The Share Price Reaction During Corporate Bond Rating Revision

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This paper analyses the informational value of corporate bond rating revision announced by Moody's and Standard and Poor's in the UK from 1997 to 2006. We focus on corporate bonds issued by UK local companies and use two market proxies, the FTSE All Share and the MSCI Europe Index. Implementing an event study, we find that in general a downgrade announcement is significant and contains additional information value. This evidence is consistent with the private information theory. However, when considering upgrade announcements our findings seem to support the efficient market hypothesis since there is little significant evidence that an announcement triggers a reaction in the market.

JEL Codes: G12 and G14

1. INTRODUCTION

The objective of this paper is to examine whether bond rating contains pricing-relevant information and its impact towards the stock price of the bond issuer. We used the event study to test whether bond rating revision announcement has any information value to the market participant based on UK corporate bond rating revision announced by Standard and Poor's and Moody's for a period of 10 years starting from 1997 to 2006.

Does rating contain useful and relevant pricing information? This question has been the subject of extensive research (Dichev & Piotroski 2001; Goh & Ederington 1993; Howton, Howton & Perfect 1998; Kliger & Sarig 2000) which had provided no uniform answer. Corporate bond ratings are very important to financial managers who are keen to maintain a high quality bond grade as a positive signal to the market. Many investors, especially institutional investors, impose guidelines that prevent the purchase of low rating bond grades (Pogue & Soldofsky 1969). All issuers pay to be rated by rating agencies despite the fact that the ratings are costly. Investors are also very keen to purchase these rating

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reports to know the current rating of their investments. The rationale of why rating information is valuable is that issuers disclose inside information to rating agencies, who assign ratings that reflect this information without disclosing the specific underlying details to the public at large. Therefore, a surprise rating change can be considered as a very valuable signal that can trigger market reaction.

We used two hypotheses to explain the behaviour of stock price during the announcement of corporate bond rating changes. The first hypothesis is known as private information hypothesis. In his analysis of corporate debt policies, Donaldson (1991) finds that financial managers dislike the idea of having an aggressive debt policy as it may jeopardize the future availability of funds and the flexibility of sources of funds. A high rating bond as assigned by a rating agency is considered to be a positive indicator of the financial status of the company. Given the importance of ratings, it is not a surprise that companies are willing to bear the high cost charged by rating agencies and investors are willing to purchase these reports. From the investor's perspective, the rating report contains information about the future financial health of the issuer. Importantly, during the rating process, the issuer will reveal insider information to the rating agency, who then publishes the assigned rating. Hence, this published rating will reflect the private information without completely revealing the exact element of the information to the public. This kind of situation is known as the private information hypothesis. Thus, the private information theory argues that because the rating agency has the opportunity to access the private information by closely observed the firm's operation and interviewed the top management and senior executives, so they have the chance to acquire information that is unavailable to the market. So, based on this hypothesis, the bond rating changes announcement could signal certain information to the market participant.

The latter hypothesis, which is known as efficient market hypothesis argues that the market participants should not have the opportunity to make any capital gain. This is because the market is expected to be efficient- which, all shares should change instantaneously to any news that arrived. This theory also assumed that the information is disseminated very quickly to all market participants and the transaction cost is very low. In this case, any money managers could make any capital gain above the average return unless they are willing to take higher level of risk. So, based on this hypothesis any bond rating revision announced by the rating agencies, either upgrade or downgrade, could not trigger any reaction to the share price.

Furthermore, past research that analysed the impact of corporate bond rating changes towards stock prices has concentrated on the corporate bond market of the United States. In order to verify and generalize the results of past research in the US on the behaviour of stock price during rating reclassification, there is a need to consider evidence from other developed capital markets, such as UK market. There is a lack of evidence on the impact of bond rating revision in the UK market. So far, there is a study done by Barron, Clare & Thomas (1997) who were testing on the equity reactions of the announcement of initial bond rating, bond rating changes and commercial paper by Standard and Poor's from 1984 to 1992 in UK Hence, this study will look at the information value of UK corporate bond rating revision as published by Standard and Poor's and Moody's for 10 years from 1997 to 2006.

The next section reviews the relevant empirical studies on the effects of bond rating announcement to the share price. Section 3 describes the data sources and presents the event study methodology. Section 4 presents the result for our daily observation on the impact to the stock price and also the analysis based on subperiod. Section 5 concludes.

2. LITERATURE REVIEW

Past research (e.g. Hand, Holthausen & Leftwich 1992; Kliger & Sarig 2000; Weinstein 1977) had studied about whether bond rating has information value to market participant in United States and they found mixed result on stock price reaction to rating changes. Bond rating is said to have pricing-relevant information (Dichev & Piotroski 2001), that investors cannot obtain from other sources and bond ratings changes can capture significant shifts in the companies' economic condition. Conversely, Matolcsy and Lianto (1995) argued that bond rating changes convey information that already known by shareholder. This is due to extensive utilization of accounting information by rating agencies in making the bond rating revisions.

