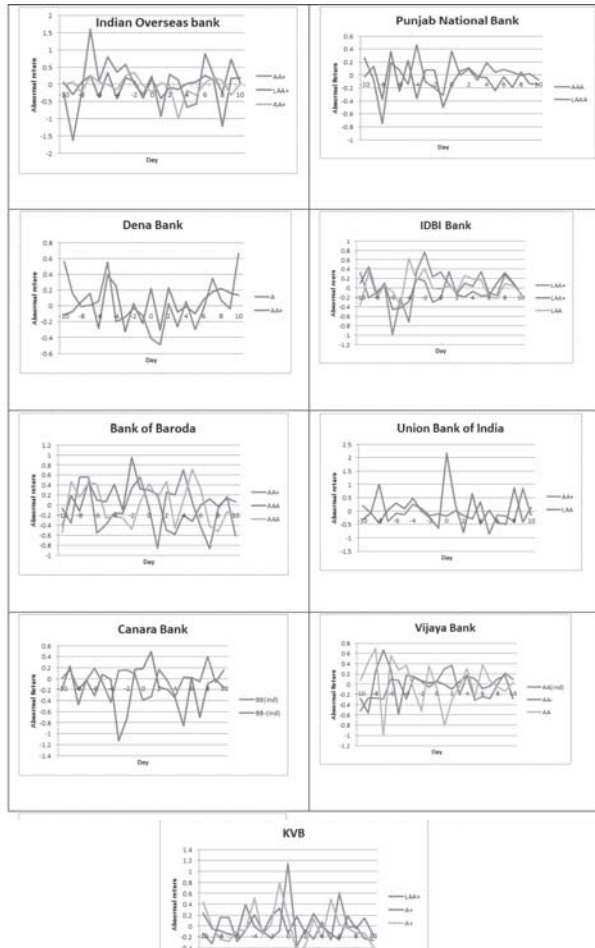
		Pre-event										Event date										Post-event									
		-10	-9	-8	-7	-6	-5	-4	-3	-2	-1	0	1	2	3	4	5	6	7	8	9	10									
Indian	AA+	-7.07%	-4.22%	-4.42%	2.79%	-2.56%	0.53%	0.99%	0.09%	-0.90%	-3.84%	-3.39%	3.28%	-2.53%	-2.70%	-2.77%	-4.98%	4.91%	-3.65%	-4.61%	-1.73%	10.62%									
Overseas	AA+	-3.99%	-0.38%	-5.70%	-0.12%	2.42%	5.56%	2.32%	-0.22%	-2.97%	0.82%	-2.54%	2.06%	1.07%	0.17%	0.03%	-1.59%	-6.13%	-2.86%	1.48%	-4.05%	-0.24%									
Bank	AA+	-1.36%	0.32%	-1.01%	0.80%	-0.83%	0.07%	-0.87%	0.04%	0.84%	-0.72%	0.46%	-0.59%	0.12%	-0.85%	-0.08%	-1.25%	0.27%	0.17%	0.91%	-0.10%	0.16%									
AAA	AAA	-0.82%	-1.33%	0.11%	-2.83%	0.87%	0.45%	1.55%	1.48%	0.59%	-0.57%	-0.22%	0.23%	-0.13%	1.57%	-1.31%	-0.41%	0.65%	0.41%	0.82%	0.51%										
PMB	AAA	-0.73%	0.73%	1.23%	1.70%	-0.37%	0.55%	-0.75%	-0.30%	-1.16%	2.21%	0.84%	-0.51%	0.49%	0.45%	-0.99%	0.11%	-0.04%	-1.54%	0.81%	0.71%										
Dena	A	-1.41%	-0.27%	0.33%	-0.71%	2.20%	-0.13%	-1.95%	0.63%	-0.18%	1.21%	-5.36%	0.51%	-2.70%	-0.32%	-1.83%	-0.91%	2.56%	2.17%	-0.27%	2.65%										
Bank	AA+	-2.80%	2.16%	-1.35%	-1.13%	-5.31%	0.67%	1.80%	5.99%	0.41%	-0.03%	-2.50%	2.06%	0.29%	-1.34%	-1.87%	2.52%	-2.50%	1.82%	-1.99%	-2.62%										
AA+	AA+	-1.89%	-5.65%	2.01%	-3.01%	-5.16%	2.74%	-1.46%	4.62%	-1.91%	-0.05%	0.59%	-4.93%	-0.08%	-1.43%	2.03%	0.41%	2.24%	3.42%	-0.45%	-1.85%										
AA+	AA+	-0.85%	2.11%	-0.71%	0.64%	-0.45%	-0.06%	-1.69%	0.41%	-0.04%	-1.33%	-0.88%	0.88%	4.55%	1.16%	0.45%	-0.35%	1.09%	0.87%	1.13%	-2.67%										
IDBI	AAA	0.83%	0.92%	-0.53%	1.05%	1.85%	0.54%	-0.39%	-0.52%	1.07%	0.40%	-0.11%	-0.29%	0.64%	2.18%	0.15%	-0.43%	0.70%	-1.56%	-0.42%	0.40%										
AA+	AA+	0.09%	-0.25%	-0.72%	0.03%	-0.14%	-0.73%	-0.63%	-0.95%	0.18%	-0.70%	-0.54%	0.38%	-0.36%	-0.23%	-0.61%	0.73%	-0.68%	-0.63%	-0.11%	-0.46%										
Bank of	AAA	1.05%	0.59%	1.50%	-0.81%	2.28%	0.04%	0.49%	-0.58%	0.53%	0.80%	0.46%	0.59%	-0.16%	0.36%	-0.01%	0.73%	-0.68%	-0.63%	1.75%	2.57%										
Baroda	AAA	-2.93%	-0.72%	1.82%	-4.94%	0.09%	3.24%	3.20%	-0.37%	-2.03%	1.42%	-2.26%	-2.45%	-2.98%	1.81%	-0.24%	-7.50%	-3.40%	-1.09%	3.30%	1.48%										
Union	AA+	1.24%	0.39%	0.15%	0.62%	-0.71%	-1.34%	1.56%	-0.12%	-0.05%	0.07%	-0.07%	1.53%	1.62%	1.54%	-0.24%	-0.19%	-1.07%	-0.10%	-0.68%	1.68%										
