

Research Article

Anticipation of Reaction Of Stock Markets to Anticipated Rating announcements by the Market in a Crisis Context and Investor Behaviour: The Case of MENA countries

Noura Mahouachi¹ and Jamel Eddine Henchiri²

Abstract

The study explores the reaction of stock markets to anticipated or unexpected rating announcements by the market in a crisis context by conducting an empirical study on the MENA (Middle East and North Africa) stock market over the period from December 2010 to August 2022. The results show that the crisis context support the anticipation of bad ratings and neutral ratings as opposed to good ratings. These results validate the asymmetry in investor reaction to announcements of anticipated rating downgrades compared with announcements of upgrades in times of crisis. This reaction highlights the irrational behavior of investors in times of crisis. In fact, when investors detect a risk concerning the financial situation of a stock, they anticipate a downgrade and react quickly, even before the official announcement of the downgrade, by selling their shares on masse. This action will cause the share price to fall. Similarly, the market's weak reaction to early good announcements is explained by the fact that this type of announcement does not provide them with any unknown information to guide their financial decisions.

Keywords: Anticipation. Expected rating. Event study. Abnormal returns. Stock markets.

¹**Corresponding author**, Doctoral student, RED-ISGG, Gabes, Tunisia.

E-mail: mahouachi.noura@hotmail.com

²Jamel Eddine Henchiri, Professor, RED-ISGG, Gabes, Tunisia.

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1. Introduction

Investors' investment decisions and choices are based on a number of criteria, of which the ratings issued by rating agencies are one of the most important. Furthermore, the impact of rating announcements on the financial markets has been studied extensively in previous financial literature. However, the study of the impact of announcements according to the principal of anticipation is rather weak, especially in a context of crisis.

In this context, the literature states that anticipation has an important influence on stock markets. Research in this area has examined the impact of expected versus surprise ratings on financial markets during a crisis (Gropp and Richards, 2001, Linciano, 2008, Baulant, and Albouz, 2021; Le and Duong, 2022, and Sanz, 2020). The results showed an asymmetric reaction to announcements of deterioration versus announcements of improvement. Also, anticipated changes have a greater impact on share prices than surprise changes. However, other studies (Purda, 2007) have confirmed the neutrality of the rating anticipation criterion on the financial market. Furthermore, the market reacts in the same way to early ratings announcements as to surprise ratings announcements.

There are different reasons for the analyses of this subject. The first is the excessive negative trend in country ratings and in the ratings of listed companies in the MENA region in recent years. This raises the question of how MENA markets react to rating changes. In response, the deployed an empirical study of the MENA stock market over the period from December 2010 to August 2022. Thus, the study covers a period when the MENA region experienced two major crises: political crisis and health crisis.

The contribution of the study lies in investigating the issue in a sample of less developed countries, in comparing the impact of rating announcements on the financial markets between the two contexts of crisis and stability as well as the use of deferent empirical methods studying the same problem to guarantee the robustness of the results obtained.

The research is organized as follows. The second section presents the theoretical background and a review of the literature on the relationship between expectations of rating announcements and the prices of securities of rated companies. The third section develops the underline hypotheses to be tested in relation to the subject. The fourth section describes the data and methodologies adopted. The fifth section is devoted to the empirical findings. Finally, the sixth section include.

2. Literature review: Rating anticipation and its impact on the stock market

The first studies on rating expectations and their impact on the financial market focused on the impact of rating expectations on the equity market. These studies confirmed the market's anticipation of rating changes. However, they showed that the post-advertisement reaction was insignificant.

In this context, Hite and Warga (1997) carried out a study of rating changes announced by Standard and Poor's and Moody's for 1,200 companies over the period 1985-1995. The results showed that the downgraded companies noted a significant announcement effect both in the month of the announcement and in the pre-announcement period. These results are confirmed by Steiner and Heinke (2001). The latter showed that the ratings of US agencies are relevant sources of information for international capital markets and that non-US investors base their investment decisions on US ratings.

Other studies have looked at the impact of ratings expectations on bond prices. Grier and Katz (1976) studied the behavior of the bond market in assimilating new information over the same period. These authors concluded that a change in a bond's rating constitutes important new information and that the market's anticipation of rating changes is conditioned by the sector of activity.

In the same context, the study by Hettenhouse and Sartoris (1976) of 46 public sector bonds rated by Standard and Poor's and Moody's showed a slight anticipation of rating downgrades and a lack of reaction to rating upgrades. These results are confirmed by Weinstein (1977). His study found slightly significant anticipation of rating announcements but no negative post-announcement performance for 412 bonds rated by Moody's over the period 1962 to 1974.

These results contradict the conclusions of Grier and Katz (1976). Pinches and Singleton (1978) also showed that increases and decreases were fully anticipated and that changes in bond ratings were anticipated by around 15 to 18 months. These results confirm the study by Grier and Katz (1976) cited above.

There have been many recent studies on the same issue. A number of studies have also looked at rating expectations and their impact on stock markets. Baulant and Albouz (2021) analysed the role of rating changes not anticipated by the markets on the performance of the Brazilian equity index.

