The Determinants of Rating Announcements Impact on Stock Markets during Crisis Periods: The Case of the 2008 Worldwide Financial Crisis

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Abstract

Identifying the determinants of rating impact on stock markets during crisis periods allows on the one hand, explaining investors' behavior towards rating agencies, and on the other hand expecting their reaction to a rating announcement. This research reviews factors previously studied and adds three new ones: the announcement anticipation, the double rating and the foreign investors' presence in firm' shareholding. We use an event study methodology to determine the short term impact of rating announcements of 207 U.S. firms during the 2008 worldwide financial crisis. Significant reaction is measured by the cumulative abnormal return of the stock price after the rating announcement. Then, we regress the measured cumulative return on several factors related to the rating change and the rated firm.Results show that a bad rating impact on stock markets during crisis period is influenced by the anticipation of the announcement, the downgrade magnitude and firms' sizes. Good rating announcements are conditioned by the initial rating level, the upgrade magnitude and firms' sectors. Reaction to assertions only depends on anticipation and institutional presence.

Keywords: crisis, determinants, event study, rating impact

1. Introduction

Identifying the determinants of rating announcements on financial markets allows on the one hand explaining investors' behaviour towards rating agencies, and on the other hand expecting their reaction to a rating announcement.

Previous researches showed that investors tend to overreact to bad rating announcements during crisis period and to neglect good and neutral ones (Griffin & Sanvicente, 1982; Hand Holthausen & Leftwich, 1992; Boudriga, Azouz, & Mamoghli, 2011). Specifically, they react more intensively to bad and neutral expected announcements. On the contrary, good news have a more important impact when they are unexpected. Otherwise, the determinants of investors' reaction to rating announcements on stock markets have not been exhaustively studied. In fact, previous researches focused only on the influence of few factors on rating impact.

As far as we know, this research is the first one to consider all the determinants that have been studied in previous researches. Moreover, this paper considers three additional factors that could be powerful during crisis period. These new factors are the announcement anticipation, the notation type (double or single rating) and foreign investors' presence in firms' shareholdings.

First, we focus on anticipation factor. We previously found that reaction to rating announcements changes whether they are expected or not (Hand et al., 1992; Purda, 2007; Boudriga & Azouz, 2013). Indeed, difference of reaction between expected and surprise rating is of 1 day for neutral announcement. It becomes of 4 days after bad announcements. As regards good rating news, a significant difference is observed 1 day before the announcement. Investors react more to surprise upgrades than expected ones. Considering the investors' faith loss towards rating agencies, it seems that investors react more intensively to expected announcements that they have well studied than surprise changes.

Second, we consider the influence of double rating on investors' decisions. Investors know that double notation alleviates the conflicts of interests between rating agencies and rated firms. Therefore, double ratings have more impact than single ones (Micu, Remonola, & Wooldridge, 2004).

Finally, we introduce the foreign investors' presence in firms' shareholdings as a potential determinant due to the asymmetry information between local and foreign investors. The latter(s) lack informations as compared to local investors. Consequently, they tend to react intensively to rating news, which causes significant impacts on stock prices.

We use an event study methodology to determine the short term impact of rating announcements of 207 U.S. firms during the 2008 worldwide financial crisis. Significant reaction is measured by the cumulative abnormal return (CAR) of the stock price after the rating announcement. Then, we regress the measured cumulative return on several factors related to the rating change and the rated firm.

Our results show that the impact of bad rating news during the crisis period is influenced by the announcement anticipation, the rating magnitude and firms' size. Good announcements are conditioned by the initial rating level and firms' sector. Reactions to assertions depend only on anticipation criterion.

The remainder of the paper is organized as follows. Section 1 reviews literature on explanatory factors of rating impact. Section 2 develops hypotheses related to rating impact determinants. Section 3 describes the methodology and data employed. Section 4 provides empirical results while section 5 concludes.

2. Literature Review

Existing literature shows ambiguous results related to the determinants of market reaction to rating announcements during stable periods.

Hand et al. (1992) indicate that the impact of rating announcements on bond and stock prices depends on the initial rating level, the change of rating class (speculative/ investment grade), the rating magnitude and the period separating two successive ratings. Schweitzer, Szewczyk and Varma (1992) show that financial and banking securities are more sensible to rating announcements than non financial ones. In fact, financial and bank institutions do not reveal bad news in order to maintain order and stability on markets. Consequently, rating agencies provide investors with bad unknown news that generate strong negative impact on prices. These results corroborate those of Gropp and Richards (2001) and Bonini, Pettinato and Salvi (2009). However, they are in contradiction with those of Sunder (1991) who highlights that rating impact on stock markets is independent of any factor. Ederington and Goh (1993) show that the origin of rating change influences market reaction. Unlike rating changes caused by the deterioration of financial indicators which are rejected by the market, rating changes resulting from the firm leverage increase are well perceived by stock markets. Nayar and Rozeff (1994) corroborate these results. In fact, authors found that rating impact on stock markets is influenced by the initial rating level and the firm level leverage. Dichev and Piotroski (2001) and John, Ravid and Reisel (2005) point out that market reaction to rating announcements is dependent upon these factors and also the firm size and status (holding or subsidiary). Micu et al. (2004) work on the rating impact on CDS prices. They found that double and triple ratings have higher impact than single ones. Also, investors' reactions are tenacious when securities are speculative and belong to small firms. Halek and Eckles (2010) advance that bad news generate stronger reaction than good ones. Reaction depends on downgrade magnitude and institutional investors' presence in firms' shareholdings. Creighton et al. (2007) study the impact of rating announcements on Australian market. They find that ratings impact especially small and low rated firms. Linciano (2008) finds that Italian stock market intensely responds to ratings of financial firms. Avramov, Chordia, Jostova and Philipov (2009) make clear that the determinants of the rating impact on stock prices are firm size, leverage, financial performance, presence of institutional investors on shareholding, rating magnitude and the initial level of rating.

Announcement anticipation, rating type and presence of foreign investors in shareholding, have not yet been considered as determinants of rating impact on stock markets. Hand et al. (1992) and Di Cesare (2006) find that investors react differently to rating announcements whether they are expected or not. Theoretically, surprise announcements have greater effects on stock prices than expected ones. Indeed, they vehicle unknown informations to investors. On the contrary, Purda (2007) highlights the same impact for both rating types. Consequently, the anticipation influence on rating impact deserves to be studied during crisis period.

Considering rating type, Raimbourg (1990) demonstrates that double ratings are more credible than single ones. In fact, investors are aware of interest conflicts between rating agencies and firms. Due to paid fees, rating agencies tend to be complacent in rating firms. Therefore, double ratings allow alleviating these conflicts and having more impact on stock prices than single ones.