According to Kliger and Sarig (2000), there are two way to test whether bond rating can signal useful information to market participants. The first method is by examining relationship between bond yield and rating information, which have been done by several researchers (e.g. Ederington, Yawitz & Roberts 1987). The second method, which also been discussed in previous study (e.g. Goh & Ederington 1993; Hand, Holthausen & Leftwich 1992; Hite & Warga 1997), examine the bond and stock price reactions to announcement on rating changes. The first method is not as popular as the second method in examining the information value of bond, which may cause by the low volatility of the bond price as compared to share price. Additionally, Kliger and Sarig (2000) mentioned that bond rating changes is actually initiated by economic condition. So, it is uncertain on how much the share price reactions are actually triggered by bond rating and how much is due to the changes in economic condition

Changes in bond ratings can result in either upgrades or downgrades. Past researchers find out that bond downgrades can trigger a greater movement in stock prices than bond upgrades. For example, Hand, Holthausen and Leftwich. (1992) examine bond and stock price reactions towards bond rating changes in the United States (US) and find weaker price reactions for both stocks and bonds to upgrade announcements. Further, Goh and Ederington (1993) and Dichev and Piotroski (2001) conclude that the US equity reaction towards upgrades of bond ratings is not significant. However, outside the US market, Abad-Romero and Robles-Fernandez (2006) find evidence of significant excess stock returns during bond upgrades and no significant price response during the bond downgrades in the Spanish Stock Exchange. This evidence supports the wealth redistribution hypothesis and may be attributed to a difference in the size, the liquidity and the depth of the Spanish market when compared to US market.

Moreover, at the time of bond downgrades, Hand, Holthausen and Leftwich (1992) and Schweitzer, Szewczyk and Varma (2001) find significant negative excess bond and stock returns. The market participants react negatively to bond downgrade announcement as these events may signal financial problem in the future that may jeopardize their investment. Meanwhile, Goh and Ederington (1993) find that there are significant negative market reactions when the rating agency downgrades the bond due to deterioration in the company's or industries financial prospect. Similar results are obtained by Matolcsy and Lianto (1995) and Dichev and Piotroski (2001). Outside the US, which is based on Australian corporate bond rating revision, Matolcsy and Lianto (1995) report similar findings as Goh and Ederington (1993). It seems that stockholders are more concerned about bond rating downward movements as compared to upward movements. Thus it seems that bond downgrades transmit more meaningful information to the market participants than bond upgrades.

In spite of this, not all downgrades lead to negative stock price reaction. This is because some rating revision announcement is already expected. Goh and Ederington (1999) support this idea. According to their study, there are two information criteria that can

influence market reaction in the event of bond downgrade. The first factor is whether or not the news is a surprise to the market and the second factor is whether the market participants perceive that the information has an intrinsic value.

The bond rating revision announcements are considered to have an information content if during the downgrade announcement, the share price is experiencing a negative excess return. In addition, a positive excess return of the share price will be experienced by companies that faced upgrade rating announcements,

3. DATA AND MODELLING FRAMEWORK

Data

Our analysis on the announcement of corporate bonds' rating revision is based on data obtained from Standard and Poor's and Moody's for the period 1 January 1997 to 31 December 2007. The study concentrates on bond rating revisions issued by UK companies and sold in the local market. The companies in the sample are listed on the London Stock Exchange. All daily stock prices are obtained from the DataStream.

The original database obtained from Standard and Poor's contained 1086 announcements of corporate bond ratings, while Moody's had 3135 corporate bond rating revision announcements issued by UK local companies from 1997 to 2006. This database was treated as the contaminated sample, which, need to be filtered. The filtering process is as the following.

i. All initial bond rating announcements were eliminated from the sample.
ii. Companies that had a double rating revision in the same year for the same bond issue were excluded from the sample.
iii. Issuing companies which were categorized as private companies were excluded from the sample.
iv. We also eliminate announcements that are related to the same issuing companies which issued different type of bonds on the same date.
v. In order to get an uncontaminated sample, we search for other firm-specific announcement (i.e. dividend announcement and profit and loss announcement) using Factiva for two weeks surrounding the rating revision events. If the firm-specific announcement occurred in this two-week period, the event was eliminated from the sample.

The final sample of 105 rating revision events (30 upgrades and 75 downgrades) by Standard and Poor's is then used to test stock price reaction to the event of bond revision as announced to the public- and the clean sample for Moody's yield 194 unique rating revision announcements with 53 events are upgrades and the rest of 141 are downgrades (please refer table 1).We loose quite a number of observations through the filtering process. Previous researchers (e.g Barron, Clare & Thomson (1997) and Hand, Holthausen & Leftwich (1992) also experienced the same situation. In order to obtained unbiased result, it is crucial to eliminate those rating revision announcements that might contaminate the sample.

Table 1 presents the number of companies involved in the rating revisions for both databases. For our example of S&P events, we observe that 22 companies experienced bond upgrade and another 45 companies had bond downgrade. For our Moody's sample, we note that 38 companies experienced an announcement of bond upgrade, and 79 companies experienced a downgrade. However, there are some instances whereby the same company had experienced both bond rating upgrade and a bond rating downgrade announcements throughout the sample period. The exact number of companies observed

are 154 for both samples (Standard and Poor's (57 companies) and Moody's (97 companies).

Table 1 Rating Revision Announcements by Standard and Poor's and Moody's from 1997 to 2006

	Standard & Poor's		Moody's		
	Upgrade	Downgrade	Upgrade	Downgrade	Total
Number of Events	30	75	53	141	299
Number of Companies	22	45	38	79	184

Table 2 presents the distribution of bond rating announcement across industries. The companies are classified according to the industry definitions of Standard and Poor's. We note that the highest number of companies are classified in media and entertainment (11.41%), followed by retailing (10.33%) and telecom services (9.24%). The banks and financial services industry is not a dominant industry in this sample as it holds only 5.43% and 2.17% of the sample respectively.