The results of their study show that persistent impact of rating changes on the Brazilian equity market. They also showed that the volatility response is highly asymmetric: Volatility reacted more strongly before and after the announcement of downgrades than upgrades.

Similarly, Le and Duong (2022) conducted a study based on the efficient market hypothesis, the theory of asymmetric information and the theory of behavior finance. The purpose of this study is to inspect the reaction of the share performance of the market indices, industrial indices and sector indices of 24 industries at the time of the rating change announcement and 20 sessions before and after.

The results of the event study showed that the Vietnamese stock market is not efficient. The prices of shares traded on the market do not yet fully reflect the information. When credit ratings rise, most indices react later. In addition, when credit ratings were downgraded, the market reacted more slowly.

Also, Sanz (2020) examined the role of textual and unstructured data in the assessment of sovereign credit risk. He has proposed a new approach to understanding and predicting sovereign ratings using a model. Its model was able to correctly predict 70.27% of the country ratings in the test sample.

Overall, although the authors' results diverge, they converge on unanimous conclusions. In times of crisis, the market tended to anticipate poor ratings rather than good ones, and investors' reactions differed according to the type of rating announcement.

The research focuses on the recent crises in the MENA region. It identified the health crisis and the political crisis as two crises of different origin other than financial. The context also provides a different set of countries with different characteristics to those of previous studies. In addition, the study proposes a methodology to better quantify the informational importance of ratings for volatility.

3. Development of Hypotheses: Rating anticipation and its impact on the stock market

We will conduct our study in a context of crisis characterized by political, social and economic upheaval influencing the behavior of investors operating on the stock market. For each type of ad, we formulate the research hypotheses. Previous studies have shown that it is possible to anticipate the event. Furthermore, the stock market anticipates changes in ratings in times of crisis: There is a connection between the crisis and the anticipation of ratings. The first hypothesis is as follows:

H1: The crisis has favored anticipation of ratings: In times of crisis, anticipated ratings are more important than unexpected ratings.

In times of crisis, the level of risk increases and irrational behavior evolves. As a result, investors are losing confidence in information provided and published by rating agencies. So, they make their own interpretations and anticipations. Investor reaction also differs according to the type and criteria of the rating published. The second hypothesis to be tested is as follows:

H2: The market reacts more strongly to bad ratings than to good ones. It also reacts more to anticipated ratings than to surprise ratings published by the agencies.

4. Data and methodology

4.1. Data

Our sample covers the MENA stock market and includes the following countries: Tunisia, Egypt, Morocco, Bahrain, Lebanon, Kuwait, Saudi Arabia and Jordan. Some countries belonging to the MENA zone are excluded from our sample due to the unavailability of data, such as Algeria, Libya, Mauritania, etc. The sample is made up of 148 rating announcements from listed companies in the countries in the sample. The ratings are taken from the Moody’s rating agency websites. The study covers the period from 2010 to 2022. This period covers the two major crises: the political crisis and the COVID-19 health crisis.

The rating announcements collected are divided into three categories: bad ratings (downgrades): this category covers announcements of downgrades and revisions of downgrades; upgrades include improvements and revisions to improve ratings and neutral notations that encompass statements. There were 93 adverts for the crisis period, compared with 55 for the non-crisis period.

The table of descriptive statistics for the crisis and non-crisis samples shows that bad ratings appear to be more frequent in periods of crisis (54%) than in periods of stability (45%). On the other hand, neutral ratings are more common in periods of stability than in periods of crisis (50%). For their part, good ratings are very rare in both periods.

Table 1: Descriptive statistics for crisis and non-crisis samples

	Crisis period			Non crisis period		
Ratings	Bad ratings	Neutral ratings	Good ratings	Bad ratings	Neutral ratings	Good ratings
Number	50	41	2	24	28	3
Total	93			55		
%	54%	44%	2%	45%	50%	5%
Total	148					

The samples are divided according to the anticipation criterion. For each type of rating announcement, we proceeded as follows:

- Calculation of abnormal return (AR) for the 120 days preceding the official announcement of the rating.
- Calculation of the stock's cumulative abnormal return (CAR) over the 120 days preceding the announcement
- Test the significance¹ of (CARs) for 120 days.

The sample of observations is divided according to the significance criterion. Thus, the rating is presumed to be anticipated by the market if the (CAR) is significant. Otherwise, it is considered an unanticipated or surprise rating.

Table 2: Descriptive statistics for crisis and non-crisis samples by anticipation criterion

	Crisis period						Non crisis period					
	Bad ratings		Good ratings		Neutral ratings		Bad ratings		Good ratings		Neutral ratings	
	A	NA	A	NA	A	NA	A	NA	A	NA	A	NA
Number	18	32	1	1	11	30	10	14	2	1	11	17
%	36%	64%	50%	50%	27%	73%	41%	59%	66%	34%	40%	60%
Total	50		2		41		24	3		27		
Total	93						55					
Total	148											

The table of descriptive statistics shows that in periods of both crisis and stability, unexpected ratings (surprises) are more frequent (64%, 50%, 59%, 60% and 73%) than expected ratings (36%, 27%, 41% and 40%). The proportion of bad and neutral ratings also remained stable over the two periods (64% versus 59% and 73% versus 60% respectively).

