Science Arena Publications
Specialty Journal of Accounting and Economics
Available online at www.sciarena.com
2016, Vol, 2 (1): 77-90

The Effects of Credit Rating Announcements on Stock Performance in Malaysia

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Abstract: This study aims to provide an investigation of the effect of bond rating changes on stock performance in Malaysia using event study and Dimson-Fowler Rorke (DFR) method. The study examines the rating changes of both Private Debt Securities (PDS) and Islamic Private Debt Securities (IPDS) based on ratings by RAM Rating Services Berhad (RAM) and Malaysian Rating Corporation Berhad (MARC). The empirical results indicate that when there is an announcement of rating upgrades for PDS, stock price react negatively and affect the firm returns while for IPDS the effect is negative but insignificant. On the other hand, the results for downgrades of PDS show that stock market responds negatively and significant while for IPDS it is negative but insignificant. This study also identifies determinants of abnormal return on bond announcement with associated firm-specific factors (firm size and leverage) and bond-specific factors (bond maturity). The results indicate that maturity for upgrade of IPDS exerts a significant and positive impact on abnormal return.
Keywords: Credit rating announcements, Dimson-Fowler Rorke (DFR), event study, Islamic Private Debt Securities (IPDS), Malaysia, Private Debt Securities (PDS) and stock returns.

Introduction

Credit rating essentially reflects a rating agency's opinion, as of the specific date, of the creditworthiness of a particular company, security, or obligation. For almost a century, credit rating agencies have been providing opinions on the creditworthiness of issuers of securities and their financial obligations. The importance of these opinions to investors and other market participants and the influence of these opinions on the securities markets have increased significantly (Dimitrov, Palia and Tang, 2015). Malaysia is a subject of interest as it has progressively developed a comprehensive Islamic Capital Market that is diversified in terms of its institutions, markets and players. One of the key thrusts of this initiative is the rapid development of the Islamic Private Debt Securities (IPDS) or Sukuk market. Local and multinational corporations, government agencies and multinational development institutions are able to raise funds through the issuance of IPDS to meet their financing requirements. As of year ended 2007, Malaysia has the largest Sukuk market in the world, both in terms of number of issuances and outstanding size. Numerous studies on the impact of corporate bond rating changes on stock returns have been conducted in developed countries, mostly in the United States; for example Katz (1974), Pinches and Singleton (1978), Caton and Goh (2003), Kim and Nabar (2003) and Michaelides, et. al (2015). However, to the best of our knowledge, there are scant published studies on this issue in Malaysia, especially on IPDS. This study intends to test whether the results on domestic bond sample would be consistent or contrary to past findings in larger markets.

It can't be denial that credit rating is an important element in finance markets and it often becomes headlines in financial community (Habib, et. al, 2015). After a series of accounting scandals that have occurred like Enron and WorldCom in 2001 and 2002, rating agencies have been periodically criticized for inaccurate ratings and slow reactions to new information. In fact, Enron's credit rating was still

investment grade[1] a couple of days before they went bankrupt. Most of the blame for failing to recognize Enron's problems has been assigned to the firm's auditors and to the sell side analysts who work for brokerages, investment banking and research firms, and sell or make their research available to retail and professional investors. Healy and Palepu (2003) state that are three key findings emerge. First, consistent with potential conflicts of interest from investment banking, on average, analysts that do investment banking expect to see twelve-month price appreciation of 54 percent, compared with only 24 percent for analysts that do not work for investment banks. This difference is statistically significance. Second, price appreciation expected by analysts of investment banks with no current banking ties is as optimistic as for analysts with current banking relationships (62 percent and 53 percent, respectively), suggesting that the conflict of interest is driven by the potential for future business as much as current business itself. Third, even analysts with no investment banking business at all are subject to optimistic bias, indicating that banking conflicts alone do not explain bias in analysts' forecasts and recommendations.

In addition, the issue of US Sub-Prime Mortgage segment and its negative effect on the international capital markets also clarified same subject matter. Hanif (2009) states that a lot of criticism has been directed at the rating agencies and underwriters of the Colleteralized Debt Obligations (CDOs) and other mortgage-backed securities that included subprime loans in their mortgage pools. Some argue that the rating agencies should have foreseen the high default rates for subprime borrowers, and they should have given these CDOs much lower ratings than the AAA rating given to the higher quality tranches. If the ratings had been more accurate, fewer investors would have bought into these securities, and the losses may not have been as bad. Moreover, the author also stated that some have pointed to the conflict of interest between rating agencies, which receive fees from a security's creator, and their ability to give an unbiased assessment of risk. The argument is that rating agencies were enticed to give better ratings in order to continue receiving service fees, or they run the risk of the underwriter going to a different rating agency (or the security not getting rated at all). However, on the flip side, it's hard to sell a security if it is not rated.