Finally, Frankel and Schmukler (1996, 1998a) advance that asymmetry information makes foreign investors more conservative when making their investment decisions. However, refer to Karolyi (2002); foreign presence has no effect on stock prices by cause of the small foreign participation in firms' shareholding.

2.1 Hypotheses

Taking into account the above literature review, we will work in the empirical part of the paper with the following hypotheses.

(1) Investors during crisis period respond more intensively to expected announcements than surprise ones.

(2) Investors care more about speculative than investment grade securities during crisis period.

(3) The impact of rating announcements on stock prices is greater when it changes securities from investment to speculative grade or *vice versa*.

(4) Investors' reaction to rating announcements during crisis period is an increasing function of the rating change magnitude.

(5) Double ratings have stronger effects on stock prices than single ones.

(6) Rating announcements of financial securities have more impact on stock prices than non financial ones.

(7) Investors respond to big firm ratings more than they do to small ones due to potential losses incurred by big firms.

(8) The most indebted firms ratings have greater impact on stock prices than less leveraged ones.

(9) Investors' reaction to rating announcements during crisis period is an increasing function of firm financial performance.

(10) Rating impact on stock price is an increasing function of institutional investors' presence in shareholding.

(11) Rating effect on stock price is an increasing function of foreign investors' presence in shareholding.

3. Data and Methodology

3.1 Data

We collect 207 rating announcements from Moodys and Standard and Poors. The period extends from 16th September to 31st December 2008. It coincides with the beginning of the 2008 worldwide financial crisis. We separate between bad news such as downgrades and revisions to downgrades, good news such as upgrades and revisions to upgrades and assertions or neutral news. Our data sources are the agencies websites and Compustat North America database.

Table 1. Descriptive statistics of the sample

News	Bad	Good	Assertions
Number	141	14	52
%	68.1	6.8	25.1
Total		**207**	

The firms sample contains different sectors: energy, textile, chemical, automobile, metallurgy, food and catering, health, technology, telecommunications, property development, services including transport, advertising and various consumption (leisure, drugstore, and cosmetics) and financial activities such as banks, insurance and investment companies.

Table 2. Businesses' firms of the sample

Businesses / News		Bad	Good	Neural
Industry	Energy (%)	6 (4.3)	2 (14.3)	3 (5.7)
	Textile (%)	5 (3.5)	0 (0)	0 (0)
	Chemistry (%)	1 (0.7)	0 (0)	2 (3.8)
	Automotive (%)	6 (4.3)	0 (0)	1 (1.9)
	Other (%)	9 (6.4)	2 (14.3)	8 (15.5)

Metallurgy (%)		4 *(2.8)*	1 *(7.1)*	1 *(1.9)*
Food and Catering (%)		14 *(9.9)*	0 *(0)*	1 *(1.9)*
Health (%)		8 *(5.7)*	2 *(14.3)*	3 *(5.7)*
Technology and Telecommunications (%)		13 *(9.2)*	1 *(7.1)*	7 *(13.5)*
Real Estate (%)		6 *(4.2)*	0 *(0)*	1 *(1.9)*
Services (Transportation, Advertising) (%)		7 *(5)*	1 *(7.1)*	2 *(3.8)*
Various consumption (Leisure, drugstore, cosmetics) (%)		16 *(11.3)*	2 *(14.3)*	2 *(3.8)*
	Bank (%)	10 *(7)*	2 *(14.3)*	2 *(3.8)*
Finance	Insurance (%)	4 *(2.8)*	0 *(0)*	0 *(0)*
	Investment (%)	32 *(22.9)*	1 *(7.1)*	19 *(36.8)*
Total		**141**	**14**	**52**

Table 3. Descriptive statistics of firms

Thousands$	*Mean*	*Median*	*Maximum*	*Minimum*	*Standard Error*
Total Assets	88813,7	5870,5	2187631	299,6	309454,6
Total liabilities	81640,2	3626,3	2074033	99,8	292758
Long terme debt	17661,2	1152,7	427112	0	59203
Equity	7170,3	1568,2	133176	-56970	19104,7
Net income	58,9	17,8	8915	-15471	1953

3.2 Methodology

First, we use an event study to measure the market reaction to rating news. It consists of calculating stock cumulative abnormal return before and after a rating announcement. The event window extends on 20 days symmetrically set around the day announcement (day 0). Cumulative abnormal returns are calculated by two models: the stock index adjusted model and the market adjusted model.

Moreover, rating announcements are subdivided according to whether they are expected or not. Expected announcements are preceded by a significant cumulative abnormal return on 120 days preceding the day announcement (Di Cesare, 2006).

3.2.1 Construction of Variables

Endogenous variable is the stock cumulative abnormal return (noted car) calculated on 10 days succeeding the announcement. The following explanatory variables are retained:

-    The announcement anticipation (noted ant): a binary variable equal 1 if the announcement is expected, 0 otherwise.

-    The initial level of rating (noted nin): a binary variable equal 1 if the equity is speculative, 0 otherwise.

-    Class change of rating (noted cc1): a binary variable equal 1 if the announcement changes the equity rating class from investment to speculative or *vice versa*, 0 otherwise

-    Rating change magnitude (noted amp): a quantitative variable calculated as the number of grades changed (new rating less old rating).

-    Double notation (noted dn): a binary variable equal 1 if a firm is doubly rated by two agencies within a short space of time (Note 1), 0 otherwise.

-    Firm business sector (noted sa): a binary variable equals 1 if the firm belongs to financial sector : banks, insurance or investment companies, 0 otherwise.

-    Firm size (noted lntaille): a quantitative variable calculated as the natural logarithm of firm's total assets.

-    Firm leverage (noted ne1): a quantitative variable calculated as the ratio of long term debt relative to total assets. To check the robustness of the leverage variable, we replace it in a second time by *ne2* representing the leverage ratio: total debt relative to equity.

-    Financial performance (noted roe): a quantitative variable (return on equity) calculated as the ratio of net income to equity. To test the robustness of the financial performance, we replace it in a second time by *pbv* (price book value).

-     Institutional investors' presence (noted nbre_ii): a quantitative variable calculated as the proportion of shares held by institutional investors. We replace it in a second time by *nbre_ii* computed as the proportion in number of institutional investors.

-     Foreign investors' presence (noted nbre_ie): a quantitative variable calculated as the proportion of shares held by foreign investors. We replace it in a second time by *nbre_ie* computed as the proportion in number of foreign investors.

