

The Information Content of Credit Ratings for Equity Investors

John Donahue and Dr. Joseph Riotto ¹

Abstract

This paper studies the question that credit rating changes of industrial companies have information content important to equity investors. The paper hypothesizes that both credit increases and credit decreases should yield statistically significant results. However, research shows that on the credit rating change announcement day, only companies being downgraded experience statistically significant movement in their stock price. The cumulative abnormal returns on stock prices for companies that were upgraded and for companies that were downgraded were statistically insignificant.

The Information Content of Credit Rating Changes

This study examines the stock price effect of credit rating changes for selected S&P 500 companies. The hypothesis is developed around the belief that credit rating changes should have a material impact on a company's fortunes and consequently be reflected in the company's stock price.

The credit rating assigned to a company by S&P is critical to a company's fortunes as it gives investors and other stakeholders an indication of the company's creditworthiness. Various rating agencies have different methods of expressing how creditworthy they deem a company to be. However, since this study's data was drawn from Compustat, a S&P service, it follows the system of assigned ratings used by S&P. Credit ratings range from a high of "AAA" to a low of "D" as shown in Table I.

Investment-grade credit risks are rated as "BBB" or better and it should be noted that each letter tier is further broken down with the addition of a plus sign, no sign, or a minus sign. For example, "BBB+" is slightly superior to "BBB" and "BBB-" is slightly inferior to "BBB". Furthermore when a company is under review for an upgrade or a downgrade, S&P will often signal that this is happening by including in their credit opinion a note that the company is under review.

The benefits of a solid credit rating can be substantial and the consequences of a low rating can be serious. Prospective borrowers that are highly rated enjoy lower interest rates and fewer, if any (depending on their rating) restrictive covenants to borrowing agreements than lower rated companies. Lower rated companies, on the other hand, face higher interest rates and more restrictions on their financial flexibility. Lenders, concerned about their capital, will likely ask for covenants from the borrower committing the borrower to maintain certain minimum financial ratios or demanding, as security, first rights to company assets.

In short, a company with a strong credit profile will pay less for its capital and have more flexibility to pursue business objectives as measured by the universe of positive net present value

¹ John Donahue is a Surety Underwriter and graduate of New Jersey City University. Dr. Joseph Riotto is Professor of Accounting/Finance at New Jersey City University.

(NPV) opportunities available to it. On the other hand, lower rated companies, paying a higher interest rate and possibly coping with restrictive covenants, will have a more limited pool of positive NPV opportunities available to them.

Importance of the Study

The results of this study will give investors insights into the value of credit rating information. If this study results in significant returns as measured by stock price movements around the day of credit rating changes, investors may be able to develop profitable investment strategies.

Literature Review

There is a significant amount of research on the topic of credit ratings and stock price movements. In 2003, Elayan, Hsu and Meyer studied small market reactions to credit rating news. While they looked primarily at New Zealand, they referenced that studies of big markets like the US found only significant reactions to negative credit news while their own research showed a small market like New Zealand significantly reacts to both good and bad credit news. What is relevant to this study is the asymmetric response to rating news in big markets because it is similar to this study's results. Nayar and Rozeff studied the commercial paper market and the influence of initial commercial paper ratings on common stock returns. Interestingly, they found the same dynamics as discussed above for big markets. "Rating downgrades...produce significantly negative abnormal returns; upgrades have no effects" (Nayar and Rozeff, 1992).

In 2001, Dichev and Piotroski undertook a very comprehensive investigation of long run stock returns following bond-rating changes. Their research reveals that there are no reliable abnormal returns following upgrades, but they did find negative abnormal returns in first year following downgrades. Interestingly, a study by Followill and Martell that looked at the effects of an announcement that a company is being put under review for a credit rating change (which often happens before the actual rating change) had more of an effect than the actual change itself. In contrast to the studies previously discussed, only the announcement of review for possible downgrade had a significant negative effect on stock prices while a downgrade following the announcement a negligible impact.

Followill and Martel suggest that their contradictory findings to other research may be in part the result of the way the other tests are constructed and the presence of contemporaneous news that contaminate the results of other studies. While the authors make some interesting points about the construction of studies, it is difficult to accept their conclusions considering the volume of the other contradictory research (Followill and Martel, 1997).