4.2. Methodology

4.2.1. The relationship between the crisis and rating expectations

In finance, there are several models for calculating abnormal returns on securities: Previous empirical studies (Brown and Warner, 1985; Collins and Dent, 1984....) have shown that all the models for estimating abnormal returns have produced the same results and that the differences are negligible. These authors considered two models for calculating abnormal returns: *the stock market adjusted return and the market model*.

The abnormal return ($AR_{i,t}$) of security i calculated on day t is the difference between the security's return ($R_{i,t}$) and the market return ($R_{m,t}$) :

¹ The significance test (Z test) was applied in Excel.

$$R_{it} = R_{mt} + \varepsilon_{it}$$

$$RA_{it} = R_{it} - R_{mt}$$

With:

R_{it} : R_{it} : the return on stock i observed on day t ;

R_{mt} : the return on the stock market index to which stock i belongs observed on day t .

ε_{it} : the residual of stock i at date t .

The cumulative abnormal returns CARs for each stock over the 120 days² preceding the announcement are calculated as follows:

$$CAR_{it} = \sum_{t=-120}^0 CAR_{it}$$

A test of the significance of abnormal returns in the event window (Z test)³ is applied. The rating announcement is considered anticipated if the calculated CAR_{it} is significant and not anticipated otherwise.

To study the correlation between the crisis and rating expectations, a test of independence (chi-square test) is applied. Its null hypothesis states that the crisis and rating expectations are independent. To do this, the CARs calculated are treated as binary variables. They are equal to unity if the RAC is significant, zero otherwise. Next, the Chi-Square independence statistic (χ^2) between the two binary variables (significance and crisis) is calculated.

4.2.2. The reaction of stock markets to announcements of expected ratings compared to unexpected ratings during period of crisis

To measure the impact of expected versus unexpected ratings on the stock market during a crisis, we adopt the methodology of the event study. First, for each type of observation, we identify the event windows to capture the very short-term event effect on the share price. The event window runs from D-10 (i.e. 10 days before the announcement date) to D+10 (i.e. 10 days after).

² The choice of 120 rating days preceding the announcement corresponds approximately to the time required for the rating agency to draw up a rating report (Di Cesare, 2006) and commonly adopted in published research on advance rating.

³ The significance test (Z test) was applied in Excel.

Then, for each day of the window, we calculate the average abnormal yield and the cumulative average abnormal yield according to the two models: The market-adjusted return model (1) and the market model (2).

$$AR_{1it} = R_{it} - R_{mt}$$

$$AR_{2it} = R_{it} - (\alpha^{\wedge} + \beta^{\wedge} R_{mt})$$

Where: α^{\wedge} and β^{\wedge} = are the parameters of the market model estimated by the ordinary least squares regression method over a period of 250 days prior to the window, from day -260 to day -10 relative to the day of the event. Finally, we compare the results for two periods in terms of persistence over time and magnitude.

5. Empirical results

5.1. The relationship between the crisis and rating expectations

The results of the Chi-Square independence test (χ^2) between the crisis and the rating anticipation shows the significance of the results for expected ratings, for both bad and neutral ratings. This shows that the variables are dependent. In other words, there is an association and correlation between the crisis and rating expectations. On the other hand, the insignificance of the results for good ratings reflects the absence of correlation between the two variables which shows that the crisis does not favour the anticipation of good ratings. This result can be explained by the density of information published during the crisis period and the increased risk aversion of investors, which favours the anticipation of bad ratings. This also applies to ads for neutral ratings, despite their low information content. Consequently, these results make it possible to accept the first hypothesis (H1) stated in this work for bad and neutral announcements and to reject it for good rating announcements.

Table 3: Test of independence (χ^2) between crisis and rating anticipation

	Bad Rating	Neutral Ratings	Good Ratings
Stat. Chi-square (χ^2)	6.048 ***	6.155 ***	3.990
P. value	0.049	0.046	0.136

*** represents significance at the 5% level.

5.2. The reaction of stock markets to expected ratings compared to unexpected ratings during the crisis period

Figures (1) and (2) below show that during a crisis, abnormal returns (ARs) are insignificant both before and after the announcement of an expected negative rating⁴. On the other hand, cumulative abnormal returns (CARs) are significant in the days preceding the official announcement of the expected rating. CARs were positive and significant from d-9 (1%) to d+4 (1.2%), then at d+9 (1.3%) and d+10 (1.4%).

When the negative rating announced is expected or unexpected, the ARs always remain insignificant throughout the event window. Similarly, CARs remained significantly negative from day 7 (-1%) to day 10 (1.3%). This result indicates that in times of crisis, the announcement of an unexpected or expected bad rating has no effect on the stock market in terms of ARs. However, in terms of CARs, this effect is significant and important throughout the event window.

In this respect, it should be noticed that the response expressed in terms of ARs differs from that expressed in terms of CARs. In fact, ARs represent the day-to-day reaction of the market. As opposed to, CARs represent the cumulative effect of the announcement on the market. Thus, the significance of the CARs highlights the impact of the rating announcement on the stock's performance over time, even if there is no significant daily reaction (represented in terms of the ARs) to an anticipated or surprise announcement. Furthermore, CARs are better than ARs at describing the market's reaction to an announcement published during a crisis.