Table 2 Numbers of Upgrade and Downgrade Announcement by S&P and Moody's According to Industry

	Standard & Poor's		Moody's			
Type of Industry	Upgrade	Downgrade	Upgrade	Downgrade	Total companies	Percentage (%)
Aerospace & Defense	1	2	2	2	7	3.80
Automobiles & Components	0	1	0	1	2	1.09
Bank	2	1	6	1	10	5.43
Building Materials	0	1	0	1	2	1.09
Capital Goods	2	2	3	4	11	5.98
Chemicals	0	1	0	1	2	1.09
Commercial Services & Supplies	1	1	0	1	3	1.63
Consumer Products	2	5	2	7	16	8.70
Energy	1	3	3	5	12	6.52
Financial Services	0	0	0	4	4	2.17
Healthcare	1	0	1	0	2	1.09
Hotels & Gaming	0	3	1	4	8	4.35
Information Technology	0	1	0	1	2	1.09
Insurance	0	0	3	4	7	3.80
Media & Entertainment	3	6	4	8	21	11.41
Metals & Mining	4	3	5	1	13	7.07
Property	0	1	0	2	3	1.63
Retailing	0	6	2	11	19	10.33
Telecom Services	4	4	3	6	17	9.24
Transportation	1	3	1	6	11	5.98
Utility	0	1	1	8	10	5.43
Venture Capital	0	0	1	1	2	1.09
Total companies	**22**	**45**	**38**	**79**	**184**	100.00

In order to undertake a comparative analysis, the market proxies used in this study are the FTSE all share and the Morgan Stanley Capital International Europe Index (MSCI Europe Index). The FTSE All Share is used to represent the market proxy as it is broader than the FTSE 100 and it measures the performance of all shares listed in main market of London Stock Exchange (LSE). While about 46% of the FTSE 100 comprises of three leading sectors (banks, oils and pharmaceutical), the FTSE All Share represents blue chips companies, as well as small and medium companies from a variety industries.

Representing a broader market index, the MSCI Europe Index consists of 16 developed market country indices which are Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, the Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, and United Kingdom. It is a free float-adjusted market capitalization index that is calculated to evaluate the developed market equity performance in Europe.

Method of Analysis

Our analysis involves the estimation of the expected return model to calculate abnormal returns in the analysis period. The abnormal return is calculated by looking at the difference between the actual return and the normal return. In order to calculate the abnormal return, the normal return without the event must be estimated first.

Abnormal return

Based on capital market efficiency, the present stock price should accurately reflect the available information in the market place. The market model which was introduced by Sharpe (1964) and Lintner (1965), is considered to be the most popular method in calculating abnormal return.

$$E(R_{i,t}) = E(\alpha_i) + E(\beta_i)R_{m,t} + \in_{i,t}$$

Where $E(\alpha_i)$ is an expected return of security *i* when the expected return of the market ($E(R_{m,t})$) is zero and $E(\beta_i)R_{m,t}$ is the systematic component assumed to have a linear relationship between company's security returns and market returns, α and β are estimated using a regression model where the parameters are calculated using the Ordinary least squares (OLS). $\in_{i,t}$ indicates the unsystematic risk component or error term (also known as residual) which incorporate the impact of a company specific event announcement (assuming that information signal and return of the market are independent). Measurement of abnormal return is introduced if $\in_{i,t}$ is brought to the left of the equation:

$$\mathrm{AR}_{\mathrm{i,t}} = \in_{i,t} = \mathrm{R}_{\mathrm{i,t}} - E(\alpha_i) - E\left((\beta_{\mathrm{i}})\,\mathrm{R}_{\mathrm{m,t}}\right)$$

Average Abnormal Return

The next step is to compute the daily cross-sectional average abnormal returns (AAR_t) for a specific day, t. This is done by summing all the daily abnormal return for the whole event period and dividing them into the number of observations.

$$AAR_t = \sum_{i=1}^{N} AR_{i,t} / N_t \qquad (4)$$

where N_t is the number of observations on event day t

Cumulative Abnormal Return (CAR)

Next, we sum the cross-sectional average abnormal return. This is done by adding the daily average abnormal returns in time periods t_1 and t_2. The formula is used as follows:

$$\text{CAR}_t = \sum_{k=t-T}^{t} AAR_t \qquad (5)$$

where T is some numbers of event days prior to day t

Standardized Abnormal Return

The parameter of the market model for this study is around 100 days which is estimated based on six months of daily return observations beginning 120 days through to 21 days before the corporate bond rating revision announced to the public. The event period ranges from 20 days before to 20 days (41-day) after the rating revision. The test statistic for the abnormal return is based on Boehmer, Musumeci & Poulsen (1991)

To compute the standardized abnormal returns (SAR_t) for a specific day, t, is as following

$$SAR_t = AR_{it} / \hat{\sigma}_i \sqrt{1 + \frac{1}{T} + \frac{(R_{mt} - \overline{R}_m)^2}{\Sigma_{E=-120}^{-21} (R_{mt} - \overline{R}_m)^2}} \qquad (6)$$

where $\hat{\sigma}_i$ is market *i*'s standard deviation of the risk-adjusted abnormal share price return during the estimation period; T_i is the number of trading days in the estimation period is company *i*; and $\overline{R}_m$ is the average market return (FTSE All Share/ MSCI Europe) during the estimation period.

T-statistic

For each day in the event period, the cross-sectional standard deviation of the SARs is calculated and this can be written as

$$\sigma_{SAR_t} = \sqrt{\frac{\Sigma_{i=1}^{N} (SAR_{it} - \Sigma_{i=1}^{N} SAR_{it} / N)^2}{N(N-1)}} \qquad (7)$$

The test statistic for the standardised cross-sectional is as follows:

$$Z = \frac{\Sigma_{i=1}^{N} SAR_{it} / N}{\sigma_{SAR_t}} \qquad (8)$$

The individual SARs are assumed to be cross-sectionally independent and normally distributed. Based on Greene (2000), the distribution of the sample average SARs will converge to normality by the Lindberg-Levy and Lindberg-Feller central limit theorems.