Goh and Ederington accepted that a body of research showing downgrades negatively affected stock prices, but drilled down into whether or not all downgrades are "equal". They argue that downgrades that are anticipated by the market (echoing Followill and Martel) and downgrades resulting from transfers of wealth from bondholders to stockholders aren't necessarily bad news for stockholders. What they found is that downgrades resulting from deteriorating financials convey new negative information to the market while downgrades related to changes in firm leverage do not (Goh and Ederington, 1993)

Similarly, in the Glascock, Davidson, and Henderson study also finds that negative rating news is significant to stock prices, but another finding of theirs is of interest. They find that after the downgrade announcement and the initial negative stock move, the movement reverses (Glascock, Davidson, et al., 1987). This is similar to something observed in this study. While mostly focusing on the methodological approach to this kind of study, Griffin and Sanvicente replicate the results of many other studies showing that downgrades convey information to common stockholders (Griffin and Sanvicente, 1982). Barron, Clare, and Thomas studied the UK market and like most of the other studies found significant returns associated with downgrades. They also found significant returns associated with positive CreditWatch announcements (Barron, Clare, et al., 1997).

Methodology and Data

In order to do this study, several pieces of information were needed: a list of companies that have credit ratings maintained by S&P and are publicly traded, availability of historical stock prices for both individual companies and various indexes, and the date that the companies credit rating changes were announced. The Compustat database maintains list of firms that have credit ratings issued by S&P. Compustat offered various ways to sort data, so a database of credit ratings of S&P 500 component firms was selected for the date range May 2003 to May 2005. Unfortunately, the Compustat subscription held by Rutgers University, where this research was done, only offered this information on a monthly basis. Information about the exact date of the credit rating changes was found on S&P's web site. Daily historical stock price information was available on "Yahoo Finance. With this information available, the next step was to narrow the number of possible companies from the universe of firms that comprise the S&P 500 index to just manufacturing firms. This set was further broken into manufacturing companies that had their credit ratings increased and those that had their credit ratings decreased. From these two subsets 5 firms from each was randomly selected. The selected companies and dates of increase or decrease are as shown in Table II.

The question posed by this paper is what is the impact of the "good" news of improved ratings and "bad" news of lowered ratings on the stock prices of selected companies. To answer this question, an event study of stock price behavior around the announcement date of these changes was conducted. Event studies are premised on the idea that markets can evaluate and "price into" a stock price the effect of new information on a company's fortunes. Therefore, the first question that needed to be posed is just how efficient is the stock market? Given the ease with which technology can disseminate information and the sophistication of U.S. financial markets, for the purposes of this paper the assumption is that markets are at least semi-strong efficient.

Hypotheses

With the forgoing in mind this study proposes to test the following hypothesis:

HO1: Credit rating announcements have information value and the release of news regarding credit ratings have a material impact on the financial prospects of a company and should be accompanied by statistically significant movements in a company's stock price on the day of the news release.

An event study to test these hypotheses requires 5 steps (Dasgupta, 1998):

- 1) Identification of the event of interest and a definition of the event window.
- 2) Selection of the sample set of firms to include in analysis.
- 3) Prediction of a normal return during the event window in the absence of the event.
- 4) Estimation of the abnormal return within the event window where the abnormal return is the difference between the expected, normal return and the actual, abnormal return.
- 5) A test to determine whether or not the abnormal return is statistically significant.

Identification of the Event of Interest

As previously described, the event of interest is the behavior of stock prices around the date of announced credit rating changes by S&P. The specific event window used is from 10 days prior to the event through 5 days following the event.

Selection of Sample Set

This was addressed in a previous section. Beginning with the universe of companies that comprised the S&P 500 index and had credit ratings maintained by S&P, industrial companies that had either credit rating increases or decreases between May 2003 and May 2005 were selected. Finally, random selection was used to come up with 10 firms. Five had credit rating increases and 5 had decreases.

Prediction of the “Normal” Return

The market model, basically a linear equation that decomposes a firm’s return into market and firm-specific components, is used in this study:

$$R_{it} = \alpha_i + \beta_i R_{mt} + e_{it}$$

Where,

- R_{it} is the expected return of security i at time t .
- α_i corresponds to the intercept of the model.
- β_i corresponds to the slope of the model.
- R_{mt} corresponds to the return on the market, in this case the S&P 500 index.
- e_{it} is the firm specific factor, which constitutes the random walk. An assumption needing to be made for the purpose of this study is that this variable is expected to have a mean of zero with respect to given levels of market performance (Bodie, 1993).