3.2.2 Explanatory Models

Bad news: we use least ordinary squares regression to construct a linear model. Structural variables concern rating announcements. Control variables (noted fc) involve firms' characteristics (business, size, leverage, financial performance, institutional investors' presence, foreign investors' presence).

$$CAR_j = \propto_0 + \beta_1 * ant + \beta_2 * nin + \beta_3 * cc_{1(2)} + \beta_4 * amp + \beta_5 * dn + \beta_6 * fc + \varepsilon$$

We construct the variables correlation matrix and use the Variance Inflation Factors (*VIF*) to detect whether collinearity exists between variables and heteroscedasticity between errors.

Good news: As regard the little size of good news sample, we just establish the correlation matrix and perform the Chi square independence test between the cumulative abnormal return and qualitative variables of ratings and firms. Otherwise, we calculate the Spearman's rank correlation coefficient to measure dependence between endogenous variable and quantitative explanatory variables.

Neutral news or assertions: we use least ordinary squares regression to construct a linear model. We omit some structural variables related to rating due to the neutral nature of assertions. These variables are: the magnitude (assertions have no magnitude) and the rating class change (assertion maintains security in the same class).

$$CAR_j = \propto_0 + \beta_1 * ant + \beta_2 * nin + \beta_3 * dn + \beta_4 * fc + \varepsilon$$

4. Empirical Results

4.1 Bad News

The Variance Inflation Factors test invalids the presence of multicollinearity between independent variables. Also, the correlation matrix (Note 2) allows eliminating the existence of significant correlations between these variables.

Table 4. VIF test results: explanatory variables of market reaction to bad rating news during crisis period

Variables	ant	nin	cc1	amp	dn	sa	pbv	ii
VIF	1.43	1.90	1.14	1.23	1.19	1.99	1.27	1.51
Variables	nbre_ii	ie	nbre_ie	ne1	ne2	lntaille	roe	*MeanVIF*
VIF	1.69	2.23	2.54	1.29	1.11	2.07	1.29	1.59

Note. ant: anticipation criterion, nin:rating initial level (speculative or investment grade); cc (1): rating change class (from investment grade to speculative); amp: change amplitude; dn: double rating; sa: business firm (financial and banking or not); pbv: price book value; ii: institutional investors' presence in shareholding in terms of monetary values; nbre_ii: institutional investors' presence in shareholding in terms of shareholders number; ie: foreign investors' presence in shareholding in terms of monetary values; nbre_ie: foreign investors' presence in shareholding in terms of shareholders number; ne1: total debt / total assets; ne2: total debt / equity; lntaille: natural logarithm of total assets; roe: return on equity (Net income /equity).

In model I, we first regress the cumulative abnormal return on rating factors. In model II, we add the firm sector and size as control variables. We find that anticipation, magnitude and firm size remain significant. Also, results are the same when introducing other control factors, such as pbv (model III), roe (model IV), ne1 (model V) and ne2 (model VI), ii (model VII), nbre_ii (model VIII), ie (model IX), and nbre_ie (model X), and when replacing the endogenous variable CAR_1 by CAR_2 (Note3).

Table 5. Correlation matrix of endogenous and exogenous variables relative to bad rating news during crisis period

	car1	car2	ant	nin	cc1	cc2	amp	dn	Sa	pbv	ii	nbre_ii	ie	nbre-ie	ne1	ne2	lntaille	roe
car1	1	0.07	-0.07	0.07	-0.03	0.09	-0.08	0.08	0.12	-0.05	-0.32	0.08	-0.06	0.33	-0.02	0.09	0.27	0.16
car2		1	-0.15	-0.04	-0.09	-0.06	0.03	-0.01	0.19	-0.12	-0.03	0.02	-0.10	0.05	-0.07	0.04	0.22	0.12
Ant			1	0.20	0.00	0.01	0.13	0.01	-0.28	-0.13	-0.05	0.08	0.26	0.07	0.15	-0.12	-0.14	-0.24
Nin				1	-0.13	0.13	0.25	0.06	-0.45	-0.22	-0.20	-0.28	-0.12	-0.19	0.31	-0.09	-0.49	-0.22
cc1					1	0.33	0.16	0.07	0.02	-0.10	0.08	0.01	0.03	0.00	0.09	0.06	-0.03	0.03
cc2						1	0.21	-0.02	0.08	-0.10	-0.04	0.07	0.09	0.12	0.10	0.15	0.05	-0.02
Amp							1	-0.19	-0.13	0.01	0.06	-0.07	-0.01	-0.06	0.21	-0.00	-0.17	-0.00
Dn								1	-0.10	-0.11	-0.14	0.04	0.10	0.02	0.13	-0.08	0.05	0.08
Sa									1	-0.15	-0.01	0.16	0.05	0.18	-0.24	0.24	0.58	0.14
Pbv										1	0.14	0.11	-0.07	-0.07	0.03	-0.02	0.00	0.07
ii											1	0.40	-0.09	-0.13	-0.07	-0.07	0.06	0.17
nbre_ii												1	0.22	0.35	-0.03	0.02	0.33	0.06
ie													1	0.68	-0.02	0.00	0.13	0.12
nbre-ie														1	-0.17	0.05	0.33	0.17
ne1															1	-0.10	-0.24	-0.20
ne2																1	0.15	-0.06
lntaille																	1	0.26
roe																		1

Note. CAR (1 2) cumulative abnormal return 4 days following the announcement, relative to stock adjusted model (1) or market adjusted model (2); ant: anticipation criterion, nin: rating initial level (speculative or investment grade); cc (1): rating change class (from investment grade to speculative); amp: change amplitude; dn: double rating; sa: business firm (financial and banking or not); pbv: price book value; ii: institutional investors' presence in shareholding in terms of monetary values; nbre_ii: institutional investors' presence in shareholding in terms of shareholders number; ie: foreign investors' presence in shareholding in terms of monetary values; nbre_ie: foreign investors' presence in shareholding in terms of shareholders number; ne1: total debt / total assets; ne2: total debt / equity; lntaille: natural logarithm of total assets; roe: return on equity (Net income /equity).

Table 6. Bad news determinants during crisis period: results of CAR1 regression on rating characteristics with introduction of firm business and firm size

	Model I		Model II	
Variables	*Coef.*	*P-Val*	*Coef.*	*P-Val*
ant	-0,152	0,030**	-0,142	0,046**
nin	-0,064	0,369	0,028	0,729
cc1	-0,171	0,176	-0,140	0,265
amp	0,045	0,223	0,047	0,197
dn	-0,004	0,945	-0,010	0,875
sa			0,045	0,621
lntaille			0,037	0,092*
Const.	-0,081	0,240	-0,497	0,023**
Adjusted R^2	0,02		0,05	
Nb.Observations	139		139	

Note. ***, ** and * denote significance at 1%, 5% and 10%.

