The Impact Of bond Rating On Share Price Of Companies In India

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Abstract

Bond rating shapes an indispensable part for the speculators to determine the credit value and security .The real venture choices taken by the financial specialists will be founded on the credit rating assessment issued by the different credit rating organizations .As indicated by the semi-strong type of the productive market speculation (EMH) the present stock costs precisely mirrors an immense measure of open data about the firm, including new esteem important data that has quite recently been made open .On the off chance that this theory holds, as and when new data about a company's bond rating is made, the market cost of the associated security value ought to promptly change to mirror this data. On the off chance that the market sets aside opportunity to seize the bond rating news, such a market can't be said to be productive in the semi-strong form .This research is about finding the impact of bond rating on share price of companies in India. The details about share prices and bond rating information are collected from the Prowess IQ, the corporate database of Centre for Monitoring Indian Economy (CMIE). In this study I have selected the companies with maximum bond rating changes .The bond rating change announced by the four major credit rating agencies in India i.e., CRISIL, ICRA, CARE and Fitch are separately identified .The share price details have been obtained from NSE and BSE websites.

Keywords: bond rating, credit rating agency, share price ,rating parameters ,event study, rating symbols.

I. Introduction

This research was conducted in 3 different industries such as automobile, textile and banking. These industries forms the backbone of the economy. The ratings done on these industries forms an integral part for the investor decisions regarding the investment .Therefore it is important to know whether there is an impact on the share price of the company due to the rating upgrades or downgrades. If there is any negative news prevailing in the market of a company ; it may affect the share price and hence its affect the rating too .So this research is carried out in order to know the impact of bond rating(downgrade or upgrade) towards the share price of the selected companies. When I selected the three sectors I looked at, I consciously selected sectors that had different volatility and characteristics, so I had a well-rounded universe of stocks.

II. Motivation for the study

Previous examinations concluded that stock markets respond adversely to the downgrade of bond rating , demonstrating that these minimizations have data content with negative ramifications. In my examination I endeavoured to look at the degree to which the stock costs react to the declaration of changes in bond rating. In opposition to the discoveries of past examinations directed in India and different nations, I found that downsizes and updates have no impact on the offer costs. The offer costs reaction to the bond rating changes

is unimportant .This examination is done to demonstrate that the bond rating affects the offer costs of the organizations or banks.

III. Review of literature

Philippe Jorion and Gaiyan Zhang(2006),in their research ,demonstrates that investigations of declaration impacts of security rating changes should consider the rating before the announcement .They discover a lot more grounded data effects ,measured by stock cost effects ,for rating changes for low-evaluated firms in respect to high-appraised firms.

Fathia Hapsari Pirenaningtyas and Umanto EKO P(2013) in their research utilizes occasion contemplate strategy so as to look at the distinction in the anomalous returns for stock(average ordinary return)and bonds(spread yield).They utilized examples of recorded organizations in Indonesian stock trades for the period 2007-2011 which issue corporate securities and have security rating changes issued by PT Pefindo.

Shanshan Xiong & Yirui Zhang (2016) in their research analysed how bond rating influences the normal stock costs in china by gathering information from the period from 1 January 2008 to 30th May 2016.

Dr. Tripti Tripathi(2017) in his research ,examines the effect of bond rating changes on bank‟s stock costs. Investigation evaluates that AARs are negative and measurably unimportant for dominant part of the days if there should arise an occurrence of rating redesigns and AARs are certain and factually irrelevant for share of the days for rating downgrade declarations.

IV. Research Gap

No recent research has been conducted regarding bond rating changes and its impact on the share price of the companies .Most of the research has followed an event study and interpretation is done with the help AAR values .In this research I have taken CAAR(Cumulative Average Abnormal return) for the analysis and interpretation of data.

V. Need for the Study

There was a lot of criticism regarding bond rating agencies as a result of the financial crisis.The quality of the ratings these companies assigns to bonds was called into question and heavily criticized. People asked what the ratings were worth and if they were accurate or upto-date. The rating agencies were blasted for assigning some of their highest ratings to the financial instruments most closely tied to the crisis, instruments which ended up being very risky and worthless. This research is conducted in order to analyse the impact of bond rating changes on the share price of companies.

VI .Methodology

Objectives of the study

- To study the impact of bond rating changes(upgrades and downgrades)on the stock price.
- To investigate whether there are any significant abnormal returns(whether positive or negative) related to the credit rating change announcement.
- To understand how long the impact lasts.
- To help investors choose their bond wisely.