Furthermore, the importance of the rating assignments issued by rating agencies can be seen in the behavior of bonds in the aftermath of changes to their credit announced by those agencies. Typically, when a rating agency announces a change in the credit rating on a bond, there tends to be what is known as announcement effect. An announcement effect is the price change that occurs in a bond as a result of an announcement made by a rating agency on the changing bond's rating. While credit ratings are widely accepted in the risk and quality assessment of bond issues, the informational effect of credit ratings is a subject of a continuing debate. Extant literatures have produced conflicting theoretical arguments on the value of credit rating, such as Partnoy (1999) and Kuhner (2001). Wakeman (1990), point out that there is no valuable information in rating actions since the agencies only summarize public information. Accordingly, no response in the market should be expected after rating changes. Besides, a few studies found that the impact of conventional corporate bond prices reaction to the rating changes is as expected (e.g., Holthausen and Leftwich (1986), Goh and Ederington (1993), Brogaard et. al (2015)), i.e. rising after upgrades and falling after downgrades. It shows that rating decisions provide information to the financial markets.

The logic around the relation between rating changes and returns is any information that is good for bondholder will immediately be good news for an equity holder and vice versa; so equity prices should react in the same way as bond prices, rising with upgrades and decreasing with downgrades (Goh and Ederington, 1993). However, the response is commonly small and most of the adjustment in prices around ratings announcements appears to occur in the weeks or months prior to the announcement. All in all, this evidence suggests that the announcements of agencies convey little new information to the market (Creighton, Gower and Richards, 2004).

The main aims of this paper are two folds. Firstly, we want to examine the behavior of firms' stock prices around credit rating announcements. This objective allows us to assess whether there are any

[1] AAA to BBB instruments are categorized as investment grade while those with lower rating, BB to C, are categorized as speculative or non-investment grade instrument. The AAA rating indicates that the instruments have the highest credit quality and bring the lowest default risk.

abnormal returns earned by security holders accompanying the specific events. Secondly, we want to investigate whether firm-specific factors such as firm size and financial leverage; and bond-specific factor such as bond maturity affect its abnormal return on bond announcement.

The structure of the paper is as follows. Section 2 explains factors that contribute to firm's abnormal returns. Meanwhile, Section 3 explains the event study methodology employed to examine the behavior of companies' stock prices as well as the beta refinement. Section 4 describes the data while section 5 reports the empirical results and discussion. Section 6 concludes.

2. Factors Contributing to Stock Abnormal Return[2] on bond announcement and Hypothesis

A number of factors contribute to the stock abnormal return. In this study, we emphasize the impacts of the credit rating changes, firm size, firm financial leverage and maturity of bond being rated. The first hypothesis tests on the effects of credit rating changes (downgrades and upgrades) on stock returns. Past studies in the U.S., including Griffen and Sanvincente (1982), Holthausen and Leftwich (1986), Glascock, Davison and Henderson (1987), Hand, Holthausen and Leftwich (1992), Goh and Ederington (1999) and Dichev and Piotroski (2001), Brogaard et. al (2015), found that announcement of downgrades are associated with statistically significant negative market reaction. Bond rating upgrades[3] are associated with positive but insignificant market returns. Studies in Australia (Matolcsy and Liano, 1995) and in the United Kingdom (Barron, Clare and Thomas, 1997) are consistent with the U.S. findings. However, Elayan, Hsu and Meyer (2003) found that there are significant market reactions to both negative (downgrade) and positive (upgrade) credit rating announcements in New Zealand. Based on these literatures, we form the following hypothesis:

H_{01}: Downgrade (upgrade) announcements of bond rating lead to significantly negative (positive) stock returns.

The second hypothesis tests whether the market reaction is related to firm size. Dichev and Piotroski (2001) documented that poor returns of downgrade firms are more pronounced for small and low-credit quality firms. Elayan, Hsu and Meyer (2003) found that firm size is negatively related to market reactions since larger and more visible firms should benefit less from the credit rating assignment. It is therefore reasonable for us to set the second hypothesis as follows:

H_{02}: Firm size has a significant negative relation with market reactions.

The third hypothesis tests whether financial leverage has an effect on firm's performance. Higher financial leverages increase variability of returns and the chance of default, and thus may adversely affect the value of the firm and increase shareholder risk. Kliger and Sarig (2000) reported that the securities of firms with more leverage have stronger reaction to new ratings information. Elayan, Hsu and Meyer (2003) asserted that firms with relatively greater leverage, ceteris paribus, should have their debt rated as being more risky. Furthermore, they expected the reaction of credit rating assignment is lower, i.e., negative relation is expected. The third hypothesis is formulated as follows:

H_{03}: Financial leverage has a negative effect on firm's performance.

The forth hypothesis tests whether the market reaction is related to the maturity of bonds. Barron, Clare, and Thomas (1997) found differential reaction to announcements for short-term versus long-term debt. Elayan, Hsu and Meyer (2003) stated that if the market seeks long-term performance, then announcements for long-term debt should be associated with greater market reaction (relative to announcements for short-term debt). They argued that the impact on credit rating revisions is expected to be positive as more information may be revealed by long-term debt. These arguments lead to the following hypothesis:

H_{04}: Maturity period of a bond has a positive effect on market reactions.

3. Methodology

[2] The abnormal return is the difference between the realized return observed from the market and the benchmark return. The benchmark return is supposed to be the return of the stock if there is no event.