Table 7. Bad news determinants during crisis period: results of CAR1 regression on rating characteristics with introduction of financial performance and indebtedness

	Model III		Model IV		Model V		Model VI	
Variables	*Coef.*	*P-Val*	*Coef.*	*P-Val*	*Coef.*	*P-Val*	*Coef.*	*P-Val*
ant	-0,154	0,034**	-0,141	0,052*	-0,139	0,053*	-0,148	0,038**
nin	0,003	0,971	0,028	0,726	0,040	0,625	0,032	0,691
cc1	-0,157	0,215	-0,140	0,267	-0,131	0,298	-0,129	0,304
amp	0,050	0,172	0,047	0,202	0,052	0,164	0,048	0,194
dn	-0,172	0,800	-0,010	0,874	-0,002	0,970	-0,015	0,814

sa	0,018	0,845	0,045	0,619	0,040	0,655	0,061	0,502
lntaille	0,038	0,088*	0,037	0,098*	0,037	0,010*	0,039	0,081*
pbv	-0,023	0,364						
roe			0,005	0,944				
ne1					-0,127	0,409		
ne2							-0,002	0,252
Const.	-0,426	0,065*	-0,495	0,024**	-0,466	0,035**	-0,505	0,020*
Adjusted R^2	0,05		0,04		0,04		0,05	
Nb.Observations	139		139		139		139	

Note. ***, ** and * denote significance at 1%, 5% and 10%.

Table 8. Bad news determinants during crisis period: results of CAR1 regression on rating characteristics with introduction of shareholding structure (institutional and foreign investors' presence)

	Model VII		Model VIII		Model IX		Model X	
Variables	*Coef.*	*P-Val*	*Coef.*	*P-Val*	*Coef.*	*P-Val*	*Coef.*	*P-Val*
ant	-0,144	0,044**	-0,135	0,061*	-0,116	0,120	-0,141	0,051*
nin	0,016	0,839	0,017	0,829	0,015	0,845	0,027	0,737
ccl	-0,135	0,281	-0,140	0,265	-0,140	0,264	-0,140	0,267
amp	0,049	0,182	0,048	0,194	0,048	0,186	0,047	0,199
dn	-0,016	0,813	-0,008	0,899	-0,001	0,987	-0,010	0,877
sa	0,037	0,680	0,042	0,645	0,049	0,584	0,045	0,621
lntaille	0,038	0,089*	0,041	0,072*	0,039	0,082*	0,038	0,095*
ii	-0,099	0,523						
nbre_ii			-0,290	0,474				
ie					-0,181	0,231		
nbre_ie							-0,028	0,875
Const.	-0,407	0,116	-0,263	0,500	-0,488	0,025**	-0,498	0,023**
Adjusted R^2	0,04		0,04		0,05		0,04	
Nb.Observations	139		139		139		139	

Note.***, ** and * denote significance at 1%, 5% and 10%.

Table 9. Bad news determinants during crisis period: results of CAR2 regression on rating characteristics with introduction of firm business and firm size

	Model I		Model II	
Variables	*Coef.*	*P-Val*	*Coef.*	*P-Val*
ant	-0,130	0,088*	-0,111	0,151
nin	-0,037	0,633	0,074	0,400
ccl	-0,165	0,229	-0,132	0,332
amp	0,036	0,372	0,038	0,334
dn	0,013	0,851	0,011	0,880
sa			0,092	0,347
lntaille			0,038	0,116
Const.	-0,042	0,570	-0,495	0,036**
Adjusted R^2	0,00		0,03	
Nb.Observations	139		139	

Note.***, ** and * denote significance at 1%, 5% and 10%.

Table 10. Bad news determinants during crisis period: results of CAR2 regression on rating characteristics with introduction of financial performance and indebtedness

Variables	Model III		Model IV		Model V		Model VI	
	Coef.	P-Val	Coef.	P-Val	Coef.	P-Val	Coef.	P-Val
ant	-0,132	0,093*	-0,110	0,162	-0,109	0,159	-0,119	0,124
nin	0,030	0,741	0,074	0,401	0,080	0,374	0,079	0,365
ccl	-0,163	0,234	-0,132	0,333	-0,128	0,350	-0,118	0,386
amp	0,044	0,272	0,038	0,340	0,040	0,315	0,039	0,327
dn	-0,000	0,994	0,010	0,882	0,014	0,842	0,004	0,956
sa	0,046	0,651	0,093	0,348	0,090	0,360	0,115	0,249
lntaille	0,039	0,107	0,038	0,123	0,038	0,122	0,040	0,010*
pbv	-0,040	0,142						
roe			0,005	0,949				
ne1					-0,060	0,720		
ne2							-0,002	0,162
Const.	-0,371	0,136	-0,493	0,039**	-0,480	0,046**	-0,505	0,032**
Adjusted R^2	0,04		0,02		0,02		0,04	
Nb.Observations	139		139		139		139	

Note.***, ** and * denote significance at 1%, 5% and 10%.

Table 11. Bad news determinants during crisis period: results of CAR2 regression on rating characteristics with introduction of shareholding structure (institutional and foreign investors' presence)

Variables	Model VII		Model VIII		Model IX		Model X	
	Coef.	P-Val	Coef.	P-Val	Coef.	P-Val	Coef.	P-Val
ant	-0,112	0,150	-0,109	0,161	-0,086	0,287	-0,112	0,152
nin	0,069	0,441	0,072	0,423	0,062	0,480	0,074	0,400
ccl	-0,130	0,340	-0,132	0,333	-0,132	0,331	-0,132	0,333
amp	0,039	0,327	0,038	0,334	0,039	0,320	0,038	0,335
dn	0,008	0,905	0,011	0,876	0,020	0,786	0,010	0,882
sa	0,090	0,368	0,092	0,353	0,097	0,325	0,092	0,350
lntaille	0,038	0,116	0,039	0,120	0,039	0,106	0,037	0,132
ii	-0,040	0,813						
nbre_ii			-0,059	0,893				
ie					-0,171	0,298		
nbre_ie							0,016	0,932
Const.	-0,458	0,103	-0,447	0,294	-0,486	0,040**	-0,494	0,037**
Adjusted R^2	0,02		0,02		0,03		0,02	
Nb.Observations	139		139		139		139	

Note.***, ** and * denote significance at 1%, 5% and 10%.

With respect to doubly rated firms, we firstly focus exclusively on first bad announcements from one agency. Then, we consider only the second bad announcements following these first ones.

Table 12. Determinants of first bad announcements during crisis period: Results of CAR1 regression on rating characteristics with introduction of firm business and firm size

Variables	Modèle I		Modèle II	
	Coef.	P-Val	Coef.	P-Val
ant	0,078	0,019**	-0,162	0,034**
nin	-0,080	0,298	0,030	0,714
ccl	-0,147	0,276	-0,124	0,348
amp	0,004	0,919	0,008	0,831
dn	0,096	0,189	0,086	0,239
sa			0,071	0,461
lntaille			0,048	0,044**

Const.	-0,133	0,075*	-0,665	0,004***
Adjusted R2	0,05		0,10	
Nb.Observations	117		117	

Note. ***, ** and * denote significance at 1%, 5% and 10%.