The strength of this model is that it is basically a regression equation, which is the process used to determine what is the normal, or expected return, for a security given a market return. Before discussing the regression analysis itself, it is necessary to discuss the time frames used to study the event. Each of the 10 companies that comprise this sample had their credit ratings changed on different dates. In order to make cross sectional comparison possible the date of change was designated as time “0” and the day prior to this as day “-1” and the day prior to that day “-2” and so forth. Similarly, the days subsequent to the change are designated day “+1”, “+2” and so forth. In order that the regression equation used to calculate “normal” returns during the event at day 0 isn’t clouded by the event itself, a regression of each firm’s return against the market return from day -110 to -11 was done. Ten separate simple regressions were performed, one for each firm. Although the assumption earlier that markets are semi-strong efficient and the

information made public on day 0 shouldn't be reflected in the stock price until day 0, days -110 to -11 were used to be conservative. The raw data used for the group of companies that had their credit ratings increased is displayed in Appendix 1 and the data for those whose credit rating was decreased is contained in Appendix 2.

Results and Analysis

Regressing the individual stock returns versus market returns yielded the results shown in Tables III-VII for the firms with raised credit ratings and Tables VIII-XII for the firms with lowered credit ratings. The regression analysis with the Bausch & Lomb (rating raised) returns as the dependent variable and the S&P 500 returns as the independent variable explain a moderate portion of variance, $R^2=.104$, $F(1,99)=11.41$ (Morgan, 2002). The regression analysis with the Dell (rating raised) returns as the dependent variable and the S&P 500 returns as the independent variable explain a sizeable portion of variance, $R^2=.280$, $F(1,99)=38.15$ (Morgan, 2002).

The regression analysis with the Phelps Dodge (rating raised) returns as the dependent variable and the S&P 500 returns as the independent variable explain a sizeable portion of variance, $R^2=.174$, $F(1,99)=20.68$ (Morgan, 2002). The regression analysis with the Kellogg (rating raised) returns as the dependent variable and the S&P 500 returns as the independent variable explain a sizeable portion of variance, $R^2=.258$, $F(1,99)=34.15$ (Morgan, 2002). The regression analysis with the Harley-Davidson (rating raised) returns as the dependent variable and the S&P 500 returns as the independent variable explain a moderate portion of variance, $R^2=.131$, $F(1,99)=14.86$ (Morgan, 2002). The regression analysis with the Clorox (rating lowered) returns as the dependent variable and the S&P 500 returns as the independent variable explain a sizeable portion of variance, $R^2=.154$, $F(1,99)=17.84$ (Morgan, 2002).

The regression analysis with the Kerr McGee (rating lowered) returns as the dependent variable and the S&P 500 returns as the independent variable explain a moderate portion of variance, $R^2=.116$, $F(1,99)=12.97$ (Morgan, 2002). The regression analysis with the Pitney Bowes (rating lowered) returns as the dependent variable and the S&P 500 returns as the independent variable explain a very large portion of variance, $R^2=.345$, $F(1,99)=51.64$ (Morgan, 2002). The regression analysis with the GM (rating lowered) returns as the dependent variable and the S&P 500 returns as the independent variable explain a sizeable portion of variance, $R^2=.147$, $F(1,99)=16.89$ (Morgan, 2002). The regression analysis with the Clorox (rating lowered) returns as the dependent variable and the S&P 500 returns as the independent variable explain only a small portion of variance, $R^2=.017$, $F(1,99)=1.71$ (Morgan, 2002).

The average R^2 for the regressions of companies with declining credit ratings is .156 and the average R^2 for the regressions of companies with improving credit ratings .190.

Recall that the market model is :

$$R_{it} = \alpha_i + \beta_i R_{mt} + e_{it}$$

The assumption is that e_{it} has a mean of zero.

One can therefore rearrange the market model as a linear equation, inputting the coefficient and X variable derived from the regression results for each sample firm. Using this

equation one can calculate “expected” or “normal” return for the stock, given the day’s market return. For each company, the derived regression equation shown in Table XIII.

Estimation of the Abnormal Return

The next step is to calculate the abnormal return over the period of the event window. The abnormal return is the difference between the normal return and the actual return. The event window for this study will be from day -10 to day $+5$. The expected return for each stock i can be expressed as:

$$E(R_{it}) = \alpha + \beta_i R_{mt}$$

Abnormal returns, therefore, can be calculated by rearranging the expected return equation as follows:

$$AR_{it} = R_{it} - \alpha_i - \beta_i R_{mt}$$

Where AR_{it} is the abnormal return for stock i at time t .