[3] Whenever an issue is shifted from a lower credit rating ranking to a higher ranking, a positive credit watch is assigned to the current credit rating category or a negative credit watch is removed from the current credit rating category, then it will be classified as a credit rating upgrade.

This study uses the event study methodology to examine the behavior of firms' stock prices around corporate events (i.e. credit rating announcements). The effectiveness of event studies arises from the fact that the magnitude of abnormal performance at the time of an event provides a measure of the (unanticipated) impact of this type of event on the wealth of the firms. In addition, event studies focusing on announcement effects for a short-horizon around an event provide evidence relevant for understanding corporate policy decisions. Event studies focusing on effects in long-horizon timeframe could provide key evidence on market efficiency (Brown and Warner, 1985, and Fama, 1998).

The common steps for the event study methodology are as follows: defining the event of interest; determining the period upon which the market would have received the news which is often called the event window; setting out the criteria for inclusion of a given firm in the study; selecting the normal performance model and establishing the period over which this model is estimated (the estimation period); measuring the difference between the observed and actual returns for each firm (abnormal return); aggregating the abnormal returns across firms and across time; and statistically testing the aggregated returns to determine whether these returns are significant, and if so, then determine the duration. For applications in which the determinants of the normal return are not expected to change due to the event, an estimation period typically is chosen prior to the event period. In addition, if the applications are expected to change due to the event, the estimation period may follow the event.

In this study, we use the Single Index Market Model (SIMM) to estimate the normal returns. The SIMM hypothesizes a linear relationship between the returns from a given security and market portfolio. The systematic risk of a security is obtained by employing an Ordinary Least Squares (OLS) regression using daily security returns within the estimation period. This model is shown as follows[4]:

$$R_{it} = \alpha_i + \beta_i(R_{mt}) + \varepsilon_i \quad (1)$$

where R_{it} is returns on security i in period t, α_i is constant term for security i, β_i is beta estimate for security i, R_{mt} is returns on the market portfolio on event day t and the term of ε_{it} denotes residual error for security i in period t (k days in the estimation period).

To determine the abnormal return of a security i for period t is calculated as follows:

$$AR_{it} = R_{it} - (\alpha_i + \beta R_{mt}) \quad (2)$$

To observe the effect of the event at a certain point of time, several firms' data must be aggregated. The Average Abnormal Return (AAR_t) is calculated by dividing the average abnormal returns for all assets on day *t* by the number of assets (N):

$$AAR_t = \sum_{t=1}^{N} \frac{AR_{it}}{N} \quad (3)$$

The Average Abnormal Return (AAR_t) is tested for significance using t-statistics as follows:

$$t = \frac{AAR_t}{\sigma(AAR)} \quad (4)$$

To observe the cumulative effect during certain event window, the cumulative average abnormal return (CAAR) is used:

$$CAAR_d = \sum_{t=t_1}^{t_2} AAR_t \quad (5)$$

The CAAR provides the accurate figure to determine the long-term effect on share prices from bond rating announcements since the expected value of CAAR is zero in the absence of abnormal performance.

Based on Kritzman (1994), t-statistic for CAAR is calculated as follows:

$$t = \frac{CAAR_t}{\sigma(CAAR)} \quad (6)$$

The standard deviation of CAAR is defined as follows:

$$\sigma(CAAR) = \sigma(AAR)\sqrt{N} \quad (7)$$

where N denotes numbers of days in the CAAR statistic.

[4] Most of these methodology follows Peterson (1989)'s paper.

Past studies done in the United States include Griffin and Sanvicente (1982), Davidson and Glascock (1985), Matolcsy and Liano (1995), Goh and Ederington (1993) and Dichev and Piotroski (2001) used the OLS method of the standard event study methodology to estimate the normal performance model. The OLS method is the simplest and most common method used in computation of beta estimation. It involves a simple linear regression of security's return on the market return. In the case of Malaysian stock market, it is a small capital market and stocks often encounter infrequent trading until recent years. In a thinly traded market, prices of the traded securities do not react promptly to current market sentiments. Thus, part of a security's actual return in any week may be reflected in the following week's return. Therefore, a market return constructed from the prices of such thinly traded securities will be biased downwards in a rising market and biased upwards in a falling market. Cheng (2000) investigated that non synchronous trading bias deals with data on daily basis. This bias can be corrected by using Dimson-Fowler Rorke method (DFR), which is a combination of Dimson (1979)'s market model and Fowler and Rorke (1983)'s corrections. Dimson (1979)'s method corrects for non-trading bias by specifying a market model with leads and lags in a time series while Fowler and Rorke (1983)'s method weights the betas with serial correlations in the market returns.

To overcome the problems arising from the infrequently traded securities, Dimson (1979) proposed that the estimation of unbiased $*\beta_{t1\ dim}$ for stock *i* on *t* time is as follows:

$$R_{it} = \alpha + \beta_{-2} R_{m,\,t-2} + \beta_{-1} R_{m,\,t-1} + \beta_t R_{m,\,t} + \beta_{+1} R_{m,\,t+1} + \beta_{+2} R_{m,\,t+2} \quad (8)$$

where R_{it} is return of stock i to period t, α is constant return of a stock, R_m is market return and β is beta of a stock.