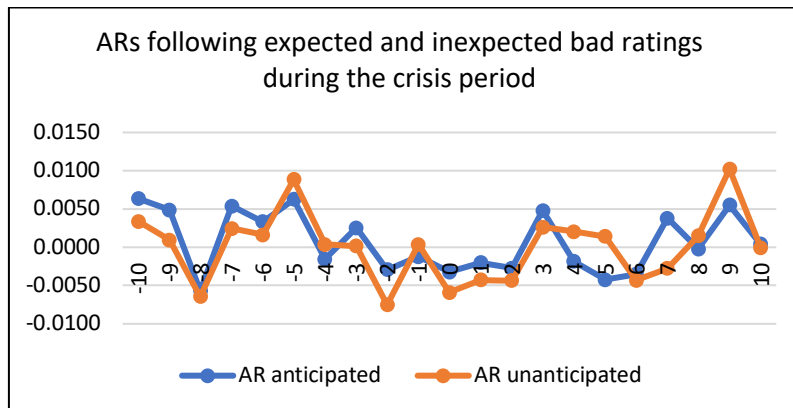


Figure 1: Evolution of ARs according to expected and unexpected bad ratings during the crisis period

⁴ The results of the ARs and CARs (significant and non-significant) day by day during the event window following the anticipated and surprise unfavourable ratings during the crisis period.

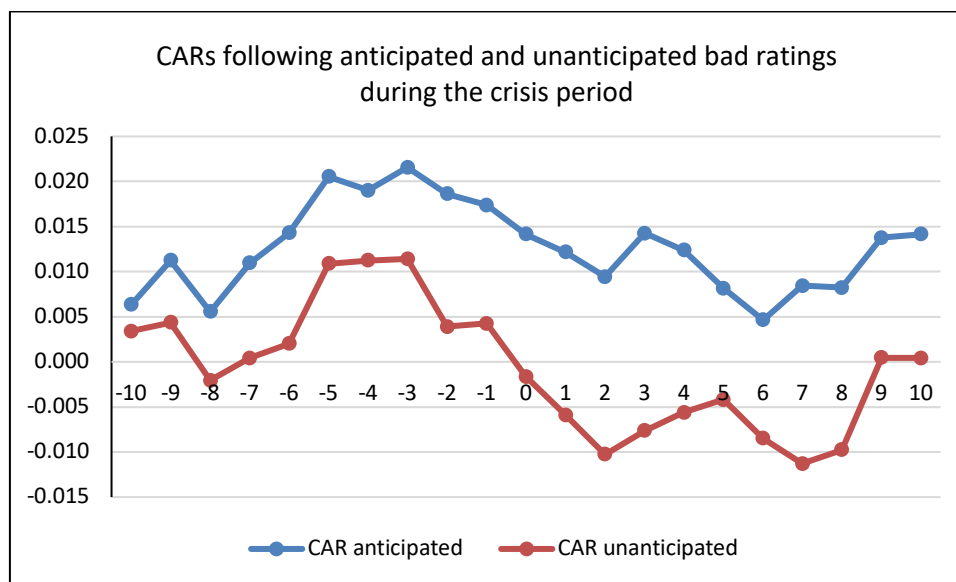


Figure 2: Evolution of CARs according to expected and unexpected bad ratings during the crisis period

Figures (3) and (4) show respectively the market reaction to an expected and an unexpected negative rating announcement in a context of stability⁵. The abnormal returns ARs recorded over the entire event window are always insignificant when the bad rating announced is anticipated. Also, CARs remained significant and negative throughout the event window, i.e. from day D-9 (-1%) to D+10 (-2.1%).

On the other hand, when the announced rating was a surprise, the ARs reacted significantly one day after the rating was announced, i.e. on d+1 (1.5%) and d+5 (-1%). For their part, CARs also reacted significantly from day 1 (1.3%) to day 4 (1.5%).