Table 13. Determinants of first bad announcements during crisis period: results of CAR1 regression on rating characteristics with introduction of financial performance and indebtedness

	Modèle III		Modèle IV		Modèle V		Modèle VI	
Variables	*Coef.*	*P-Val*	*Coef.*	*P-Val*	*Coef.*	*P-Val*	*Coef.*	*P-Val*
ant	-0,176	0,023**	-0,168	0,032**	-0,157	0,041**	-0,167	0,029**
nin	0,005	0,953	0,027	0,750	0,040	0,634	0,034	0,680
ccl	-0,143	0,285	-0,124	0,351	-0,111	0,405	-0,113	0,395
amp	0,013	0,730	0,009	0,816	0,012	0,754	0,008	0,821
dn	0,078	0,283	0,087	0,232	0,092	0,209	0,080	0,272
sa	0,042	0,675	0,068	0,478	0,064	0,502	0,086	0,376
lntaille	0,049	0,042**	0,050	0,042**	0,048	0,048**	0,049	0,040**
pbv	-0,029	0,311						
roe			-0,032	0,692				
ne1					-0,108	0,492		
ne2							-0,002	0,291
Const.	-0,583	0,016**	-0,676	0,004***	-0,640	0,006***	-0,672	0,003***
Adjusted R^2	0,10		0,09		0,09		0,10	
Nb.Observations	117		117		117		117	

Note. ***, ** and * denote significance at 1%, 5% and 10%.

Table 14. Determinants of first bad announcements during crisis period: results of CAR1 regression on rating characteristics with introduction of shareholding structure (institutional and foreign investors')

	Modèle VII		Modèle VIII		Modèle IX		Modèle X	
Variables	*Coef.*	*P-Val*	*Coef.*	*P-Val*	*Coef.*	*P-Val*	*Coef.*	*P-Val*
ant	-0,166	0,030**	-0,150	0,051*	-0,131	0,093*	-0,159	0,037**
nin	0,006	0,942	0,011	0,896	0,017	0,836	0,032	0,703
ccl	-0,109	0,408	-0,124	0,345	-0,126	0,337	-0,133	0,314
amp	0,011	0,771	0,008	0,837	0,007	0,853	0,004	0,914
dn	0,079	0,277	0,094	0,197	0,098	0,177	0,088	0,227
sa	0,054	0,576	0,065	0,495	0,076	0,423	0,072	0,453
lntaille	0,049	0,041**	0,056	0,023**	0,051	0,032**	0,056	0,027**
ii	-0,184	0,232						
nbre_ii			-0,544	0,171				
ie					-0,244	0,109		
nbre_ie							-0,200	0,300
Const,	-0,499	0,061*	-0,236	0,538	-0,663	0,004***	-0,687	0,003***
Adjusted R^2	0,10		0,10		0,11		0,10	
Nb.Observations	117		117		117		117	

Note. ***, ** and * denote significance at 1%, 5% and 10%.

Table 15. Determinants of second bad announcements during crisis period: results of CAR1 regression on rating characteristics with introduction of firm business and firm size

	Modèle I		Modèle II	
Variables	*Coef.*	*P-Val*	*Coef.*	*P-Val*
ant	-0,113	0,140	-0,109	0,168
nin	-0,077	0,307	-0,015	0,859
ccl	-0,203	0,124	-0,186	0,160
amp	0,069	0,083*	0,069	0,084*

dn	-0,054	0,468	-0,060	0,433
sa			0,031	0,748
lntaille			0,026	0,281
Const.	-0,053	0,507	-0,342	0,150
Adjusted R^2	0,03		0,03	
Nb.Observations	117		117	

Note. ***, ** and * denote significance at 1%, 5% and 10%.

Table 16. Determinants of first bad announcements during crisis period: results of CAR1 regression on rating characteristics with introduction of financial performance and indebtedness

	Modèle III		Modèle IV		Modèle V		Modèle VI	
Variables	Coef.	P-Val	Coef.	P-Val	Coef.	P-Val	Coef.	P-Val
ant	-0,122	0,130	-0,099	0,222	-0,108	0,176	-0,115	0,149
nin	-0,040	0,656	-0,009	0,910	-0,012	0,887	-0,011	0,898
cc1	-0,205	0,127	-0,186	0,162	-0,184	0,169	-0,175	0,186
amp	0,073	0,071*	0,067	0,098*	0,070	0,084*	0,069	0,083*
dn	-0,066	0,389	-0,063	0,408	-0,057	0,459	-0,065	0,392
sa	0,004	0,962	0,034	0,724	0,029	0,761	0,048	0,622
lntaille	0,026	0,280	0,024	0,324	0,026	0,288	0,028	0,259
pbv	-0,027	0,350						
roe			0,048	0,565				
ne1					-0,028	0,860		
ne2							-0,002	0,253
Const,	-0,260	0,303	-0,324	0,178	-0,335	0,165	-0,350	0,140
Adjusted R^2	0,03		0,02		0,02		0,03	
Nb.Observations	117		117		117		117	

Note. ***, ** and * denote significance at 1%, 5% and 10%.

Table 17. Determinants of first bad announcements during crisis period: results of CAR1 regression on rating characteristics with introduction of shareholding structure (institutional and foreign investors' presence)

	Modèle VII		Modèle VIII		Modèle IX		Modèle X	
Variables	Coef.	P-Val	Coef.	P-Val	Coef.	P-Val	Coef.	P-Val
ant	-0,112	0,161	-0,106	0,187	-0,099	0,230	-0,111	0,163
nin	-0,026	0,765	-0,020	0,816	-0,019	0,820	-0,015	0,854
cc1	-0,182	0,171	-0,186	0,163	-0,185	0,165	-0,190	0,153
amp	0,071	0,078*	0,069	0,085*	0,068	0,089*	0,070	0,080*
dn	-0,062	0,417	-0,057	0,453	-0,056	0,462	-0,061	0,426
sa	0,024	0,807	0,030	0,760	0,033	0,735	0,031	0,745
lntaille	0,027	0,278	0,029	0,260	0,027	0,268	0,020	0,436
ii	-0,092	0,559						
nbre_ii			-0,148	0,717				
ie					-0,077	0,624		
nbre_ie							0,161	0,413
Const.	-0,259	0,348	-0,225	0,574	-0,340	0,154	-0,319	0,183
Adjusted R2	0,02		0,02		0,02		0,03	
Nb.Observations	117		117		117		117	

Note. ***, ** and * denote significance at 1%, 5% and 10%.