Bank	AAA	0.05%	-1.60%	1.50%	-0.50%	-2.72%	-2.27%	-0.94%	4.19%	-9.18%	-6.06%	6.13%	-2.50%	7.78%	-1.30%	-0.33%	-2.16%	-0.67%	4.05%	2.79%	0.09%										
Karur	AA+	-1.15%	0.65%	-0.35%	0.55%	0.60%	0.91%	0.25%	0.29%	0.16%	0.41%	-0.37%	-0.10%	-0.05%	0.00%	0.71%	0.77%	0.24%	0.25%	0.20%	0.22%										
Vysa	A+	1.04%	0.56%	0.24%	0.36%	-0.58%	0.29%	0.73%	0.47%	0.39%	-0.33%	-0.14%	0.80%	1.11%	0.14%	0.24%	-0.92%	1.01%	-0.21%	-0.01%	-0.65%										
Bank	A+	-1.20%	-1.50%	-0.16%	0.96%	0.64%	0.20%	-0.78%	1.38%	-0.16%	-2.88%	-0.85%	-0.49%	1.93%	-0.24%	1.00%	-1.01%	-1.27%	-1.23%	-0.33%	1.82%										
Carra	BBB(in)	-3.53%	3.03%	-1.20%	1.48%	-0.66%	0.83%	2.47%	0.65%	1.66%	1.70%	0.32%	-0.56%	0.18%	2.72%	-0.71%	2.40%	-0.57%	2.05%	-0.68%	-0.74%										
Bank	BB(in)	-1.03%	1.03%	-1.09%	0.73%	-0.76%	1.84%	-0.47%	-0.36%	-0.03%	1.49%	1.49%	0.92%	1.69%	1.01%	0.40%	0.54%	0.33%	-0.37%	-1.18%	1.48%										
AA(in)	AA(in)	-1.10%	-2.87%	-1.10%	-0.89%	2.33%	0.08%	-1.39%	-0.76%	-1.54%	-3.29%	-0.14%	-1.62%	-4.67%	1.55%	-2.53%	-4.27%	2.14%	-1.27%	3.67%	-1.63%										
Vijaya	AA-	3.01%	0.11%	1.63%	-0.85%	2.12%	0.37%	-0.07%	-0.02%	1.74%	-2.14%	-1.09%	-2.69%	-0.85%	-1.00%	0.53%	-3.19%	0.70%	-0.02%	-0.13%	-1.56%										
Bank	AA	0.08%	0.65%	1.48%	-2.14%	0.15%	-0.57%	-0.73%	-0.73%	1.51%	0.79%	-0.04%	-2.31%	1.93%	3.56%	-0.29%	-1.19%	0.57%	-1.51%	-1.29%	2.10%										
Central	AAA	-2.92%	2.07%	1.41%	0.90%	-0.85%	1.67%	0.33%	1.31%	-0.12%	-0.04%	0.78%	-0.12%	0.15%	1.69%	1.04%	0.95%	0.51%	-0.23%	-1.11%	-3.11%										
Bank	AA+	120.13%	130.86%	130.35%	133.69%	131.90%	132.44%	130.77%	131.94%	131.25%	135.46%	133.67%	132.22%	133.72%	131.72%	131.45%	132.11%	133.27%	135.78%	132.36%	131.50%										
																					132.83%										

Variance Graphs





Abnormal Return Graphs



The Authors :

Amitesh Kapoor is Assistant Professor in Lovely Professional University Phagwara, Punjab.

Sakshi Sachdeva and **Ashima Gupta** are Research Scholars in Lovely Professional University, Phagwara, Punjab

Copyright of Journal of Commerce & Management Thought is the property of SSK Busilink and its content may not be copied or emailed to multiple sites or posted to a listserv without the copyright holder's express written permission. However, users may print, download, or email articles for individual use.