4. EMPIRICAL RESULT

UK Corporate Bond Rating Revision Announced by Moody's

Table 3 presents the results obtained from an event study based on our sample taken from bond rating revision announcements by Moody's from 1997 to 2006 using the MSCI Europe Index as the market proxy. The table is divided into two panels, one indicating the impact on stock price of companies that have experienced bond rating upgrades while the second shows the market reactions on the downgrades announcement by Moody's over an event window of 20 days before to 20 days after the announcement of the event (41-day event period). Note that the standard errors are estimated using Standardized Abnormal Return (SARs), however, only AAR are reported. There are 53 observations for the corporate bond upgrade and 141 observations for corporate bond downgrades.

The findings reported in Table 3 are mixed. Specifically, the results for upgrade announcement reveal two statistically significant cases at the 5% level prior to the event announcement, (day -19 and –4), and one statistically significant case at the 10% level (day –17). However, the AAR for these particular days are negative which is unanticipated and contrary to the private information theory. In addition, the CAR results reflect the same finding where there is statistically significant result on day 17 and 16 prior to the announcement of an upgrade but the sign is negative. According to the information theory, upgrade announcements should impact positively on the market as it signals a positive outlook on the future performance of the particular companies. Interestingly, however, our results are in line with Goh & Ederington (1993), who find significant negative excess stock return during the upgrade bond rating revision of US market This seems to suggest that, based on our Moody's database, an upgrade announcement on UK corporate bonds has no informative value to the market.

In our analysis of downgrade announcements reported in Table 3, we observed that on average the AAR results reveal a negative sign indicating that rating downgrades of UK corporate bonds has, as expected, a negative impact on the market. Significant result on AAR with negative sign can be observed on days -18, -3, +3 and +20. We note that day -3 is statistically significant at the 5% level while the other days are statistically significant at 10%. This indicates that the market predicts the bad news since the AAR is negative before the rating downgrades is announced by Moody's. Further, we observe that the impact continues to be negative after the announcement date. The CAR findings reveal similar significant results with the desirable sign from day -18 to day -8, which indicates cumulative stock reactions before the downgrade announcements and from day -1 to day +20 that indicates the significant negative reactions surrounding the event and after the event announcements. This result is consistent with the previous literature (Hand, Holthausen & Leftwich 1992; Schweitzer, Szewczyk & Varma 2001), which found that the bond downgrade rating announcement contained useful information.

The CAR shows the same significant result and the desirable sign from -18 day to -8 day which indicates the accumulative stock reactions before the downgrades announcement and from -1 to -20 that indicates the significant negative reactions surrounding the events.

In conclusion, the results of our analysis based on Moody's data seem to suggest that upgrade announcements have no informational value to the market while downgrade announcements have a negative effect on stock prices. These findings whereby bond rating downgrades have information value but upgrades do not are consistent with other studies, for example, Goh and Ederington (1993) and Dichev & Piotroski (2001).

Table 3
Market reaction on the announcement of rating changes UK Corporate Bond by Moody's from 1997 to 2006 (market proxy: MSCI Europe Index)
Estimation period= 100 days (-120 to -20)
Event period=41 days (-20 to +20)

Event day	Rating Upgrades (N=53)				Rating Downgrades (N=141)			
	AAR	t-Statistic	CAR	t-Statistic	AAR	t-Statistic	CAR	t-Statistic
-20	0.003	0.193	0.003	0.193	-0.004	-0.102	-0.004	-0.102
-19	-0.006	-1.97**	-0.003	-1.162	0.004	0.307	0.000	0.710
-18	-0.001	-0.201	-0.004	-1.157	-0.002	-1.902*	-0.002	-1.652*
-17	-0.008	-1.926*	-0.012	-1.827*	-0.002	-1.316	-0.003	-1.895*
-16	-0.004	-0.699	-0.016	-1.891*	-0.003	-0.608	-0.006	-1.872*
-15	0.004	1.491	-0.012	-1.183	-0.007	-1.497	-0.014	-2.18**
-14	0.002	0.476	-0.010	-0.915	0.000	0.250	-0.014	-1.902*
-13	0.008	1.205	-0.002	-0.439	-0.003	-0.942	-0.017	-2.09**
-12	0.001	0.659	-0.001	-0.210	-0.003	-1.307	-0.020	-2.36**
-11	-0.003	-0.723	-0.004	-0.373	-0.003	-0.692	-0.023	-2.42**
-10	0.006	1.769	0.003	0.060	-0.005	-1.583	-0.028	-2.70***
-9	-0.006	-0.937	-0.003	-0.138	0.003	1.025	-0.025	-2.302**
-8	0.002	0.730	-0.002	0.012	0.003	1.396	-0.022	-1.843*
-7	-0.005	-0.856	-0.006	-0.144	0.006	1.914	-0.016	-1.256
-6	-0.005	-1.396	-0.011	-0.383	0.004	0.477	-0.011	-1.064
-5	0.000	-0.407	-0.011	-0.438	0.000	-0.178	-0.011	-1.040
-4	-0.013	-1.96**	-0.024	-0.747	-0.002	0.167	-0.013	-0.945
-3	0.002	0.695	-0.023	-0.615	-0.007	-2.12**	-0.020	-1.331
-2	-0.003	-0.369	-0.026	-0.656	-0.012	-1.278	-0.032	-1.538
-1	0.001	0.768	-0.025	-0.522	-0.012	-1.432	-0.043	-1.769*
0	-0.005	-1.359	-0.030	-0.709	-0.001	-0.899	-0.045	-1.892*
1	0.002	0.118	-0.028	-0.676	-0.005	-1.549	-0.050	-2.129**
2	-0.005	-0.970	-0.033	-0.798	0.000	-0.579	-0.050	-2.186**
3	0.003	0.759	-0.030	-0.676	-0.007	-1.892*	-0.057	-2.462**
4	0.002	0.083	-0.028	-0.651	-0.003	-0.081	-0.061	-2.426**
5	0.007	1.388	-0.022	-0.453	0.002	0.857	-0.059	-2.239**
6	0.001	0.476	-0.021	-0.381	0.003	1.330	-0.056	-1.979**
7	-0.004	-0.530	-0.025	-0.440	0.004	0.620	-0.052	-1.838*
8	-0.001	0.116	-0.025	-0.416	0.001	-0.486	-0.051	-1.876*
9	0.004	1.447	-0.021	-0.232	-0.003	-0.960	-0.054	-1.987**
10	0.000	-0.190	-0.021	-0.249	0.002	1.471	-0.052	-1.724*
15	-0.003	-1.141	-0.014	-0.131	-0.002	-0.506	-0.053	-1.761*
20	-0.002	0.254	-0.016	-0.043	-0.003	-1.686*	-0.060	-2.117**