Results reveal that during crisis period expected bad rating announcements of big firms and with considerable magnitude have great impact on stock prices. Conversely, market reaction to downgrades is independent of firm financial performance, indebtedness level and shareholding structure. These findings point out once again the crisis faith towards rating agencies. First, expected announcements have stronger impact on stock prices than surprise ones. Investors respond to well thought bad announcements on what their investment decisions were

based more than they do to sudden announcements that only source is rating agencies. Thus, expected rating announcements do not guide investors on investment decisions but seem to strengthen their positions (Norden & Weber, 2004; Di Cesare, 2006). Second, magnitude is significant for repeated downgrades. This result denotes that investors are more sensitive to important successive downgrades during crisis period than slight ones. In fact, downgrade magnitude is a warning sign of firm financial health. Therefore, it seems logical that investors intensively react to downgrades with important magnitudes. The latter determinant of downgrades' impact on stock prices is the firm size. Downgrades have great impact on stock prices of big firms. Indeed, their financial difficulties lead to accentuate the financial market turmoil and to cause huge losses for investors.

4.2 Good News

The correlation matrix (Note 4) combined with independence Chi square test and Spearman correlation coefficient reveal that during crisis the factors explaining good rating announcements effects on stock prices are the initial rating level, the magnitude, the double rating and the firm sector.

Table 18. Correlation matrix of endogenous and exogenous variables relative to good rating news during crisis period

	car1	car2	ant	nin	cc1	cc2	amp	dn	Sa	pbv	ii	nbre_ii	ie	nbre-ie	ne1	ne2	lntaille	roe
car1	1	0.948	0.154	-0.011	0.095	0.066	0.655	0.381	0.560	-0.429	-0.715	-0.734	-0.006	-0.050	0.557	0.482	0.482	0.309
car2		1	0.315	0.043	0.242	0.085	0.834	0.321	0.589	-0.397	-0.770	-0.887	-0.049	-0.154	0.073	0.585	0.673	0.476
Ant			1	0.025	0.189	0.244	0.318	0.304	-0.026	0.350	-0.250	-0.360	-0.207	-0.317	-0.177	0.047	0.384	0.671
Nin				1	0.330	0.337	0.082	0.284	-0.152	0.261	0.064	-0.153	-0.531	0.079	-0.419	0.158	-0.246	0.237
cc1					1	0.471	0.477	-0.194	0.055	-0.102	-0.496	-0.450	-0.176	-0.293	-0.232	0.029	0.242	0.393
cc2						1	0.116	0.122	-0.337	0.180	-0.387	-0.264	-0.372	-0.556	0.295	-0.216	-0.205	0.473
Amp							1	0.064	0.553	-0.260	-0.791	-0.957	-0.043	-0.256	-0.096	0.523	0.778	0.579
Dn								1	-0.284	0.290	0.264	-0.146	-0.679	0.003	0.222	0.150	-0.172	0.122
Sa									1	-0.387	-0.282	-0.459	0.531	0.358	-0.255	0.805	0.730	0.096
Pbv										1	0.249	0.265	-0.194	-0.110	-0.095	-0.200	-0.339	0.235
ii											1	0.832	0.185	0.402	-0.418	-0.316	-0.436	-0.381
nbre_ii												1	0.119	0.384	-0.036	-0.449	-0.684	-0.619
ie													1	-0.007	-0.157	-0.029	0.343	-0.049
nbre-ie														1	-0.255	0.568	-0.099	-0.506
ne1															1	-0.182	-0.355	-0.276
ne2																1	0.525	0.028
lntaille																	1	0.494
roe																		1

Note. CAR (1 2) cumulative abnormal return one day before the announcement, relative to stock adjusted model (1) or market adjusted model (2); ant: anticipation criterion, nin: rating initial level (speculative or investment grade); cc (1): rating change class (from speculative to investment grade); amp: change amplitude; dn: double rating; sa: business firm (financial and banking or not); pbv: price book value; ii: institutional investors' presence in shareholding in terms of monetary values; nbre_ii: institutional investors' presence in terms of shareholders number; ie: foreign investors' presence in shareholding in terms of monetary values; nbre_ie: foreign investors' presence in shareholding in terms of shareholders number; ne1: total debt / total assets; ne2: total debt / equity; lntaille: natural logarithm of total assets; roe: return on equity (Net income /equity).

Table 19. Results of Chi square test and Spearman coefficient

	Khi-carré (CAR$_1$)	p-value	Khi-carré (CAR$_2$)	p-value
ant	1,143	0,285	1,143	0,285
nin	4,571**	0,033	4,571**	0,033
cc1	2,571	0,109	2,571	0,109
cc2	1,143	0,285	1,143	0,285
amp	13***	0,002	13***	0,002
dn	7,143***	0,008	7,143***	0,008
sa	4,571**	0,033	4,571**	0,033
Variable	ρs (CAR$_1$)	p-value	ρs (CAR$_2$)	p-value
lntaille	-0,054	0,852	0,002	0,994

pbv	-0,389	0,169	-0,353	0,214
roe	0,068	0,817	0,112	0,702
ne1	0,389	0,169	0,345	0,226
ne2	0,380	0,179	0,287	0,318
ii	-0,279	0,333	-0,371	0,191
nbre_ii	-0,309	0,280	-0,336	0,239
ie	-0,050	0,863	0,024	0,934
nbre_ie	-0,264	0,361	-0,235	0,417

Note. ***, ** and * denote significance at 1%, 5% and 10%.

ant: anticipation criterion, nin: rating initial level (speculative or investment grade); sa: business firm (financial and banking or not); pbv: price book value; ii : institutional investors' presence in shareholding in terms of monetary values; nbre_ii : institutional investors' presence in shareholding in terms of shareholders number; ie: foreign investors' presence in shareholding in terms of monetary values; nbre_ie: foreign investors' presence in shareholding in terms of shareholders number; ne1: total debt / total assets; ne2: total debt / equity; lntaille: natural logarithm of total assets; roe: return on equity (Net income /equity).

First, it seems that investors take into account upgrades of speculative equities more than they do of investment grade ones (Hand et al., 1992; Jorion et Zangh, 2007). In the former case, the probability of default is very important and highly likely. Furthermore, the significance of double rating factor corroborates the theoretical finding of Raimbourg (1990). Double rating permits to alleviate interest conflicts between firms and rating agencies. These could perhaps be complacent in rating firms due to paid fees. That's why; multiple ratings allow thwarting this problem. This finding joins those of Hand et al. (1992) and highlights once again the important effect of double or multiple notations on investors. Otherwise, the upgrade magnitude indicates the improvement of firm's repayment ability, and thus the firm's financial soundness. Therefore, big upgrades have more impact on stock prices than small ones. Finally, as regards firm's characteristics, it seems that only firm sector and institutional presence in shareholding explain market reaction to upgrades during crisis period. Indeed, financial securities upgrades have higher repercussion on stock prices than non-financial ones. This can be explained by the banking and financial origin of 2008 crisis. Also, the correlation matrix reveals significant relation between institutional presence in shareholding and upgrades' impact on stock prices. This is explained by investment constraints imposed on institutional investors that are required to sell speculative securities and to buy investment grade ones. Consequently, they react to upgrades and generate a significant increase on stock prices (Halek & Eckles, 2010).