However, Fowler and Rorke (1983) argue that Dimson's beta value is biased and suggest that the beta coefficients should be weighted by serial correlation in the market return in order to yield a consistent and unbiased beta coefficient. Therefore, in this study, the first and second order autoregressive schemes are conducted to obtain the correlation of one month and two months lag market return. Our study follows the estimation of Imbarine and Annuar (2007) as follows:

$$R_{m,\,t} = \rho_0 + \rho_1 R_{m,\,t-1} + \rho_{-2} R_{m,\,t-2} + u_t \quad (9)$$

Thus, the Adjusted Beta based on Dimson-Fowler Rorke (1983) is as follows:

$$*\beta_{t1}\,(DFR) = W_2(\beta_{-2}) + W_1(\beta_{-1}) + \beta_t + W_1(\beta_{+1}) + W_2(\beta_{+2}) \quad (10)$$

The weights (W) for correcting the beta coefficient are as follows:

$$W_1 = (1 + 2\,\rho_1 + \rho_2) / (1 + 2\,\rho_1 + 2\,\rho_2) \quad (11)$$

$$W_2 = (1 + \rho_1 + \rho_2) / (1 + 2\,\rho_1 + 2\,\rho_2) \quad (12)$$

Substitute the $*\beta_{t1}$(DFR) at the following formula to estimate the required rate of return:

$$R_{it} = R_f + *\beta_{t1}(DFR)\,(R_m - R_f) \quad (13)$$

The cross-sectional multivariate regression model is employed in this study to determine the firm-specific and bond-specific factors that may be significantly associated with market reactions to the credit rating change announcements. The control variables used in this study are based on Elayan, Hsu and Meyer (2003). The main justification is that Malaysia is a small market as compared to that of New Zealand. However, for this study the analysis uses three day announcement period of CAAR as the dependent variable. It is used to capture a day before and after of CAAR reaction to explain further the stock returns response to the rating changes. The firm-specific factors are identified as size of firm (FIRM SIZE) and financial leverage (LEVERAGE). The bond-specific factor is identified as maturity of debt being rated (MATURITY). The multivariate regression model for bond rating downgrades and upgrades is provided as follows:

$$CAAR_{(-1,\,1)} = \alpha + \beta_1 \text{FIRM SIZE} + \beta_2 \text{LEVERAGE} + \beta_3 \text{MATURITY} + \varepsilon \quad (14)$$

where FIRM SIZE represents the natural log of the market value of equity, LEVERAGE represents ratio of total debt to total asset, MATURITY represents dummy variable of debt maturity: MATURITY =1 if the

maturity of debt is long-term and MATURITY = 0 if the maturity of debt is short-term, and the term of ε denotes error term.

4. Data

The data consist of bond issues of public listed companies in Bursa Malaysia that are the issuer of PDS and IPDS. These bond issues must be rated by either RAM or MARC. All data are collected from RAM, MARC, Bond Pricing Agency Malaysia, Thomson Datastream, Securities Commission and Bank Negara Malaysia. Preliminary data collection indicates that there are approximately 110 PDS issues and 105 IPDS issues by firms over the entire period. However, out of these samples only 19 PDS and 24 companies are utilized for this study. Complete data were available for 9 years, January 2000 to December 2008. The sample is reduced because for some firms the ratings did not change[5] during the period analyzed and also due to the lack of sufficient data on stock returns i.e some bonds issued by companies are not listed or not associated with any listed company. Additionally, the rating would be eliminated when any other news is announced by the same firm during the time of the rating change. The rating change announcement would also be excluded if the RAM and MARC announce simultaneous rating changes of different bond issues for the same issuing firm i.e whenever any two rating agencies have announced a rating change, only the first rating change will be taken into account.

5. Empirical Results

As can be seen in Figure 1(a) and Figure 1(b) below, the CAAR for both PDS upgrades and downgrades seem to be negative abnormal return around the announcement prior to the rating change. After the rating change, the upgrades and downgrades also seem to have a negative CAAR following the rating change. These results might be compatible, as mentioned by Elayan, Hsu and Meyer (2003); it seems that participants in small financial markets like Malaysia are generally found to be more sensitive to good news than those investors in larger markets like US and UK.

Table 1(a) shows for PDS upgrades, the AAR of Day -1 is 0.0538 percent. These results demonstrate that for PDS upgrades it is positive and statistically insignificant but during the announcement day (Days 0), negative AAR appears and statistically significant at -0.6892 percent. This response is anomalous since the reaction on good news announcement produces a negative and also significant result which is contradictory from what had been anticipated. However, AAR for PDS downgrades is negative and statistically significant for Day-1 and Day 0. This might evidence that sample of downgrades have signaling information leakage. The result for Day 1 is interesting since it is positive and significant at 0.6750 percent. Nevertheless, for PDS upgrades and PDS downgrades none of these results are significant at 5% significance level. Furthermore, Table 2(a) reports that none of the event days show significant CAAR for PDS and IPDS ratings at Day(-5,0), Day(-1,0), Day(0,2) and Day(0,8) and also during the varies event day. Hence, from the first hypothesis it shows that only PDS downgrades announcement give significantly negative effect on abnormal returns.