* indicates statistical significance at 10% level of confidence
** indicates statistical significance at 5% level of confidence
*** indicates statistical significance at 1% level of confidence

Moody's Vs. S&P: Analysis on Market Reaction Based on Subperiods

There is a degree of uncertainty about the exact time of the day when the corporate bond revision announcements are made. These conflicting rating revisions are either announced early in the trading day or towards the trading end. Because of this timing uncertainty, there is a possibility that the estimation on the market reaction is not precise. Furthermore, there are possibilities that the market may react earlier that the announcements date- or during the event date or after the announcement date. Table 4 presents the results of the market's reaction based on subperiods for both bond downgrades and upgrades announcement by Moody's and Standard and Poor's using two different market - the FTSE All Share and the MSCI Europe

Index. For our analysis, we divide the full sample period into three phases. The first phase is the pre-announcement period that contains 3 subperiods which are: (a) *t*=-20 to *t*=-1; (b) *t*=-20 to *t*= -15 and; (c) *t*=-10 to *t*=-1. The second phase covers the period surrounding the event announcement which extends from *t*=-1 to *t*=0. The final phase contains 2 subperiods (a) from *t*=+1 to *t*=+20; and (b) from *t*=+*1* to *t*=+20, thus examining the post-announcement market reaction to rating changes. The selection of the subperiods is based on the reaction of daily observations discussed on the previous section.

The market reaction for rating upgrade announced by Standard and Poor's (with FTSE All Share as proxy to the market) is statistically significant at 1% for the subperiod of day -1 to day 0 with a positive sign which is consistent with the theory of the information value. The theory stipulates that the market reaction should react positive to good news such as the upgrade announcement. However, the subperiod for the pre-announcement (*t*=-20 to *t*=-15) during the upgrade announcement by Standard and Poor's has a significant negative reaction which is not consistent with the information value theory. This could happen when the market participants make a wrong prophecy of the observed companies. Instead of good news (bond upgrade announcements), they expect the observed companies may received bad news in the future – which cause a significant negative price reaction for the period before the upgrade announcement. However, when the rating agencies announced the bond rating upgrade announcements, the stock price react instantaneously positive once they received such good news. When we used the MSCI Europe Index as market proxy for the corporate bond rating upgrade released by S&P, similar significant results observed prior to the announcement (*t*=-20 to *t*=-15) with a negative sign. However there is no significant result observed during the event announcement (*t*=-1 to *t*=0). In the case of upgrade announcements made by Moody's, there is no significant CAR in any of the subperiods.

We also examine the stock price reaction during bond rating downgrade announcements, once again using two market proxies - the FTSE All Share and the MSCi Europe. For the S&P sample, both reveal that the CAR is statistically significant at 1% around the event announcement. Furthermore, our findings for the S&P sample when using the MSCI Europe Index report that there is a significant negative reaction before the downgrade is publicized, during the subperiod *t*=-10 to *t*=-1. This negative reaction may suggest that the market has anticipated the negative information prior to downgrade announcement and there is also a possibility that Standard and Poor's delayed the downgrade announcement.

The results for downgrades announced by Moody's result in a very interesting yet conflicting outcome, sensitive to our choice of market proxy. First when use the FTSE All Share to represent the market, there is very limited evidence to indicate that downgrade announcements can be considered to have any informational value perceived. Although the reaction is statistically significant, the sign is positive which is contrary to the information value theory. However, when we test the same sample using the MSCI Europe Index as the market proxy, the CAR is significant for 2 subperiods before the announcement (*t*=-20 to *t*=-1 which is significant at 10% and *t*=-20 to *t*=-15 which is significant at 5% level of confidence) and during the event announcement.

Several insights are provided by this subperiod analysis. First, there isn't sufficient evidence to suggest that upgrade announcements result in a positive reaction in stock prices. In the case of downgrades, three of the four analyses indicate that downgrade announcements are considered as a significant by the market. In terms of rating agencies, there is no significant evidence to suggest that data from Standard and Poor's performs better than data from Moody's in signalling information to the public. In their study, Kish, Hogan & Olson (1999) also compare the market reactions on S&P and Moody's bond rating changes announcement and find that there is no significant evidence indicating that the public values information provided by one agency

over that provided by the other. Furthermore, the MSCI Europe Index seems to be better a better market proxy than the FTSE All Share, especially during downgrade announcements.