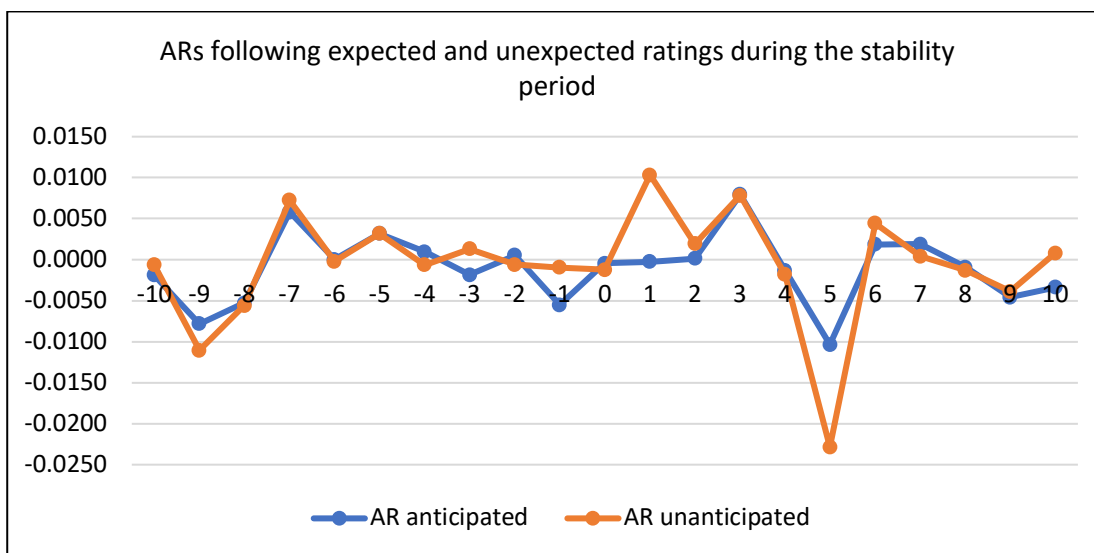


Figure 3: Evolution of ARs according to expected and unexpected bad ratings during the stability period

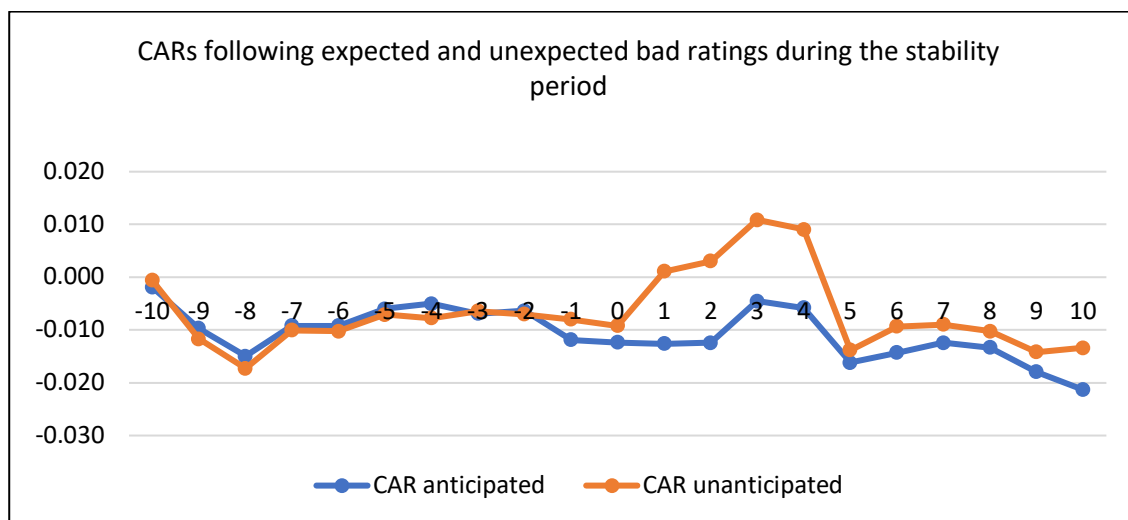


Figure 4: Evolution of CARs according to expected and unexpected bad ratings during the stability period

To check the robustness of the results obtained previously, we applied tests of the difference in means between the different sub-samples. This test consists of comparing the differences in the averages of the two types of announcements (expected and unexpected) in the same period (the crisis period or the stability period). Table (1) shows the results of the first test during a crisis period. The latter is applied between the ARs and the CARs according to the advance and surprise announcements.

The results show that during a crisis, the differences in averages between the RAs are slightly significant before the day the rating is announced and after, on day-10 (1%), day+5 (-1%) and day+7 (1%).

For CARs, the mean differences between CARs were significantly positive throughout the window, from day -10 (1.3%) to day +10 (2.8%).

The table shows that during a period of crisis, the ARs and CARs recorded around the dates of announcements of anticipated negative ratings are higher than those following unexpected negative announcements. This result converges with those found previously and validates the second hypothesis (H2) of this study, namely the difference in investor reacted to announcements of expected versus unexpected ratings in times of crisis.

During the period of stability, the results converge with those found in the crisis period in terms of intensity. Indeed, table (2) shows significant differences in averages between the RAs only one day after the rating announcement, i.e. day d+1 (-1%). In terms of CARs, the differences in means were largely significant from d-1 (-1.6%) to d+10 (-3%). This shows the existence of highly significant reactions after the actual occurrence of the announcements of expected ratings than those unexpected whether these announcements are published during periods of crisis or stability.