The results of downgrades should be bad news as it is expected to show a price reduction, while upgrades should be good news resulting in a price increase. However, for IPDS (refer to Table 2(b)) the finding is also consistent with PDS results. As compared with PDS for upgrades, the findings show that from Day -1 to Day 1, AAR for IPDS decrease by 0.0372 percent; which is for Day -1 AAR of 0.5037 percent (t-statistic = 1.8831) and for Day 1 AAR of -0.2600 percent (t-statistic = -0.9722). Hence, the evidence indicates that for IPDS upgrades there are an information leakage as for Day -1 AAR is positive and significant.

Nevertheless, with reference to Table 1(b) for IPDS downgrades period surrounding Day -1 the percentage of AAR is positive at 0.4015 percent but insignificant. Subsequently, AAR on the day of the announcement as well as the day after the announcement, both results are negative and insignificant which is -0.5176 percent and -0.2495 percent, respectively. A few research reports negative and

[5] The change of credit rating can be formulated by comparing the current credit rating and last period's credit rating (which is published by respective credit rating agencies).

statistically significant AAR for bond rating downgrade. As an example, Griffin and Sanvicente (1982) conclude that bond rating downgrades produce significant negative price responses, but for this sample the result is contradictory and insignificant. In addition, it might explain that a negative action for downgrades shows the negative wealth effect and also negative response from the market.

As expected from PDS results, CAAR for IPDS also indicates no significance in any case, signifying that there is no effect on returns related with rating upgrade and downgrade announcements. This may specify that the wealth redistribution effect in this case negated the information content effect. Based on this analysis it explains that the first hypothesis of upgrade and downgrade is rejected. This is because, none of this finding show significant result even for downgrade. In addition, it shows that no wealth effect occurred on stock return with the announcement of upgrade and downgrade.

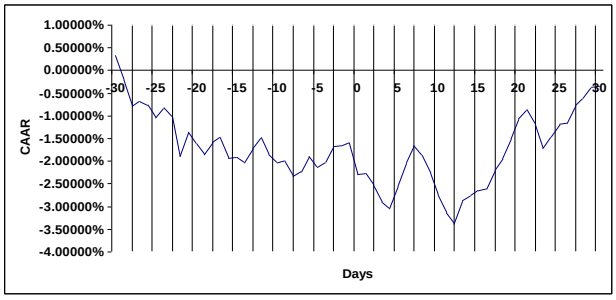
To get an overall result, additional analysis is needed where sample of upgrades and downgrades by PDS and IPDS are consolidated since there is no difference between upgrades and downgrades. This unexpected result might be compatible, as in Romero and Fernandez (2006), with the redistribution of wealth between liability holders. As shown in Table 1(c), for both PDS and IPDS upgrades at Day -1 the results of AAR is positive and insignificant. But, it does not ensure that during the announcement day the result can be positive and significant. Further, at Day 0 and Day 1 the findings point that for both days the results are -0.4606 percent (t-statistic = -2.3470) and -0.1248 percent (t-statistic = -0.6359). Again, as noticed for PDS and IPDS, there are negative effects but significant at Day 0 and insignificant at Day -1.

However, like the case for both PDS and IPDS upgrades, the announcement of both PDS and IPDS downgrades imposes 0.7702 percent (t-statistic = 1.6961) at Day -1. The result is positive, but not statistically significant. In addition, it is as a signal to pre-announcement of the negative abnormal returns. This fact supports the results since for Day 0 the result shows -0.5988 percent (t-statistic = -1.3185). The result is consistent with Dicheiv and Piotroski (2001), Goh and Ederington (1999), Matolscy and Liano (1995) and Glascock, Davison and Henderson (1987) since with respect to downgrades, the authors ended up with the same conclusion. Subsequently, for Day 1, the results is back to positive but still insignificant at 0.1030 percent (t-statistic = 0.2268).

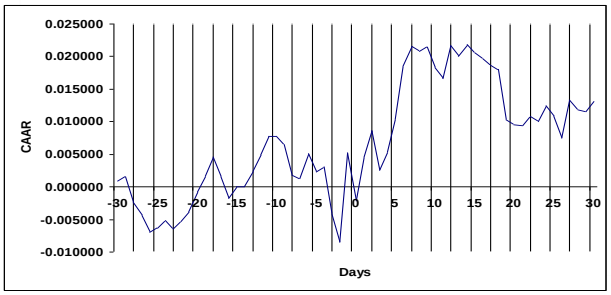
On the other hand, with reference to Table 2(c) the CAAR for both upgrades and downgrades at Day (-5, 0), Day (-1, 0), Day (0, 2) and Day (0, 8) are statistically insignificant. Overall, these results reject the hypotheses in that downgrades (upgrades) announcements are expected to be associated with significantly negative (positive) abnormal returns. This indicates that Malaysia do not perceive any difference between upgrades and downgrades. Additionally, it reveals that the Malaysian market for PDS and IPDS credit rating show some signs of information leakage.