4.3 Neutral News or Assertions

The Variance Inflation Factors allows to invalid presence of multicollinearity between independent variables. Besides, the correlation matrix (Note 5) eliminates presence of significant variables correlations.

Table 20. VIF test results: explanatory variables of market reaction to neutral rating news during crisis period

Variables	ant	nin	dn	sa	pbv	ii	nbre_ii	ie	nbre_ie	ne1	ne2	lntaille	roe	**Mean VIF**
VIF	1.26	1.96	1.36	2.13	1.22	1.75	1.85	2.06	2.39	1.97	1.84	2.74	1.09	1.82

Note. ant: anticipation criterion, nin: rating initial level (speculative or investment grade); sa: business firm (financial and banking or not); pbv: price book value; ii : institutional investors' presence in shareholding in terms of monetary values; nbre_ii : institutional investors' presence in shareholding in terms of shareholders number; ie: foreign investors' presence in shareholding in terms of monetary values; nbre_ie: foreign investors' presence in shareholding in terms of shareholders number; ne1: total debt / total assets; ne2: total debt / equity; lntaille: natural logarithm of total assets; roe: return on equity (Net income /equity).

In model I, we regress the cumulative abnormal return CAR_1 on structural variables, such as anticipation, initial level of rating and double notation. After, we gradually introduce control variables, such as business and size firm (Model II), financial performance (Models III and IV), indebtedness (Models V and VI), and shareholding structure: institutional investors (Models VII and VIII) and foreign investors (Models IX and X).

Table 21. Correlation matrix of endogenous and exogenous variables relative to neutral rating news during crisis period

	car1	car2	ant	nin	dn	Sa	pbv	ii	nbre_ii	ie	nbre-ie	ne1	ne2	lntaille	roe
car1	1	0.946	-0.481	0.036	-0.100	0.120	0.165	0.251	0.066	0.021	0.081	0.009	0.031	0.011	0.053
car2		1	-0.320	0.062	-0.085	0.127	0.166	0.302	0.111	0.076	0.128	0.041	0.104	0.052	-0.023
Ant			1	0.161	0.068	-0.294	-0.077	-0.078	-0.014	-0.056	-0.033	0.202	-0.099	-0.234	-0.125
Nin				1	0.304	-0.417	-0.016	-0.086	-0.239	-0.071	-0.066	0.447	-0.151	-0.515	0.098
Dn					1	-0.293	-0.016	0.014	0.010	0.221	0.168	0.180	-0.005	-0.001	-0.061
Sa						1	-0.199	-0.050	0.178	0.197	0.231	-0.436	0.414	0.521	-0.078
Pbv							1	0.038	-0.011	-0.027	-0.096	0.224	0.051	-0.137	-0.099
ii								1	0.558	0.156	0.016	0.144	0.052	0.135	-0.116
nbre_ii									1	0.144	0.244	-0.016	0.142	0.358	-0.095
ie										1	0.658	-0.295	0.115	0.260	-0.031
nbre-ie											1	-0.357	0.235	0.403	-0.047
ne1												1	0.040	-0.314	0.069
ne2													1	0.549	-0.103
lntaille														1	-0.086
roe															1

Note. CAR (1 2) cumulative abnormal return one day before the announcement, relative to stock adjusted model (1) or market adjusted model (2); ant: anticipation criterion, nin: rating initial level (speculative or investment grade); dn: double rating; sa: business firm (financial and banking or not); pbv: price book value; ii: institutional investors' presence in shareholding in terms of monetary values; nbre_ii: institutional investors' presence in shareholding in terms of shareholders number; ie: foreign investors' presence in shareholding in terms of monetary values; nbre_ie: foreign investors' presence in shareholding in terms of shareholders number; ne1: total debt / total assets; ne2: total debt / equity; lntaille: natural logarithm of total assets; roe: return on equity (Net income /equity).

Table 22. Neutral news determinants during crisis period: results of CAR1 regression on rating characteristics with introduction of firm business and firm size

	Model I		Model II	
Variables	*Coef.*	*P-Val*	*Coef.*	*P-Val*
ant	-0.269	0.000***	-0.270	0.000***
nin	0.758	0.319	0.066	0.450
dn	-0.066	0.528	-0.058	0.615
sa			0.134	0.869
lntaille			-0.005	0.718
Const.	0.070	0.451	0.114	0.600
Adjusted R^2	0.2571		0.2586	
Nb.Observations	52		52	

Note. ***, ** and * denote significance at 1%, 5% and 10%.

Table 23. Neutral news determinants during crisis period: results of CAR1 regression on rating characteristics with introduction of financial performance and indebtedness

	Model III		Model IV		Model V		Model VI	
Variables	*Coef.*	*P-Val*	*Coef.*	*P-Val*	*Coef.*	*P-Val*	*Coef.*	*P-Val*
Ant	-0.259	0.001***	-0.271	0.001***	-0.273	0.000***	-0.271	0.001***
Nin	0.073	0.403	0.066	0.413	0.051	0.521	0.062	0.451
dn	-0.054	0.633	-0.057	0.500	-0.057	0.613	-0.058	0.498
Sa	0.030	0.717	0.012	0.877	0.026	0.771	0.009	0.908
Lntaille	-0.004	0.793	-0.005	0.760	-0.005	0.718	-0.007	0.727
Pbv	0.020	0.220						
Roe			-0.007	0.884				
ne1					0.117	0.620		
ne2							0.013	0.854
Const.	0.042	0.855	0.116	0.520	0.088	0.719	0.127	0.511

Adjusted R^2	0.2747	0.2589	0.2644	0.1604
Nb.Observations	52	52	52	52

Note. ***, ** and * denote significance at 1%, 5% and 10%.