Hypothesis of the study

H01: Bond rating announcements has no impact on share prices of companies in India

H02: Bond rating announcements has an impact on share prices of companies in India

Sampling Size and Techniques

The share price and bond rating details of 5 companies for a period of 5 years have been selected for this research.

Data Collection Method

The details about share prices and bond rating information are collected from the Prowess IQ, the corporate database of Centre for Monitoring Indian Economy (CMIE). In this study I have selected the companies with maximum bond rating changes .The bond rating change announced by the four major credit rating agencies in India i.e., CRISIL, ICRA, CARE and Fitch are separately identified .The share price details have been obtained from NSE and BSE websites.

General Methodology

I followed event study methodology to analyse the impact of bond rating change on stock price. The event period is centred on the announcement date of bond rating change. The announcement date is designated as day "0" in the event period. Daily returns are calculated for the entire range and are compared with the estimated normal return. The change in CAR and CAAR after the announcement of bond rating has been analysed to know the impact of bond rating on the share price of companies or banks. The change in CAR and CAAR value before and after the rating date ie t-30 to t+30 has been taken in order to analyse the actual impact of bond rating on share prices. The single t-test and paired sample t test has been done inorder to find the level of significance.

VII. Results and Discussion

The following tables display the results of the various analyses carried in the study.

Company	One Sample t Test		Paired Sample t Test	
	T value	Significance	T value	Significance
HMT Ltd	-1.743	.10	-.064	.950
IFCL Ltd	-1.36	.22	.424	.675
VARDHAMAN Ltd	.556	.608	-.804	.428
PUNJAB NATIONAL BANK	-2.48	.056	-3.87	.702
BANK OF MAHARASTRA	-0.497	.673	-.387	.702

Table 1.1: One sample and paired sample t test using CAR

Company	One Sample t Test	
	T value	Significance
HMT Ltd	-1.74	.10
IFCL Ltd	-1.35	.219
VARDHAMAN Ltd	.560	.605
PUNJAB NATIONAL BANK	6.70	.56
BANK OF MAHARASTRA	-0.497	.637

Table 1.2 : One sample and paired sample t test using CAAR

- ## Test of HMT Ltd

In case of One-sample T-Test if the significance (2-tailed) $p = < 0.05$, then the means are statistically significantly different. If significance (2-tailed) $p = > 0.05$, then the means are not statistically significantly different .From the above table 1.1 of One-Sample test, using CAR the significance p values is .10, so the model is not significant.

From the above shown table 1.2 of One-Sample test, using CAAR the significance p values is .10, so the model is not significant.

From the above table we can see that, the significance (2 tailed) p value is .950 which is more than 0.05 i.e $p > 0.05$. So we cannot say that this model is significant.

Therefore, the null hypothesis is accepted and the alternative hypothesis is rejected, i.e, there is no significant between the pre and post impact of the event.

Calculated CAR CAAR values for from t0 till t-30 and t0 till t+30

Day	CAR	CAAR	Day	CAR	CAAR
-30	-20.1793	-1.83448	1	-15.1895	-1.38086
-29	0.191171	0.017379	2	0.216002	0.019637
-28	-20.7686	-1.88806	3	-16.1417	-1.46743
-27	-1.04102	-0.09464	4	-0.02988	-0.00272
-26	-22.0211	-2.00192	5	-16.916	-1.53782
-25	-1.88221	-0.17111	6	0.007034	0.000639
-24	-23.1627	-2.1057	7	-18.054	-1.64127
-23	-3.05397	-0.27763	8	-0.09603	-0.00873
-22	-24.2283	-2.20257	9	-18.6969	-1.69972
-21	-4.1526	-0.37751	10	-0.03547	-0.00322
-20	-24.69	-2.24454	11	-19.857	-1.80519
-19	-4.74525	-0.43139	12	0.115166	0.01047
-18	-26.0324	-2.36658	13	-21.2661	-1.93328
-17	-6.01116	-0.54647	14	-0.02524	-0.00229
-16	-26.7919	-2.43563	15	-22.0433	-2.00393
-15	-6.40067	-0.58188	16	0.004197	0.000382
-14	-27.8216	-2.52924	17	-23.0052	-2.09138
-13	-7.99579	-0.72689	18	-0.15983	-0.01453
-12	-29.1378	-2.64889	19	-24.1746	-2.19769
-11	-9.28207	-0.84382	20	-0.27327	-0.02484