For each of the stocks in each group, the abnormal return during the event window is shown in Tables XIV and XV. Next, across all stocks in each group, for each day -10 to $+5$, the average abnormal return was taken resulting in Table XVI.

Statistical significance of Abnormal Returns

The final step is determining the statistical significance of the abnormal returns. To do this, a comparison of the average abnormal return for the event day (day 0) to the abnormal returns for the comparison period, day -110 to day -11 was done. Across all stocks in each group for the period -110 to -11 the average abnormal return is shown in Table XVII. Recall that the averages of the abnormal returns for the event day (day 0) for the group that had its credit rating lowered and the group that had its credit rating raised were $-.016$ and 0 respectively. The test for statistical significance is how many standard deviations from the mean of the comparison period does this fall. For the group that had its credit rating lowered, the average abnormal return of $-.016$ falls 3 standard deviations from the mean of the comparison period, days -110 to -11 , clearly a statistically significant result. For the group that had its credit ratings raised, the average abnormal return of 0 fell only $.08$ standard deviations from the mean of the comparison period, days -110 to -11 . This is not a statistically significant result.

Conclusion

This research studied the question that credit rating changes of industrial companies have information content important to equity investors. It was hypothesized that both credit increases and credit decreases should yield statistically significant results. However, this study demonstrates that on the credit rating change announcement day; only companies being downgraded experience statistically significant movement in stock their price. This result makes sense as a downgrade may trip existing loan covenants and make borrowing more expensive; adversely affecting a company’s fortunes. Therefore, HO1 for downgraded companies is accepted but rejected for upgraded companies.

Companies whose credit rating improved had no significant stock movement on the day of the announcement. Although the companies can likely borrow on improved terms, the increase may accrue only marginal benefits.

Table I

Highest Quality Credit			→	Lowest Quality Credit						
AAA	AA	A		BBB	BB	B	CCC	CC	C	D

Table II

	Date of Increase		Date of Decrease
Harley-Davidson.	10/15/2004	Molson	3/1/2005
Dell.	01/21/05	Coors	10/07/04
Kellogg	08/11/04	Clorox	04/14/05
Phelps Dodge	02/09/05	Kerr McGee	04/14/05
Bausch & Lomb	04/08/05	Pitney Bowes	8/3/2004
		General Motors	05/05/05

Tables III-VII Regression Results – Credit Rating Raised

Bausch & Lomb								
Regression Statistics								
Multiple R	0.323							
R Square	0.104							
Adjusted R Square	0.095							
Standard Error	0.012							
Observations	100							
	Coeff	Std Error	t Stat	P-value	Lwr 95%	Upr 95%	Lwr 95%	Upr 95%
Intercept	0.001	0.001	0.901	0.370	-0.001	0.004	-0.001	0.004
X Variable 1	0.669	0.198	3.378	0.001	0.276	1.063	0.276	1.063

Dell								
Regression Statistics								
Multiple R	0.529							
R Square	0.280							
Adjusted R Square	0.273							
Standard Error	0.008							
Observations	100							
	Coeff	Std Error	t Stat	P-value	Lwr 95%	Upr 95%	Lwr 95%	Upr 95%
Intercept	0.001	0.001	1.111	0.269	-0.001	0.003	-0.001	0.003
X Variable 1	0.803	0.130	6.177	0.000	0.545	1.060	0.545	1.060
Harley Davidson								
Regression Statistics								
Multiple R	0.363							
R Square	0.132							
Adjusted R Square	0.123							
Standard Error	0.011							
Observations	100							
	Coeff	Std Error	t Stat	P-value	Lwr 95%	Upr 95%	Lwr 95%	Upr 95%
Intercept	0.001	0.001	0.849	0.398	-0.001	0.003	-0.001	0.003
X Variable 1	0.640	0.166	3.855	0.000	0.310	0.969	0.310	0.969

Kellogg								
Regression Statistics								
Multiple R	0.508							
R Square	0.258							
Adjusted R Square	0.251							
Standard Error	0.008							
Observations	100							
	Coeff	Std Error	t Stat	P-value	Lwr 95%	Upr 95%	Lwr 95%	Upr 95%
Intercept	0.003	0.001	3.329	0.001	0.001	0.004	0.001	0.004
X Variable 1	0.597	0.102	5.844	0.000	0.394	0.800	0.394	0.800