Table 24. Neutral news determinants during crisis period: results of CAR1 regression on rating characteristics with introduction of shareholding structure (institutional and foreign investors' presence)

	Model VII		Model VIII		Model IX		Model X	
Variables	*Coef.*	*P-Val*	*Coef.*	*P-Val*	*Coef.*	*P-Val*	*Coef.*	*P-Val*
ant	-0.259	0.000***	-0.275	0.000***	-0.270	0.001***	-0.362	0.000***
nin	0.072	0.434	0.071	0.379	0.065	0.417	0.114	0.179
dn	-0.054	0.633	-0.058	0.489	-0.064	0.467	-0.072	0.413
sa	0.038	0.640	0.013	0.867	0.009	0.911	-0.104	0.232
lntaille	-0.010	0.563	-0.010	0.604	-0.006	0.740	0.003	0.870
ii	0.218	0.058*						
nbre_ii			0.214	0.386				
ie					0.059	0.784		
nbre_ie							0.161	0.432
Const.	-0.022	0.923	-0.037	0.881	0.065	0.726	0.121	0.505
Adjusted R^2	0.3157		0.1738		0.1611		0.2812	
Nb.Observations	52		52		52		52	

Note. ***, ** and * denote significance at 1%, 5% and 10%.

For results' robustness, we get back on regressions by considering CAR$_2$ as the endogenous variable. We find same results.

Table 25. Neutral news determinants during crisis period: results of CAR2 regression on rating characteristics with introduction of firm business and firm size

	Model I		Modele II	
Variables	*Coef.*	*P-Val*	*Coef.*	*P-Val*
ant	-0.196	0.012**	-0.183	0.034**
nin	0.081	0.365	0.105	0.336
dn	-0.068	0.562	-0.067	0.611
sa			0.033	0.698
lntaille			0.005	0.767
Const.	0.056	0.590	-0.024	0.922
Adjusted R^2	0.1265		0.2453	
Nb.Observations	52		52	

Note. ***, ** and * denote significance at 1%, 5% and 10%.

Table 26. Neutral news determinants during crisis period: results of CAR2 regression on rating characteristics with introduction of financial performance and indebtedness

	Model III		Model IV		Model V		Model VI	
Variables	*Coef.*	*P-Val*	*Coef.*	*P-Val*	*Coef.*	*P-Val*	*Coef.*	*P-Val*
ant	-0.168	0.053**	-0.190	0.032**	-0.188	0.034**	-0.186	0.033**
nin	0.115	0.220	0.107	0.258	0.086	0.391	0.096	0.325
dn	-0.062	0.528	-0.065	0.512	-0.066	0.607	-0.066	0.504
sa	0.056	0.563	0.031	0.749	0.051	0.618	0.023	0.816
lntaille	0.007	0.727	0.005	0.818	0.005	0.787	0.000	0.989
pbv	0.029	0.238						
roe			-0.029	0.627				
ne1					0.154	0.617		
ne2							0.003	0.648

Const.	-0.124	0.579	-0.016	0.938	-0.058	0.837	0.013	0.952
Adjusted R^2	0.0471		0.0220		0.1411		0.0214	
Nb.Observations	52		52		52		52	

Note. ***, ** and * denote significance at 1%, 5% and 10%.

Table 27. Bad news determinants during crisis period: results of CAR2 regression on rating characteristics with introduction of shareholding structure (institutional and foreign investors' presence)

	Model VII		Model VIII		Model IX		Model X	
Variables	*Coef.*	*P-Val*	*Coef.*	*P-Val*	*Coef.*	*P-Val*	*Coef.*	*P-Val*
ant	-0.169	0.024**	-0.190	0.029**	-0.185	0.034**	-0.190	0.029**
nin	0.114	0.327	0.112	0.236	0.105	0.268	0.093	0.388
dn	-0.062	0.630	-0.067	0.493	-0.081	0.428	-0.082	0.549
sa	0.068	0.433	0.034	0.725	0.024	0.807	0.022	0.807
lntaille	-0.001	0.944	-0.000	0.996	0.004	0.857	-0.001	0.934
ii	0.296	0.031**						
nbre_ii			0.278	0.335				
ie					0.139	0.581		
nbre_ie							0.217	0.350
Const.	-0.209	0.427	-0.221	0.448	0.007	0.971	0.021	0.932
Adjusted R^2	0.2227		0.0372		0.0235		0.1494	
Nb.Observations	52		52		52		52	

Note. ***, ** and * denote significance at 1%, 5% and 10%.

Regression results denote that the anticipation of the announcement and the presence of institutional investors are the most important determinants of market reaction to assertions during crisis period. This finding is mainly explained by investors risk aversion especially during financial turmoil. Assertions reveal constancy and not improvement of firms' repayment ability. Therefore, they maintain priority position of bondholders to stockholders especially during crisis. This enhances investors' reject to affirmed securities and their prices' decrease. Negative investor's response to assertions increases when assertion is expected. Also, affirmations could have much greater impact when there is an important institutional presence in shareholding. Indeed, institutional investors have to take short positions on risky assets, especially during crisis period. That's why an assertion pushes them to sell affirmed assets, which generates prices decline. Furthermore, it seems that market reaction to assertions is stronger for speculative than investment grade securities.

5. Conclusion

This paper aims to explain market reaction to rating announcements during crisis period. Its main contribution to previous works is twofold. Firstly, it offers a new context of rating determinants study, which is the 2008 crisis period. Secondly, this paper presents three potential determinants of market reaction to rating announcements during crisis period: the announcement anticipation, the double notation and foreign investors' presence in shareholding. An event study allows measuring market reaction to rating announcements. Its proxy is the cumulative abnormal return during the period surrounding the announcement date. For bad and neutral news, we regress the cumulative abnormal returns on structural factors related to the rating. Then, we gradually introduce firms' characteristics as control variables, such as business, size, indebtedness, financial performance and shareholding structure: institutional and foreign investors' presence. For good news, due to the small sample size, we just establish correlation matrix and Chi square independence test to check significant relation between market reaction to upgrades and both of ratings and firms' characteristics. We find firstly the influence of anticipation, rating magnitude and firm size on market reactions to bad rating news. Otherwise, good rating announcements' effects on stock prices depend on initial rating level, change magnitude and firms' sector. In fact, financial and banking stocks have greater impact on markets than non-financial ones. Besides, institutional investors' presence in shareholding enhances the stock price increase following good and neutral news announcements. Assertions' effects are also dependent upon the announcements' anticipation. Globally, results point out investors' loss faith towards rating agencies during the 2008 financial crisis. These should re-launch a favourable image on financial markets. Accordingly, they have to revise their methodologies in ratings assignments and changes. At last, rating agencies have to be cautious in rating especially large firm because they are of great interest to investors.

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Notes

Note 1. If two ratings occur during the same event window, the event is considered as a single one and the day 0 corresponds to the first announcement day.

Note 2. Please refer to table 5 in the annexes.

Note 3. CAR1 is the CAR calculated by the stock adjusted model, CAR2 is calculated by the market adjusted model.

Note 4. Please refer to table 18 in the annexes.

Note 5. Please refer to table 21 in the annexes.

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