-10	0.106704	0.0097	21	-25.1167	-2.28333
-9	-10.0409	-0.91281	22	0.251853	0.022896
-8	-0.03819	-0.00347	23	-25.7834	-2.34395
-7	-10.8054	-0.98231	24	0.05189	0.004717
-6	-0.09362	-0.00851	25	-27.1177	-2.46524
-5	-12.1138	-1.10125	26	-0.0255	-0.00232
-4	-0.04627	-0.00421	27	-28.0199	-2.54726
-3	-12.9062	-1.17329	28	-0.07258	-0.0066
-2	0.004066	0.00037	29	-29.2455	-2.65868
-1	-14.3461	-1.30419	30		0
0	0.178425	0.01622			

Table 1.3Calculated CAR CAAR values for from t0 till t-30 and t0 till t+30

From the above table 1.3, CAAR was positive on the day when bond ratings were done, and becomes negative the next day There is an overall CAAR t-score of .109 is needed for a 95% confidence level .CAAR was negative one day before the rating was performed . The t scores intended are not close enough for any abnormal state of significance, and therefore we can't reject the invalid hypothesis. There is no proof to support abnormal stock returns upon the arrival of and days immediately going before and following an organization's bond rating.

- **Test Of IFCL Ltd**

From the above shown table 1.1 of One-Sample test, using CAR the significance p values is .22, so the model is not significant.

From the above shown table 1.2 of One-Sample test, using CAAR the significance p values is .219, so the model is not significant.

From the above table1.1 we can see that, the significance (2 tailed) p value is .675 which is more than 0.05 i.e p >0.05. So we cannot say that this model is significant. Therefore, we accept the null hypothesis and we reject the alternative hypothesis. This tells us that there is no difference between the pre and post values.

Calculated CAR CAAR values for from t0 till t-30 and t0 till t+30

Day	CAR	CAAR	Day	CAR	CAAR
-30	-0.0087	-0.00145	1	-0.01404	-0.00234
-29	0.00254	0.000423	2	-0.03123	-0.00521
-28	-0.02846	-0.00474	3	-0.07439	-0.0124
-27	-0.06272	-0.01045	4	0.057744	0.009624
-26	0.011722	0.001954	5	0.000794	0.000132
-25	-0.00277	-0.00046	6	0.043793	0.007299

-24	0.067842	0.011307	7	-0.01666	-0.00278
-23	0.066171	0.011029	8	-0.08748	-0.01458
-22	-0.00929	-0.00155	9	-0.03076	-0.00513
-21	0.074672	0.012445	10	0.085705	0.014284
-20	0.045181	0.00753	11	-0.03104	-0.00517
-19	0.001918	0.00032	12	0.032021	0.005337
-18	-0.00823	-0.00137	13	0.017231	0.002872
-17	0.053232	0.008872	14	0.035469	0.005912
-16	0.03918	0.00653	15	0.011687	0.001948
-15	0.005266	0.000878	16	-0.04568	-0.00761
-14	-0.03089	-0.00515	17	-0.04424	-0.00737
-13	-0.11642	-0.0194	18	-0.08789	-0.01465
-12	-0.00222	-0.00037	19	0.060455	0.010076
-11	-0.01362	-0.00227	20	-0.09764	-0.01627
-10	-0.032	-0.00533	21	-0.07416	-0.01236
-9	-0.10174	-0.01696	22	0.182504	0.030417
-8	0.028163	0.004694	23	-0.01639	-0.00273
-7	0.047725	0.007954	24	0.053038	0.00884
-6	0.011157	0.00186	25	0.063458	0.010576
-5	0.02829	0.004715	26	-0.01612	-0.00269
-4	-0.00477	-0.0008	27	-0.0625	-0.01042
-3	0.054432	0.009072	28	0.01015	0.001692
-2	-0.0191	-0.00318	29	-0.00419	-0.0007
-1	-0.09338	-0.01556	30		0
0	-0.10734	-0.01789			

Table 1.4 Calculated CAR CAAR values for from t0 till t-30 and t0 till t+30

From the above table 1.4 Both CAR and CAAR was negative on the day rating was done, and continues to be negative even after the rating is made. The t scores intended are not close enough for any abnormal state of significance, and therefore we can't reject the invalid hypothesis. There is no proof to support abnormal stock returns upon the arrival of and days immediately going before and resulting an organization's bond rating.