Phelps Dodge								
Regression Statistics								
Multiple R	0.418							
R Square	0.174							
Adjusted R Square								
Standard Error	0.018							
Observations	100							
	Coeff	Std Error	t Stat	P-value	Lwr 95%	Upr 95%	Lwr 95%	Upr 95%
Intercept	0.002	0.002	0.895	0.373	-0.002	0.005	-0.002	0.005
X Variable 1	1.267	0.278	4.548	0.000	0.714	1.819	0.714	1.819

Tables VIII-XII Regression Results – Credit Rating Lowered

Clorox								
Regression Statistics								
Multiple R	0.392							
R Square	0.154							
Adjusted R Square	0.145							
Standard Error	0.007							
Observations	100							
	Coeff	Std Error	t Stat	P-value	Lwr 95%	Upr 95%	Lwr 95%	Upr 95%
Intercept	0.000	0.001	-0.394	0.695	-0.002	0.001	-0.002	0.001
X Variable 1	0.467	0.111	4.224	0.000	0.248	0.686	0.248	0.686

Kerr McGee								
Regression Statistics								
Multiple R	0.342							
R Square	0.117							
Adjusted R Square	0.108							
Standard Error	0.014							
Observations	100							
	Coeff	Std Error	t Stat	P-value	Lr 95%	Upr 95%	Lwr 95%	Upr 95%
Intercept	0.002	0.001	1.488	0.140	-0.001	0.005	-0.001	0.005
X Variable 1	0.794	0.220	3.603	0.000	0.357	1.231	0.357	1.231

Pitney Bowes								
Regression Statistics								
Multiple R	0.587							
R Square	0.345							
Adjusted R Square	0.338							
Standard Error	0.008							
Observations	100							
	Coeff	Std Error	t Stat	P-value	Lwr 95	Upr 95	Lwr 95%	Upr 95%
Intercept	0.000	0.001	0.356	0.723	-0.001	0.002	-0.001	0.002
X Variable 1	0.757	0.105	7.186	0.000	0.548	0.966	0.548	0.966

General Motors								
Regression Statistics								
Multiple R	0.384							
R Square	0.147							
Adjusted R Square	0.138							
Standard Error	0.014							
Observations	100							
	Coeff	Std Error	t Stat	P-value	Lwr 95%	Upr 95%	Lwr 95%	Upr 95%
Intercept	-0.004	0.001	-2.724	0.008	-0.007	-0.001	-0.007	-0.001
X Variable 1	0.875	0.213	4.111	0.000	0.453	1.298	0.453	1.298

Molson Coors								
Regression Statistics								
Multiple R	0.131							
R Square	0.017							
Adjusted R Square	0.007							
Standard Error	0.013							
Observations	100							

	Coeff	Std Error	t Stat	P-value	Lwr 95%	Upr 95%	Lwr 95%	Upr 95%
Intercept	-0.001	0.001	-0.667	0.507	-0.003	0.002	-0.003	0.002
X Variable 1	0.257	0.196	1.311	0.193	-0.132	0.645	-0.132	0.645

Table XIII

Credit Rating Increased		Credit Rating Decreased	
Harley-Davidson.	$R_{it} = .001 + .640 R_{mt}$	Molson Coors Brewing	$R_{it} = -.001 + .251 R_{mt}$
Dell.	$R_{it} = .001 + .803 R_{mt}$	Clorox	$R_{it} = 0 + .467 R_{mt}$
Kellogg	$R_{it} = .003 + .597 R_{mt}$	Kerr McGee	$R_{it} = .002 + .794 R_{mt}$
Phelps Dodge	$R_{it} = .002 + 1.267 R_{mt}$	Pitney Bowes	$R_{it} = -.004 + .757 R_{mt}$
Bausch & Lomb	$R_{it} = .001 + .669 R_{mt}$	General Motors	$R_{it} = -.004 + .875 R_{mt}$

Table XIV

Companies Having Credit Rating Raised					
Day	Bausch & Lomb AR	Dell AR	Harley Davidson AR	Kellogg AR	Phelps Dodge AR
+5	0.000	0.008	-0.006	0.005	-0.003
+4	-0.018	0.009	-0.010	-0.002	-0.001
+3	0.011	-0.010	-0.003	-0.003	-0.001
+2	-0.005	0.000	-0.014	-0.004	-0.001
+1	-0.004	-0.001	-0.003	-0.003	-0.001
0	0.002	0.002	-0.010	0.009	-0.004
-1	-0.004	0.008	-0.003	0.003	-0.002
-2	0.013	0.001	-0.007	-0.012	0.002
-3	-0.002	-0.001	-0.001	0.006	-0.003
-4	-0.001	-0.005	0.004	0.003	-0.002
-5	-0.014	-0.007	-0.003	0.002	-0.002
-6	-0.017	-0.015	-0.005	-0.004	-0.001
-7	0.012	0.014	0.004	0.002	-0.002
-8	-0.014	0.017	-0.008	0.002	-0.002
-9	-0.006	-0.009	0.024	-0.009	0.001
-10	0.004	-0.011	-0.017	-0.002	-0.001