Table 1: Mean difference tests between ARs and CARs according to expected or unexpected bad ratings during the crisis period

Jr(t)	Adjusted stock return model				Market model			
	AR	t-stat	CAR (dce)	t-stat	AR	t-stat	CAR (dce)	t-stat
-10	0.0131**	2.5003	0.0131**	2.5003	0.0093	1.7755	0.0093*	1.7755
-9	0.0103*	1.9667	0.0235***	4.4670	0.0088	1.6797	0.0181***	3.4552
-8	-0.0085	-1.6148	0.0150***	2.8521	-0.0050	-0.9478	0.0132**	2.5074
-7	0.0086	1.6365	0.0236***	4.4886	0.0083	1.5875	0.0215***	4.0949
-6	0.0035	0.6714	0.0271***	5.1600	0.0050	0.9602	0.0265***	5.0551
-5	-0.0010	-0.1857	0.0261***	4.9743	0.0037	0.6973	0.0302***	5.7525
-4	-0.0076	-1.4472	0.0185***	3.5271	-0.0034	-0.6538	0.0268***	5.0986
-3	0.0017	0.3178	0.0202***	3.8448	0.0049	0.9416	0.0317***	6.0403
-2	0.0009	0.1740	0.0211***	4.0189	0.0016	0.3114	0.0333***	6.3516
-1	-0.0018	-0.3381	0.0193***	3.6808	-0.0028	-0.5379	0.0305***	5.8137
0	-0.0001	-0.0218	0.0192***	3.6590	-0.0006	-0.1066	0.0300***	5.7071
1	-0.0002	-0.0328	0.0190***	3.6262	0.0003	0.0537	0.0302***	5.7608
2	-0.0036	-0.6914	0.0154***	2.9348	-0.0011	-0.2107	0.0291***	5.5501
3	0.0062	1.1785	0.0216***	4.1133	0.0070	1.3334	0.0361***	6.8834
4	-0.0062	-1.1715	0.0154***	2.9418	-0.0058	-1.0955	0.0304***	5.7879
5	-0.0074	-1.4119	0.0080	1.5299	-0.0099*	-1.8791	0.0205***	3.9088
6	-0.0031	-0.5836	0.0050	0.9464	-0.0028	-0.5248	0.0178***	3.3841
7	0.0101*	1.9204	0.0151***	2.8668	0.0104*	1.9754	0.0281***	5.3595
8	-0.0004	-0.0751	0.0147***	2.7917	-0.0019	-0.3639	0.0262***	4.9956
9	-0.0027	-0.5237	0.0119**	2.2680	0.0008	0.1556	0.0270***	5.1512
10	-0.0006	-0.1079	0.0113**	2.1601	0.0009	0.1667	0.0279***	5.3178

AR: Abnormal Return, CAR: Cumulative Abnormal Return.

*, ** and *** represent significance at the 10%, 5% and 1% thresholds respectively.

Table 2: Mean difference tests between ARs and CARs according to expected or unexpected bad ratings during the stability period

Jr(t)	Adjusted stock return model				Market model			
	AR	t-stat	CAR (dce)	t-stat	AR	t-stat	CAR (dce)	t-stat
-10	-0.0005	-0.0808	-0.0005	-0.0808	-0.0031	-0.5245	-0.0031	-0.5245
-9	-0.0051	-0.8443	-0.0056	-0.9251	-0.0046	-0.7641	-0.0077	-1.2886
-8	-0.0061	-1.0130	-0.0116*	-1.9381	-0.0050	-0.8293	-0.0127**	-2.1179
-7	0.0042	0.7020	-0.0074	-1.2362	0.0043	0.7239	-0.0084	-1.3940
-6	0.0022	0.3696	-0.0052	-0.8666	0.0003	0.0417	-0.0081	-1.3523
-5	0.0022	0.3723	-0.0030	-0.4943	0.0032	0.5335	-0.0049	-0.8188
-4	0.0063	1.0473	0.0033	0.5530	0.0026	0.4297	-0.0023	-0.3891
-3	-0.0075	-1.2547	-0.0042	-0.7017	-0.0050	-0.8362	-0.0074	-1.2253
-2	0.0017	0.2877	-0.0025	-0.4139	0.0016	0.2739	-0.0057	-0.9514
-1	-0.0090	-1.5016	-0.0115*	-1.9155	-0.0101	-1.6852	-0.0158***	-2.6367
0	0.0011	0.1834	-0.0104	-1.7321	0.0004	0.0593	-0.0155**	-2.5774
1	-0.0086	-1.4386	-0.0190***	-3.1707	-0.0108*	-1.8054	-0.0263***	-4.3827
2	-0.0014	-0.2274	-0.0204***	-3.3981	-0.0016	-0.2722	-0.0279***	-4.6549
3	0.0109*	1.8087	-0.0095	-1.5894	0.0080	1.3373	-0.0199***	-3.3175
4	-0.0010	-0.1680	-0.0105	-1.7574	-0.0008	-0.1352	-0.0207***	-3.4527
5	0.0018	0.3070	-0.0087	-1.4504	0.0022	0.3601	-0.0186***	-3.0926
6	0.0006	0.0934	-0.0081	-1.3570	-0.0007	-0.1181	-0.0193***	-3.2108
7	0.0067	1.1238	-0.0014	-0.2332	0.0033	0.5574	-0.0159***	-2.6534
8	0.0037	0.6224	0.0023	0.3892	-0.0005	-0.0883	-0.0165***	-2.7417
9	-0.0037	-0.6094	-0.0013	-0.2202	-0.0053	-0.8830	-0.0217***	-3.6247
10	-0.0059	-0.9909	-0.0073	-1.2111	-0.0075	-1.2569	-0.0293***	-4.8817

AR: Abnormal Return, CAR: Cumulative Abnormal Return.