- **Test Of Vardhaman Ltd**.

 From the above shown table 1.1 of One-Sample test, using CAR the significance p values is .608, so the model is not significant.

From the above shown table 1.2 of One-Sample test, using CAAR the significance p values is .605, so the model is not significant.

From the above table 1.1 we can see that, the significance (2 tailed) p value is .428 which is more than 0.05 i.e p >0.05. So we cannot say that this model is significant. Therefore, we accept the null hypothesis and we reject the alternative hypothesis. This tells us that there is no difference between the pre and post values.

Calculated CAR CAAR values for from t0 till t-30 and t0 till t+30

Day	CAR	CAAR	Day	CAR	CAAR
-30	0.072349	0.018087	1	-0.00748	-0.00187
-29	0.047769	0.011942	2	0.015765	0.003941
-28	0.027477	0.006869	3	0.023026	0.005757
-27	0.017715	0.004429	4	0.057739	0.014435
-26	-0.02169	-0.00542	5	-0.01543	-0.00386
-25	0.014661	0.003665	6	0.059251	0.014813
-24	0.0048	0.0012	7	0.022114	0.005529
-23	-0.08448	-0.02112	8	0.026137	0.006534
-22	-0.00282	-0.0007	9	0.007215	0.001804
-21	0.088832	0.022208	10	-0.00414	-0.00103
-20	0.014987	0.003747	11	-0.00618	-0.00154
-19	0.027868	0.006967	12	0.024465	0.006116
-18	0.003601	0.0009	13	0.029299	0.007325
-17	0.032804	0.008201	14	-0.04826	-0.01207
-16	-0.01136	-0.00284	15	0.080166	0.020042
-15	0.041951	0.010488	16	0.059098	0.014775
-14	0.062079	0.01552	17	0.054739	0.013685
-13	-0.04224	-0.01056	18	0.012225	0.003056
-12	-0.04221	-0.01055	19	0.042942	0.010735
-11	0.012274	0.003069	20	0.05664	0.01416
-10	0.041281	0.01032	21	-0.01525	-0.00381
-9	-0.01885	-0.00471	22	0.013244	0.003311
-8	0.004284	0.001071	23	0.052172	0.013043
-7	0.044592	0.011148	24	0.060161	0.01504
-6	-0.00722	-0.0018	25	0.088647	0.022162
-5	0.049777	0.012444	26	-0.01103	-0.00276

-4	-0.0545	-0.01363	27	-0.00098	-0.00024
-3	0.01194	0.002985	28	-0.02325	-0.00581
-2	0.177189	0.044297	29	0.102886	0.025721
-1	-0.04736	-0.01184	30		0.004711
0	-0.01504	-0.00376			

Table 1.5 Calculated CAR CAAR values for from t0 till t-30 and t0 till t+30

From the above table 1.5 we can see that CAAR was negative at the 0th day ie the day on which the rating is being done ,and changes to positive on t+$2^{th\ day}$ of bond rating being done.After t+5th day it again changed to negative. There is no proof to support abnormal stock returns upon the arrival of and days immediately going before and following an organization's bond rating.

- **Test Of Punjab national bank**   .

 From the above shown table 1.1 of One-Sample test, using CAR the significance p values is .056, so the model is not significant.

From the above shown table 1.2 of One-Sample test, using CAAR the significance p values is .560, so the model is not significant

From the above table 1.1 we can see that, the significance (2 tailed) p value is .428 which is more than 0.05 i.e p >0.05. So we cannot say that this model is significant. Therefore, we accept the null hypothesis and we reject the alternative hypothesis. This tells us that there is no difference between the pre and post values.

Calculated CAR CAAR values for from t0 till t-30 and t0 till t+30

Day	CAR	CAAR	Day	CAR	CAAR
-30	0.010168	0.002034	1	-0.14718	-0.02944
-29	0.090455	0.018091	2	-0.03954	-0.00791
-28	-0.07591	-0.01518	3	-0.01476	-0.00295
-27	0.017121	0.003424	4	-0.07586	-0.01517
-26	-0.06459	-0.01292	5	-0.06013	-0.01203
-25	-0.10862	-0.02172	6	-0.05986	-0.01197
-24	-0.03973	-0.00795	7	-0.36033	-0.07207
-23	-0.06104	-0.01221	8	0.024993	0.004999
-22	-0.09328	-0.01866	9	-0.18387	-0.03677
-21	-0.16077	-0.03215	10	-0.0906	-0.01812
-20	0.040573	0.008115	11	-0.17724	-0.03545
-19	-0.10086	-0.02017	12	-0.17393	-0.03479
-18	-0.0033	-0.00066	13	-0.07077	-0.01415