Figure 1. Impact of Debt Securities Upgrades and Downgrades on Stock Returns

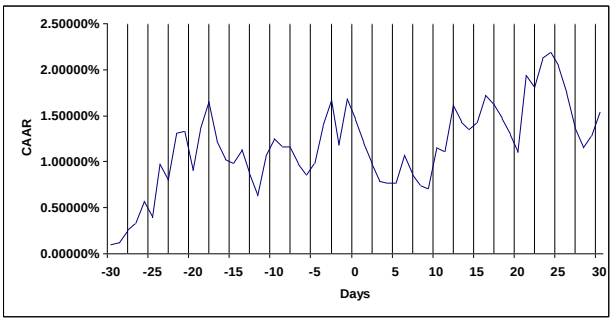
(a) Impact of PDS Upgrades on Stock Returns



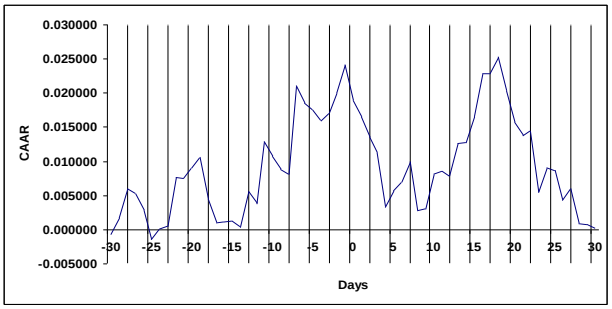
(b) Impact of PDS Downgrades on Stock Returns



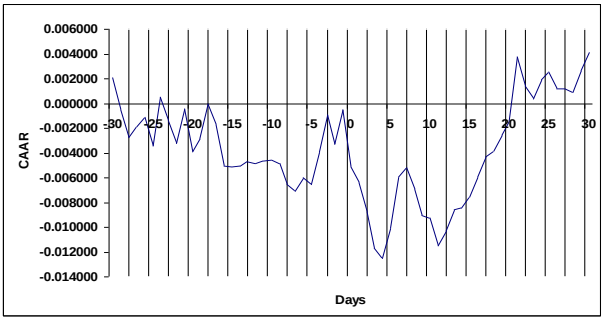
(c) Impact of IPDS Upgrades on Stock Returns



(d) Impact of IPDS Downgrades on Stock Returns



(e) Impact of PDS & IPDS Upgrades on Stock Returns



(f) Impact of PDS & IPDS Downgrades on Stock Returns

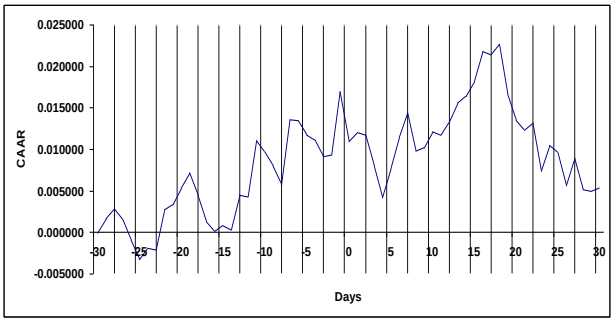


Table 1. Summary of Average Abnormal Return (AAR) on the Day -1, Day 0 and Day 1

Types of Changes	Day -1	Day 0	Day 1
(a) Private debt securities (PDS)			
Upgrade	0.0538%	-0.6892%	0.0166%
	(0.1789)	(-2.2938)	(0.0554)
Downgrade	1.3687%	-0.7314%	0.6750%
	(4.5553)	(-2.4343)	(2.2467)
(b) Islamic private debt securities (IPDS)			
Upgrade	0.5037%	-0.2257%	-0.2600%
	(1.8831)	(-0.8440)	(-0.9722)
Downgrade	0.4015%	-0.5176%	-0.2495%
	(1.2378)	(-1.5959)	(-0.7693)
(c) Private debt securities (PDS) & Islamic private debt securities (IPDS)			
Upgrade	0.2756%	-0.4606%	-0.1248%
	(1.4045)	(-2.3470)	(-0.6359)
Downgrade	0.7702%	-0.5988%	0.1030%
	(1.6961)	(-1.3185)	(0.2268)

Note: t- statistics are shown in parentheses.

Table 2. Summary of the Cumulative Average Abnormal Return (CAAR)

Types of Changes	Day (-5,0)	Day (-1,0)	Day (0,2)	Day (0,8)
(a) Private debt securities (PDS)				
Upgrade	-0.1529%	-0.6892%	-0.2335%	0.4073%
	(-0.0167)	(-0.0752)	(-0.0255)	(0.0444)
Downgrade	-0.4375%	-0.7314%	1.0788%	2.2943%
	(-0.0477)	(-0.0798)	(0.1177)	(0.2504)
(b) Islamic private debt securities (IPDS)				
Upgrade	0.4685%	-0.2257%	-0.4875%	-0.7184%
	(0.0574)	(-0.0277)	(-0.0598)	(-0.0881)
Downgrade	0.1485%	-0.5176%	-0.5435%	-1.6150%
	(0.0150)	(-0.0523)	(-0.0549)	(-0.1633)
(c) Private debt securities (PDS) & Islamic private debt securities (IPDS)				
Upgrade	0.1423%	-0.4606%	-0.3667%	-0.1803%
	(0.0238)	(-0.0770)	(-0.0613)	(-0.0301)
Downgrade	-0.0732%	-0.5988%	0.0752%	-0.1233%
	(-0.0053)	(-0.0432)	(0.0054)	(-0.0089)

Note: t- statistics are shown in parentheses.