*, ** and *** represent significance at the 10%, 5% and 1% thresholds respectively.

Finally, we look at the impact of the crisis on expected and unexpected downgrades. Table 3 presents the results of the difference-in-means tests between ARs and CARs observed following the announcement of the expected bad ratings between the two periods of crisis and stability.

The differences in averages between the ARs are slightly significant before the announcement of the rating downgrade, on day D-9 (13%). In terms of CARs, the differences in averages are largely significant during the period before and after the official announcement of the downgrade rating from day d-9 (2.1%) to d+10 (3.6%). These results validate the third hypothesis (H3) of this study, namely that the crisis amplifies investors' reaction to bad ratings.

Table 3: Mean difference tests between ARs and CARs according to expected bad ratings in a period of crisis versus stability

Jr(t)	Adjusted stock return model				Market model			
	AR	t-stat	CAR (dce)	t-stat	AR	t-stat	CAR (dce)	t-stat
-10	0.0111*	1.7981	0.0111*	1.7981	0.0082	1.2679	0.0082	1.2679
-9	0.0157**	2.5598	0.0268***	4.3579	0.0127*	1.9557	0.0210***	3.2236
-8	-0.0041	-0.6598	0.0227***	3.6981	-0.0004	-0.0634	0.0205***	3.1602
-7	0.0014	0.2289	0.0242***	3.9270	-0.0004	-0.0601	0.0202***	3.1001
-6	0.0066	1.0669	0.0307***	4.9939	0.0033	0.5103	0.0235***	3.6103
-5	0.0023	0.3762	0.0330***	5.3701	0.0031	0.4712	0.0265***	4.0816
-4	-0.0092	-1.4994	0.0238***	3.8708	-0.0025	-0.3841	0.0240***	3.6974
-3	0.0034	0.5606	0.0273***	4.4314	0.0044	0.6793	0.0284***	4.3767
-2	-0.0022	-0.3539	0.0251***	4.0775	-0.0035	-0.5321	0.0250***	3.8446
-1	0.0095	1.5518	0.0346***	5.6293	0.0043	0.6622	0.0293***	4.5068
0	-0.0080	-1.3058	0.0266***	4.3235	-0.0028	-0.4292	0.0265***	4.0777
1	-0.0032	-0.5162	0.0234***	3.8073	-0.0018	-0.2700	0.0247***	3.8076
2	-0.0013	-0.2135	0.0221***	3.5938	-0.0029	-0.4431	0.0219***	3.3646
3	-0.0067	-1.0896	0.0154**	2.5042	-0.0031	-0.4794	0.0188***	2.8851
4	-0.0014	-0.2295	0.0140**	2.2746	-0.0005	-0.0816	0.0182***	2.8035
5	0.0096	1.5562	0.0236***	3.8308	0.0061	0.9411	0.0243***	3.7445
6	-0.0017	-0.2683	0.0219***	3.5625	-0.0054	-0.8303	0.0189***	2.9142
7	-0.0021	-0.3490	0.0198***	3.2135	0.0019	0.2944	0.0209***	3.2087
8	0.0027	0.4362	0.0224***	3.6497	0.0007	0.1112	0.0216***	3.3198
9	0.0081	1.3232	0.0306***	4.9729	0.0101	1.5567	0.0317***	4.8765
10	0.0033	0.5342	0.0339***	5.5071	0.0038	0.5842	0.0355***	5.4607

AR: Abnormal Return, CAR: Cumulative Abnormal Return.

*, ** and *** represent significance at the 10%, 5% and 1% thresholds respectively.

Table (4) presents the results of the differences in averages between ARs and CARs following announcements of unexpected bad ratings during periods of crisis versus stability. The results are similar to those found when the published rating is expected.

The differences in means between the ARs were slightly significant and negative after the rating announcement, at d+1 (-3%) and d+5 (-1.5). For the CARs, the differences in means were highly significant throughout the period after the announcement, i.e. from day 0 (-1.8) to day 10 (-2.2%). These results confirm that the crisis amplifies the reaction to announcements of bad ratings that were unexpected.

To sum up, we deduce, firstly, that the market reacts more intensely to announcements of downgrades published during periods of crisis than to those published during periods of stability, whether the downgrades are anticipated or surprise ratings (Glascok and al., 1987; Norden and Weber, 2004).

Secondly, investors react more to announcements of anticipated downgrades than to unexpected ones, whether or not the context is one of crisis. This conclusion validates the second hypothesis (H2) of this study.