-17	-0.0868	-0.01736	14	-0.14031	-0.02806
-16	0.055566	0.011113	15	-0.09449	-0.0189
-15	0.003599	0.00072	16	0.044619	0.008924
-14	-0.17742	-0.03548	17	0.062467	0.012493
-13	-0.12074	-0.02415	18	-0.09055	-0.01811
-12	-0.02077	-0.00415	19	-0.10434	-0.02087
-11	0.015086	0.003017	20	-0.20364	-0.04073
-10	-0.13603	-0.02721	21	-0.05206	-0.01041
-9	-0.04685	-0.00937	22	-0.04353	-0.00871
-8	-0.0427	-0.00854	23	-0.115	-0.023
-7	-0.02766	-0.00553	24	-0.16323	-0.03265
-6	-0.12539	-0.02508	25	-0.08415	-0.01683
-5	0.011276	0.002255	26	-0.03747	-0.00749
-4	-0.13025	-0.02605	27	-0.16264	-0.03253
-3	0.001682	0.000336	28	-0.02668	-0.00534
-2	-0.21962	-0.04392	29	0.351014	0.070203
-1	-0.3306	-0.06612	30	0	0
0	-0.17283	-0.03457			

Table 1.6 Calculated CAR CAAR values for from t0 till t-30 and t0 till t+30

Interpretation:

From the above table 1.6 CAAR is negative at the 0th day and it continues till t+15.In single tailed CAAR t test there is a t-score of .056 and is needed for a 95% confidence level. The t scores calculated are not close enough for any high level of significance, and therefore we are unable to reject the null hypothesis. There is no evidence to support abnormal stock returns on the day of and days immediately preceding and following the company's bond rating.There is no evidence to support abnormal stock returns on the day of and days immediately preceding and following a company's bond rating change

Test Of Bank Of Maharashtra

From the above shown table 1.1 of One-Sample test, using CAR the significance p values is .637, so the model is not significant.

From the above shown table 1.2 of One-Sample test, using CAAR the significance p values is .637, so the model is not significant.

From the above table 1.1 we can see that, the significance (2 tailed) p value is .702 which is more than 0.05 i.e p >0.05. So we cannot say that this model is significant. Therefore, we accept the null hypothesis and we reject the alternative hypothesis. This tells us that there is no difference between the pre and post values.

Calculated CAR CAAR values for from t0 till t-30 and t0 till t+30

Day	CAR	CAAR	Day	CAR	CAAR
-30	-0.0146	-0.00209	1	0.067059	0.00958
-29	0.017651	0.002522	2	-0.03995	-0.00571
-28	-0.04646	-0.00664	3	0.066452	0.009493
-27	-0.00154	-0.00022	4	-0.01362	-0.00195
-26	-0.00913	-0.0013	5	0.017416	0.002488
-25	0.014364	0.002052	6	-0.00648	-0.00093
-24	0.016517	0.00236	7	-0.03834	-0.00548
-23	-0.05609	-0.00801	8	0.034871	0.004982
-22	0.044073	0.006296	9	-0.04765	-0.00681
-21	-0.03556	-0.00508	10	-0.01556	-0.00222
-20	0.037672	0.005382	11	-0.02244	-0.00321
-19	-0.04068	-0.00581	12	0.00449	0.000641
-18	-0.01236	-0.00177	13	-0.0055	-0.00079
-17	-0.04433	-0.00633	14	-0.01897	-0.00271
-16	-0.07975	-0.01139	15	0.050105	0.007158
-15	0.044053	0.006293	16	-0.02123	-0.00303
-14	-0.03568	-0.0051	17	-0.033	-0.00471
-13	0.012915	0.001845	18	-0.01647	-0.00235
-12	-0.05862	-0.00837	19	-0.02084	-0.00298
-11	-0.00034	-4.8E-05	20	-0.07178	-0.01025
-10	0.010461	0.001494	21	0.027779	0.003968
-9	0.065298	0.009328	22	0.029668	0.004238
-8	-0.03876	-0.00554	23	0.003197	0.000457
-7	0.032481	0.00464	24	0.137176	0.019597
-6	-0.03518	-0.00503	25	0.076126	0.010875
-5	0.009524	0.001361	26	-0.0871	-0.01244
-4	-0.06782	-0.00969	27	0.040996	0.005857
-3	0.001485	0.000212	28	-0.00685	-0.00098
-2	-0.03821	-0.00546	29	-0.03641	-0.0052
-1	0.021871	0.003124	30	0.001823	