Table 4 Market Reactions to Corporate Bond Rating Changes

CAR according to subperiod (days)	Upgraded Companies			
	Market Proxy: FTSE All Share		Market Proxy: MSCI Europe	
	Standard & Poor's	Moody's	Standard & Poor's	Moody's
-20 to -1	-0.0141	-0.0294	-0.0289	-0.0246
	(-0.9881)	(-0.8597)	(-1.22175)	(-0.5220)
-20 to -15	-0.0038***	-0.0103	-0.0144***	-0.0116
	(-3.510)	(-0.8257)	(-5.0116)	(-1.1828)
-10 to -1	-0.0063	-0.0213	-0.0113	-0.0207
	(-0.2540)	(-0.7076)	(-1.0211)	(-0.2989)
-1 to 0	0.0022***	-0.0095	0.0001	-0.0041
	(2.6816)	(-1.3432)	(-0.5210)	(-0.3930)
+1 to +10	-0.0020	-0.0021	-0.0072	0.0084
	(-0.0732)	(0.5800)	(-1.3997)	(1.1845)
+1 to +20	0.0003	-0.0089	-0.0027	0.0140
	(0.3284)	(0.1664)	(0.2093)	(1.2552)
CAR according to subperiod (days)	**Downgraded Companies**			
	Market Proxy: FTSE All Share		**Market Proxy: MSCI Europe**	
	Standard & Poor's	**Moody's**	**Standard & Poor's**	**Moody's**
-20 to -1	-0.0114	0.0206***	-0.0078	-0.0434*
	(-0.2105)	(3.8967)	(-0.3472)	(-1.7686)
-20 to -15	0.0017	0.0107***	0.0024	-0.0135**
	(-0.3423)	(2.3590)	(0.0987)	(-2.1830)
-10 to -1	-0.0251	0.0051	-0.02212**	-0.0204
	(-1.2422)	(1.1438)	(-2.2263)	(-0.2405)
-1 to 0	-0.0242***	-0.0069	-0.02214***	-0.0129***
	(-7.9297)	(-1.3047)	(-6.1274)	(-6.1829)
+1 to +10	-0.0018	-0.00007	0.0040	-0.0069
	(-0.9078)	(0.2613)	(0.2612)	(-0.2410)
+1 to +20	0.0125	0.0041	0.0161	-0.0135
	(0.6118)	(0.2780)	(1.2209)	(-0.4645)

This table shows Cumulative Average Return (CAR) Over Selected Subperiods. The standard errors are estimated using SARs but only AAR reported. A rating change occurs when S&P and Moody's announce a rating change.

* indicates statistical significance at 10% level of confidence

** indicates statistical significance at 5% level of confidence

*** indicates statistical significance at 1% level of confidence

5. CONCLUSION

In this study, we undertake event studies to test whether the bond rating revision by Moody's and Standard and Poor's has any informational value to the market participants. In general, we find that bond downgrade announcements have some informational content while there is no market reaction to bond upgrade announcements. These results are consistent with the findings of Goh and Ederington (1993) and Dichev & Piotroski (2001). Based on subperiod analysis, both Standard and Poor's and Moody's downgrade announcements result in a negative market. This result was not observed during upgrade announcements. Hence, we do not find sufficient evidence to support the argument that announcements by Moody's outperforming those by Standard and Poor's in signalling news to the public. These findings are consistent with those reported by Kish, Hogan & Olson (1999).

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APPENDIX

Table 1
Bond Rating Change Matrix based on Announcement by Standard and Poor's (Upgrades and Downgrades)

	New Bond Rating																			
	AAA	AA+	AA	AA-	A+	A	A-	BBB+	BBB	BBB-	BB+	BB	BB-	B+	B	B-	CCC+	CCC	CCC-	CC	C
Old Bond Rating																					
AAA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AA+	0	0	2	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AA	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AA-	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
A+	0	0	0	1	0	3	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0
A	0	0	0	0	0	0	8	5	1	0	0	0	0	0	0	0	0	0	0	0	1
A-	0	0	0	0	3	2	0	10	2	0	0	0	0	0	0	0	0	0	0	0	0
BBB+	0	0	0	0	0	0	4	0	13	2	0	0	0	0	0	0	0	0	0	0	0
BBB	0	0	0	0	0	0	0	3	0	7	0	1	0	0	0	0	0	0	0	0	0
BBB-	0	0	0	0	0	0	0	0	3	0	1	1	1	0	0	0	0	0	0	0	0
BB+	0	0	0	0	0	0	0	1	0	2	0	3	0	0	0	0	0	0	0	0	0
BB	0	0	0	0	0	0	0	0	0	0	2	0	4	0	0	0	0	0	0	0	0
BB-	0	0	0	0	0	0	0	0	0	0	0	3	0	1	0	0	0	0	0	0	0
B+	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0
B	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	0	0	0	0	0
B-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0
CCC+	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CCC	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CCC-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CC	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
C	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

This table describe the evidence on upgrades and downgrades for the uncontaminated sample from January 1997 to December 2006. Rows indicate the original rating assigned by Standard and Poor's and columns represent the new rating assigned by Standard and Poor's after the change. The number in each cell represents the number of observations in the uncontaminated sample of upgrades and downgrades.

Table 2
Bond Rating Change Matrix based on Announcement by Moody's (Upgrades and Downgrades)