Table 3 reports the results from multiple regressions for the three different groups that represent PDS, IPDS, and PDS & IPDS credit rating samples. The results are split into three groups according to differences in the response to upgrades and downgrades and to test the hypotheses relating to different response patterns. In these regressions, the dependent variables are CAAR at period t-1 to t+1. To run this OLS regression and to overcome the problem of heteroskedasticity (unequal variance in the regression error) White test is used.

There are three hypotheses for multivariate regression after the first hypothesis which is for OLS regression. The second possibility is that the reaction of a stock return to a rating change might depend on the size of firm. The FIRM SIZE is a numerical variable that assumes the natural logarithm of the market capitalization of the firm. The expected sign of the coefficient is negative, as indicated by Elayan, Hsu and Meyer (2003) and Li, Visaltanachoti and Kesayan (2004) since smaller firms should be more sensible to rating change. The third hypothesis tests whether financial leverage has an impact on firm performance. The proxy used for LEVERAGE is total debt divided by total assets. Again, the expected sign of the coefficient is negative, since their debt should be rated as risky with the firms that have higher leverage and ceteris paribus (Elayan, Hsu and Meyer, 2003). The fourth hypothesis is to test the market reaction is related to the maturity of bonds. The MATURITY is a dummy variable that assumes 1 if the debt is long-term (maturity periods more than 5 years) and 0 if the debt is short-term (maturity periods within 1 to 12 months). However, the expected sign for the coefficient is positive, since for long-term debt more information may be revealed as noted by Elayan, Hsu and Meyer (2003).

As reported in Table 3, it shows the multivariate regression results of PDS and IPDS for three day event window to explain interrelationship between firm characteristic and bond specific factors. In particular, PDS rating samples of both upgrades and downgrades show only LEVERAGE is in line with hypothesis. As such, it means that the negative market reaction to credit rating announcements is if the firms also have high leverage. Following, the coefficient is -0.8731 of upgrade and -11.1073 of downgrade. However, both coefficients are not significant thus indicating that the relationship between CAAR and leverage is weak. As stated at Table 3, FIRM SIZE variable for upgrade and downgrade shows positive coefficient at 0.1675 and 2.3093 respectively. These findings are insignificant for both and contradictory with hypothesis. Subsequently, for MATURITY the result documents negative coefficient at -0.4754 for upgrade and -1.8900 for downgrade.

In the regression model for IPDS, the only significant variable is MATURITY for upgrade sample (see Table 3 (b)). Apart from that, the coefficient is 1.1298 and significant at 5% level. This proves that, more information will be acquired for long term debt. However, for downgrade the result is contrary when the result is negative at -0.5142. Nevertheless, it is insignificant. For LEVERAGE, both results of upgrade (-2.2332) and downgrade (-1.5429) shows negative coefficient. This result is parallel with the hypothesis although it is not significant. Instead of FIRM SIZE, the result of upgrade show positive relationship at 0.0972 and it is not significant. But, for downgrade the result show negative coefficient at -0.8990 which is in line with the hypothesis even though it is not significant. Overall, for IPDS samples, the results indicate that the explanatory power of this model is poor.

When the category variable is included and all of the credit announcements are regressed together, the coefficient of each variables, are not statistically significant and their signs are not consistent with what is expected. The result for combination of PDS and IPDS (refer to Table 3(c)), shows that it is consistent with the finding of Islamic sample. Similarly, from both sample of upgrade and downgrade the result shows that the reaction on FIRM SIZE is positive coefficient since the result for both indicates 0.1228 and 0.5340 respectively. Apart from that, the result for LEVERAGE also shows negative coefficient when coefficient of upgrade is -1.3858 whereas for downgrade coefficient is -3.9898. Nevertheless, it is evident that all the three variables do not show any significant level. Comprehensively, this shows that only LEVERAGE support the hypothesis. Generally, the poor explanatory power of the firm characteristics and bond characteristic variable such as FIRM SIZE, LEVERAGE and MATURITY are of no surprise because the CAAR surrounding credit rating announcement date is not statistically different from zero.