0	0.013783	0.001969

Table 1.7 Calculated CAR CAAR values for from t0 till t-30 and t0 till t+30

In table 1.7 CAAR was positive on t-1, t0,t+1 and becomes negative on t+2 , a t-score of .387 is needed for a 95% confidence level. The t scores calculated are not close enough for any high level of significance, and therefore we are unable to reject the null hypothesis. There is no evidence to support abnormal stock returns on the day of and days immediately preceding and following the downgrade of a company's bond rating for three-step downgrades .There is no evidence to support abnormal stock returns on the day of and days immediately preceding and following a company's bond rating change.

SUMMARY

The rating offices are extraordinarily essential for analyzing the safety of the bond or other securities in the market .The main aim behind this research is to find whether there is any impact on the bond rating and share price of the company .The data has been collected using prowess iq and NSE website .The various sectors considered in this study includes manufacturing ,textile and banking industry .The various companies selected for this study are Vardhaman Ltd ,Punjab National Bank ,Bank Of Maharashtra ,IFCL Ltd ,HMT Ltd. The companies with maximum bond rating fluctuations are selected for this research.

CONCLUSION

Based on my analysis and results, there is no evidence to support the claim that the rating change in a company's bond has no impact on its stock price on the day of and on the days surrounding the downgrade. When reflecting on my research is whether different results, and statistically insignificant results, could be found by looking by three sectors individually. When I selected the three sectors I looked at, I consciously selected sectors that had different volatility and characteristics, so I had a well-rounded universe of stocks. However, I began to wonder if more volatile sectors, such as Financials, might have a statistically significant abnormal return which is being masked by the lack of abnormal returns in the Consumer. From the several individual tests I ran, none of them had a t-score high enough to confirm at any level of significance that the CAR and CAAR was statistically different from zero. The aggregate results show that downgrades are preceded by positive abnormal returns indicating that either there are leakages in information or the investors can do superior analysis. It may also indicate that rating changes by the rating agency lag the news which demands the rating change action and the shareholders are able to anticipate the ratings information through other variables related to corporate performance .No important abnormal return was stated after rating change .Even though some changes occurred it does not last long.I can conclude that the material content of bond rating to equity investors is very low. The findings also confirm the existence of a ratings change lag, the period of time after equity investors distinguish firm deterioration compared to when rating agencies react to this change. Although there could be a long-term impact on share prices changes for if the downgrades continues for a longer period.

References

Elayan, F., Maris, B. and Young, P. (1996). The Effect of Commercial Paper Rating Changes and Credit-Watch Placement on Common Stock Prices. The Financial Review, 31(1), pp.149-167.

Pinches, G. and Mingo, K. (1973). A Multivariate Analysis of Industrial Bond Ratings. The Journal of Finance, 28(1), p.1.

CRABBE, L. and POST, M. (1994). The Effect of a Rating Downgrade on Outstanding Commercial Paper. The Journal of Finance, 49(1), pp.39-56.

Venkatesh, S. and Goswami, R. (1999). Understanding and Use of Credit Rating In India: A Survey of Individual and Institutional Investors. SSRN Electronic Journal.

Abad-Romero, P. and Robles-Fernández, M. (2006). Bond rating changes and stock returns: evidence from the Spanish stock market. Spanish Economic Review, 9(2), pp.79-103.

Jorion, P., & Zhang, G. (2007). Information Effects of Bond Rating Changes. The Journal of Fixed Income, 16(4), 45-59. doi:10.3905/jfi.2007.683317

Miyamoto, M. (2016). Event Study of Credit Rating Announcement in the Tokyo Stock Market. Journal of Economics, Business and Management, 4(2), 138-143. doi:10.7763/joebm.2016.v4.380

Pacheco, L. (2012). Moody's Credit Ratings and the Stock Market Performance of Portuguese Rated Firms. Journal of Advanced Studies in Finance, III(1). doi:10.2478/v10259-012-0005-z

Charoenwong, C., Li, X. H., & Visaltanachoti, N. (2004). Market Reaction to Credit Rating Announcements in the Irish Stock Market. SSRN Electronic Journal. doi:10.2139/ssrn.488243