	New Bond Rating																			
	Aaa	Aa1	Aa2	Aa3	A1	A2	A3	Baa1	Baa2	Baa3	Ba1	Ba2	Ba3	B1	B2	B3	Caa1	Caa2	Caa3	Ca	C
Old Bond Rating																					
Aaa	0	2	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Aa1	1	0	1	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Aa2	0	4	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Aa3	0	0	3	0	11	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
A1	0	0	1	3	0	12	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
A2	0	0	1	0	4	0	16	6	1	0	0	0	0	0	0	0	0	0	0	0	0
A3	0	0	0	0	0	7	0	16	3	2	0	0	0	0	0	0	0	0	0	0	0
Baa1	0	0	0	0	0	2	3	0	16	3	1	0	0	0	0	0	0	0	0	0	0
Baa2	0	0	1	0	1	0	0	2	0	12	1	0	0	0	0	0	0	0	0	0	0
Baa3	0	0	0	0	0	0	1	0	2	0	5	1	0	0	0	0	0	0	0	0	0
Ba1	0	0	0	0	0	0	0	0	0	3	0	6	2	0	0	1	0	0	0	0	0
Ba2	0	0	0	0	0	0	0	0	0	1	1	0	1	0	0	0	0	0	0	0	0
Ba3	0	0	0	0	0	0	0	0	0	0	0	2	0	2	0	2	0	0	0	0	0
B1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	0	0	1	0	0
B2	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0	3	0	0	1	0	0
B3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	2	0	0	0	0
Caa1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Caa2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Caa3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ca	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
C	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

This table describe the evidence on upgrades and downgrades for the uncontaminated sample from January 1997 to December 2006. Rows indicate the original rating assigned by Moody's and columns represent the new rating assigned by Moody's after the change. The number in each cell represents the number of observations in the uncontaminated sample of upgrades and downgrades.

Figure 1
Market Reaction on the Upgrade Announcement of Corporate Bond: Standard and Poor's Vs Moody's (Market Proxy: FTSE All Share)

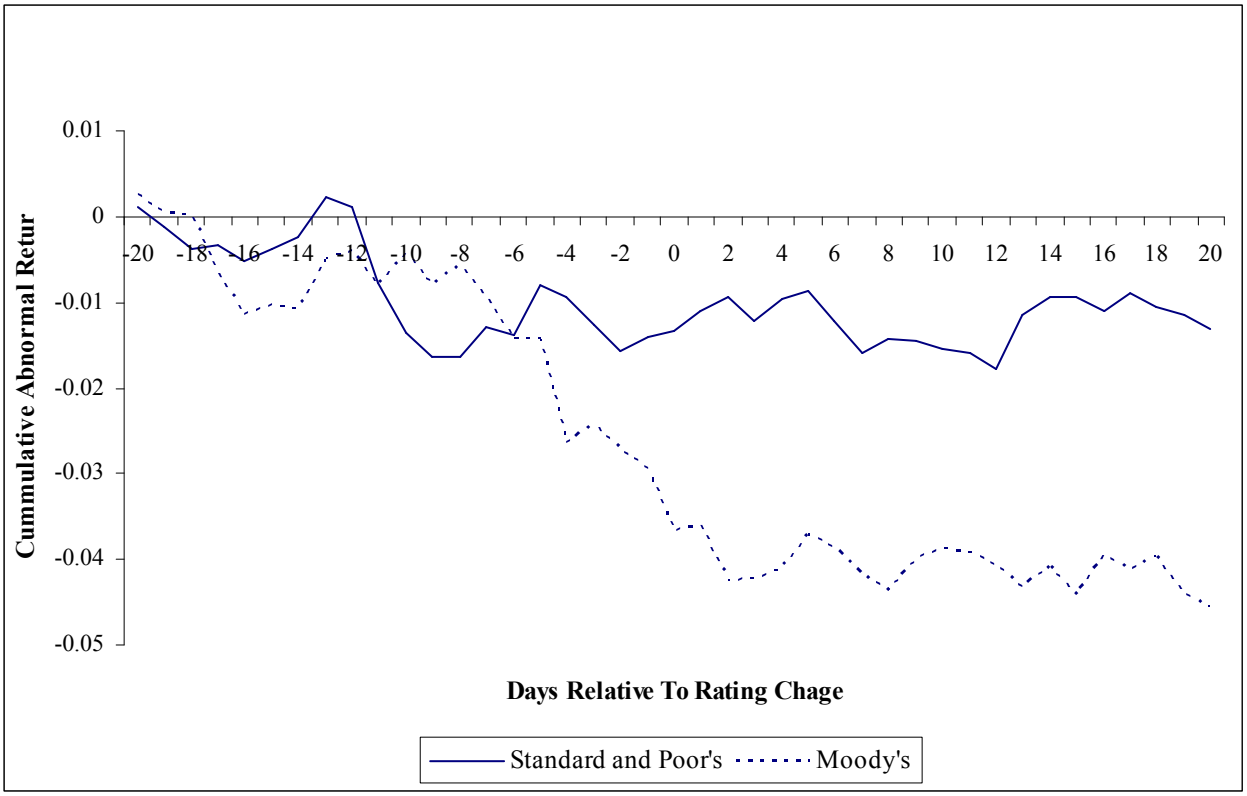

Figure 2
Market Reaction on the Upgrade Announcement of Corporate Bond: Standard and Poor's Vs Moody's (Market Proxy: MSCI Europe)