Table XV

Companies Having Credit Rating Lowered					
Day	Clorox AR	Kerr-McGee AR	Pitney Bowes AR	GM AR	Molson Coors AR
+5	0.008	0.006	0.003	-0.006	0.032
+4	0.002	-0.001	0.007	-0.023	0.003
+3	0.003	-0.004	-0.004	0.018	0.001
+2	-0.012	-0.008	-0.005	0.017	-0.002
+1	0.014	0.007	0.011	0.002	0.025
0	-0.003	-0.020	0.001	-0.054	-0.005
-1	0.007	-0.013	0.006	0.068	0.016
-2	-0.002	-0.009	0.009	0.008	0.003
-3	-0.007	0.016	0.003	0.016	0.008
-4	0.010	-0.003	-0.001	-0.010	-0.007
-5	0.009	-0.023	0.001	0.017	-0.020
-6	-0.004	-0.009	-0.006	0.021	-0.007
-7	0.004	-0.038	-0.005	0.003	-0.003
-8	-0.009	-0.032	-0.004	-0.005	0.016
-9	-0.002	0.019	-0.008	0.045	-0.001
-10	0.004	0.003	0.004	-0.018	-0.013

Table XVI

Average Abnormal Returns		
Day	Credit Ratings Lowered	Credit Ratings Raised
+5	0.008	0.001
+4	-0.002	-0.004
+3	0.003	-0.001
+2	-0.002	-0.005
+1	0.012	-0.002
0	-0.016	0.000
-1	0.017	0.000
-2	0.002	-0.001
-3	0.007	0.000
-4	-0.002	0.000
-5	-0.003	-0.005
-6	-0.001	-0.008
-7	-0.008	0.006
-8	-0.007	-0.001
-9	0.011	0.000
-10	-0.004	-0.005

Table XVII

Average Abnormal Returns and Standard Deviations, Day -110 to -11			
Lowered Credit		Raised Credit	
Average AR, Day -110 to -11	0	Average AR, Day -110 to -11	-.00032
Standard Deviation, Day -110 to -11	.00528	Standard Deviation, Day -110 to -11	.00385

Bibliography

- Barron, M., Clare, A., Thomas, S. (1997, April). The Effect of Bond Rating Changes and New Ratings on UK Stock Returns. *Journal of Business Finance & Accounting*, p. 497-509.
- Bodie, Z., Kane, A., Marcus, A. (1993). *Investments*, 2nd ed. Boston, MA: Richard D. Irwin, Inc.
- Dasgupta, S., Laplante, B., Mamingi, N. (1998). *Capital Market Responses to Environmental Performance in Developing Countries*. Retrieved from: www.worldbank.org/nipr/work_paper/market/MARKETS-htmp4.htm.
- Dichev, I., Piotroski, J. (2001). The Long Run Stock Returns Following Bond Rating Changes. *The Journal of Finance*, 56, (1) 173-202.
- Elayan, F., Hsu, W., Meyer, T. (2003). The Informational Content of Credit Rating Announcements for Share Prices in a Small Market. *Journal of Economics and Finance*, 27 (3), 337-356.
- Followill, R., Martell, T. (1997). Bond Review and Rating Change Announcements: An Examination of Informational Value and Market Efficiency. *Journal of Economics and Finance*, 21 (2), 75-82.
- Glascock, J., Davidson III, W., Henderson Jr., G. (1987). Announcement Effects of Moody's Bond Rating Changes on Equity Returns. *University of Nebraska - Lincoln Quarterly Journal of Business and Economics*, 3.
- Goh, J., Ederington, L. (1993). Is Bond Rating Downgrade Bad News, Good News, or No News for Stockholders? *The Journal of Finance*, 48 (5), 2001-2008
- Griffin P., Sanvicente A. (1982). Common Stock Returns and Rating Changes: A Methodological Comparison. *The Journal of Finance*, 38 (1), 103-119.
- Morgan, S., Reichert, T., Harrison, T. (2002). *From Numbers to Words: Reporting Statistical Results for the Social Sciences*. Boston, MA. Allyn & Bacon.