Table 3. Multivariate Regression Results

	Intercept	Firm Size	Leverage	Maturity	R^2	F-Statistic
(a) Private debt securities (PDS)						
Upgrade	-0.5744%	0.1675%	-0.8731%	-0.4754%	0.037654	0.091297
	(-0.1979)	(0.1556)	(-0.2391)	(-0.4111)		
Downgrade	-0.3504%	2.3093%	-11.1073%	-1.8900%	0.250957	0.446716
	(-0.0151)	(0.3081)	(-0.5007)	(-0.6668)		
(b) Islamic private debt securities (IPDS)						
Upgrade	-3.2490%	0.0972%	-2.2332%	1.1298%	0.284803	0.92917
	(-1.8826)[a]	(1.5384)	(-1.4376)	(2.7337)[b]		
Downgrade	2.1230%	-0.8990%	-1.5429%	-0.5142%	0.136007	0.47225
	(1.1607)	(-0.9145)	(-0.5930)	(-1.0903)		
(c) Private debt securities (PDS) & Islamic private debt securities (IPDS)						
Upgrade	-0.4168%	0.1228%	-1.3859%	0.0371%	0.029230	0.180658
	(-0.2213)	(0.1616)	(-0.9466)	(0.0572)		
Downgrade	0.4797%	0.5340%	-3.9898%	-0.8667%	0.112071	0.715227
	(0.2267)	(0.4802)	(-1.3428)	(-0.6579)		

Note: t- statistics are shown in parentheses.

6. Conclusion

This study investigates stock prices response to rating changes announcements proclaimed by two rating agencies in Malaysia namely RAM and MARC. The sample includes only listed companies in Bursa Malaysia that have encountered the first rating change announcement. This study examines two objectives. First, it investigates the behavior of stock price when there is an announcement of rating change. The method used to achieve this objective is by using Single Index Market Model (SIMM) and standard event study methodology. In addition, the second objective is to identify whether firm specific and bond specific factors are associated with the market reaction. This is carried out by using multivariate regression where there are three variables, which is FIRM SIZE and LEVERAGE (firm-specific factor) and MATURITY (bond-specific factor) (Elayan, Hsu and Meyer, 2003).

Based on the analysis, the results reveal that when upgrades and downgrades of PDS and IPDS are announced, the stock returns respond negatively. The result shows unexpected findings for rating upgrades, as both PDS and IPDS samples generate negative abnormal returns. The results produce statistically significant negative abnormal returns especially for PDS. To get a better insight, upgrade and downgrade data for both PDS and IPDS are consolidated to observe its stock price reaction. However, result of rating upgrade for consolidated PDS and IPDS continue to show significantly negative result and this is contrary to evidence from most existing studies conducted elsewhere. Based on the study done by Elayan, Hsu and Meyer (2003) the results strengthen the hypothesis that credit rating for upgrades give useful information. This result is consistent with that of a study done by Romero and Fernandez (2006) and Doma and Omar (2006) where the reaction of upgrade announcement is viewed as bad news which causes negative abnormal return to happen. Rating agencies may be concerned about their reputation if they make mistake of assigning ratings such as increase or decrease in the level of firm debt. As Holthausen and Leftwith (1986) and Brogaard et. al (2015), state, rating agencies face asymmetric loss functions and they have allocated more resources to identify negative and positive credit information. The reason is that the loss of reputation would be worse if false rating is too high or too low. This problem would give a negative impact to investors and they will suffer losses if a bad firm with problem of paying interest on debt, is classified as fine. In this context, rating agencies are keener to upgrade than to downgrade and will take more time to make a decision to assign the rating. Also, when rating agencies

make announcements, the announcement may already have been discounted by the market thus creating no response.

In addition, the announcement of upgrade may be smaller than expected and this will cause a negative reaction. These findings found by Goh and Ederington (1993) are appropriate with wealth redistribution from shareholders to bondholders. This is also applicable for reputation, to show a deferral in upgrade announcement readjustment of price since the effects of upgrades are detected at announcement date and in those days further from this date. For downgrade, a large number of similar studies reported negative and statistically significant average abnormal returns (Zaima and McCarthy 1988; Dichev and Piotroski 2001). Nevertheless, in this study, the negative impact occurs well before the downgrade announcement, signaling the presence of information leakage. Then, several authors such as Griffin and Sanvicente (1982), Hand, Holthausen and Leftwitch (1986), Goh and Ederington (1993) and Goh and Ederington (1999) also evidence a direct effect on stock returns when a rating announcement is done. It proved that this result of downgrades is consistent with previous study. Further, this research analyzes the multivariate regression to investigate whether market reactions to corporate bond rating changes are associated with specific firm or bond related factors. The results of changes to upgrade and downgrade shows that only LEVERAGE follows the expected sign and support the hypothesis for the sample of IPDS. The results are consistent with the study done by Elayan, Hsu and Meyer (2003) where debt must be rated as risky if the firms have high leverage and ceteris paribus. Whereas, FIRM SIZE for upgrade and downgrade by PDS and IPDS show only downgrade of PDS which possess the sign as expected or support the hypothesis. However, it is not significant and for the remaining samples the result has positive coefficient i.e reject the hyphothesis. This contradicts the hypothesis which states that smaller firm should be more sensible to rating change (Elayan, Hsu and Meyer (2003) and Li, Visaltanachoti and Kesayan (2004)). As regard for MATURITY, the model of regression produces negative result for both upgrade and downgrade. Again, this variable is inconsistent with the highlight of the hypothesis. This result shows that only upgrade sample for IPDS and PDS & Islamic have positive sign but still not significant. This result is weak and not approaching as noted by Elayan, Hsu and Meyer (2003) that long term debt will produce more information.

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