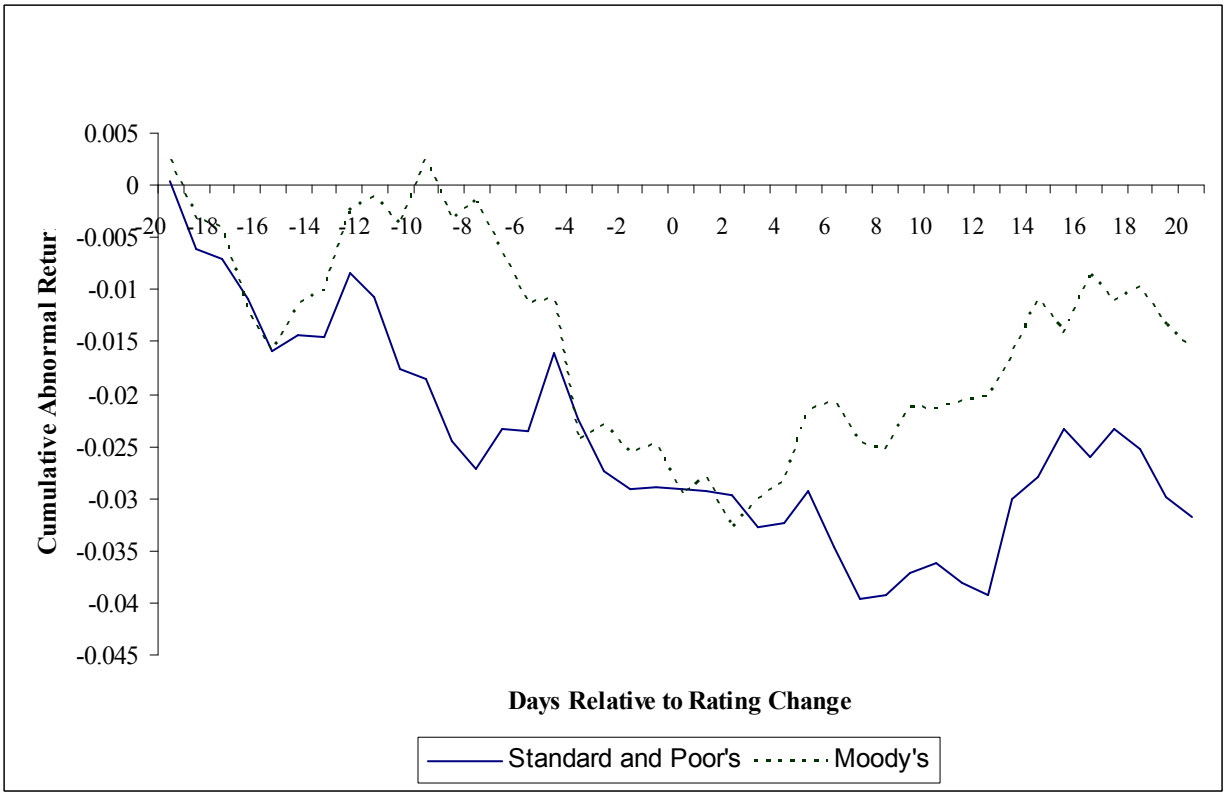

Figure 3
Market Reaction on the Downgrades Announcement of Corporate Bond: Standard and Poor's Vs Moody's (Market Proxy: FTSE All Share)

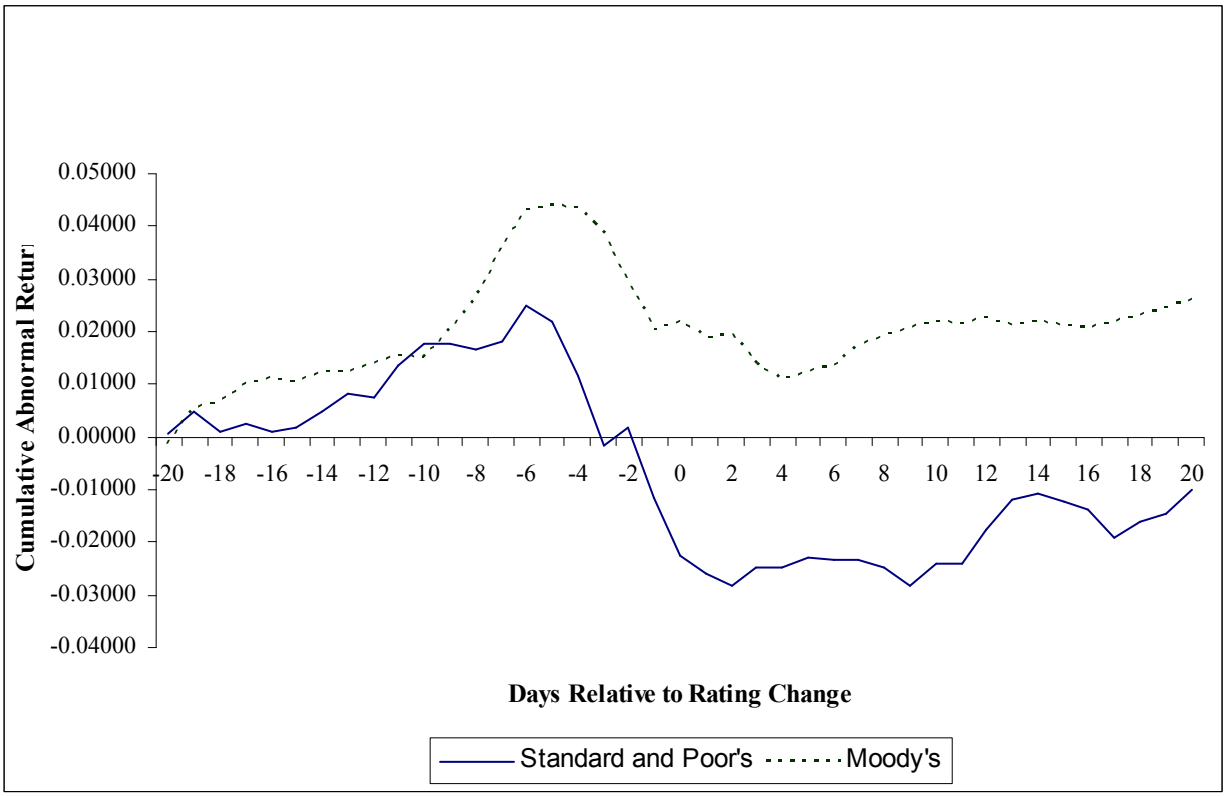

Figure 4
Market Reaction on the Downgrades Announcement of Corporate Bond: Standard and Poor's Vs Moody's (Market Proxy: MSCI Europe)