Table 4: Mean difference tests between ARs and CARs according to unanticipated bad ratings in periods of crisis versus stability

Jr(s)	Adjusted stock return model				Market model			
	AR	t-stat	CAR (dce)	t-stat	AR	t-stat	CAR (dce)	t-stat
-10	-0.002	-0.500	-0.002	-0.500	-0.004227	-0.828	-0.004227	-0.828
-9	0.000	0.069	-0.002	-0.431	-0.000690	-0.135	-0.004918	-0.964
-8	-0.001	-0.325	-0.0039	-0.756	-0.000412	-0.080	-0.005330	-1.045
-7	-0.003	-0.582	-0.0068	-1.339	-0.004382	-0.859	-0.009712*	-1.904
-6	0.005	1.030	-0.0016	-0.309	-0.001474	-0.289	-0.011186**	-2.193
-5	0.005	1.082	0.0039	0.773	0.002603	0.510	-0.008583	-1.682
-4	0.004	0.913	0.0086	1.687	0.003514	0.688	-0.005069	-0.993
-3	-0.005	-1.127	0.0029	0.560	-0.005545	-1.087	-0.010615***	-2.081
-2	-0.001	-0.267	0.0015	0.293	-0.003450	-0.676	-0.014065***	-2.757
-1	0.002	0.452	0.0038	0.745	-0.002983	-0.584	-0.017047***	-3.342
0	-0.006	-1.336	-0.0030	-0.590	-0.001874	-0.367	-0.018921***	-3.710
1	-0.01**	-2.281	-0.01***	-2.872	-0.01287**	-2.523	-0.031791***	-6.233
2	0.001	0.186	-0.01***	-2.685	-0.003407	-0.668	-0.035198***	-6.901
3	-0.002	-0.399	-0.02***	-3.084	-0.002092	-0.410	-0.037290***	-7.311
4	0.003	0.731	-0.012**	-2.353	0.004410	0.864	-0.032880***	-6.447
5	0.02**	3.691	0.0068	1.338	0.0181***	3.557	-0.014738***	-2.889
6	0.002	0.387	0.0088	1.725	-0.003351	-0.657	-0.018089***	-3.546
7	-0.005	-1.075	0.0033	0.649	-0.005113	-1.002	-0.023201***	-4.549
8	0.006	1.335	0.0101*	1.985	0.002103	0.412	-0.021098***	-4.136
9	0.007	1.417	0.02***	3.403	0.004004	0.785	-0.017095***	-3.351
10	-0.002	-0.410	0.02***	2.992	-0.004619	-0.905	-0.021714***	-4.257

AR: Abnormal Return, CAR: Cumulative Abnormal Return.

*, ** and *** represent significance at the 10%, 5% and 1% thresholds respectively.

The results reflect investors' loss of confidence in the information published by the rating agencies. The mean differences between the ARs were slightly significant and negative after the rating was announced, at d+1 (-3%) and d+5 (-1.5).

This reaction highlights the irrational behavior of investors in times of crisis (Michayluk and Neuhauser, 2006). When they detect a risk in a stock's financial situation, they anticipate a downgrade. They reacted quickly, even before the official announcement of the downgrade, by selling their shares massively. This action will cause the share price to fall.

5.2.1. The reaction of stock markets to expected neutral ratings compared with unexpected ratings in case crisis.

Figures 5 and 6 show that the anticipated ratings published are significantly downgraded by the stock market in times of crisis, both before and after the announcement. The ARs recorded are insignificant throughout the event window. In terms of CARs, the results were significantly negative from d-7 (-2.8%) to d+10 (-4.5%).

When it comes to unexpected announcements, the ARs recorded are significantly negative only two days after the announcement of a neutral rating, i.e. on d+2 (-1.6%). The CARs recorded were significant and negative from d+2 (-3%) to d+7 (-1.8%). This result converges with those found previously for bad ratings and validates the second hypothesis (H2)

In periods of stability, there is no effect of the announcements on the market in terms of ARs either before or after the announcement, regardless of whether the rating is anticipated or not. However, in terms of CARs, there is a considerable effect when the rating is anticipated. These results converge with those found for neutral ratings in times of crisis.

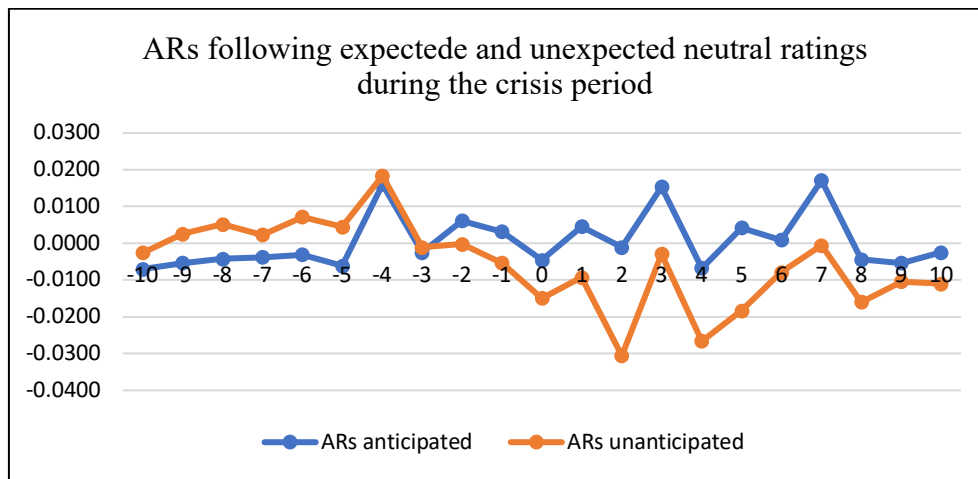


Figure 5: The evolution of ARs according to expected and unexpected neutral ratings during the crisis period

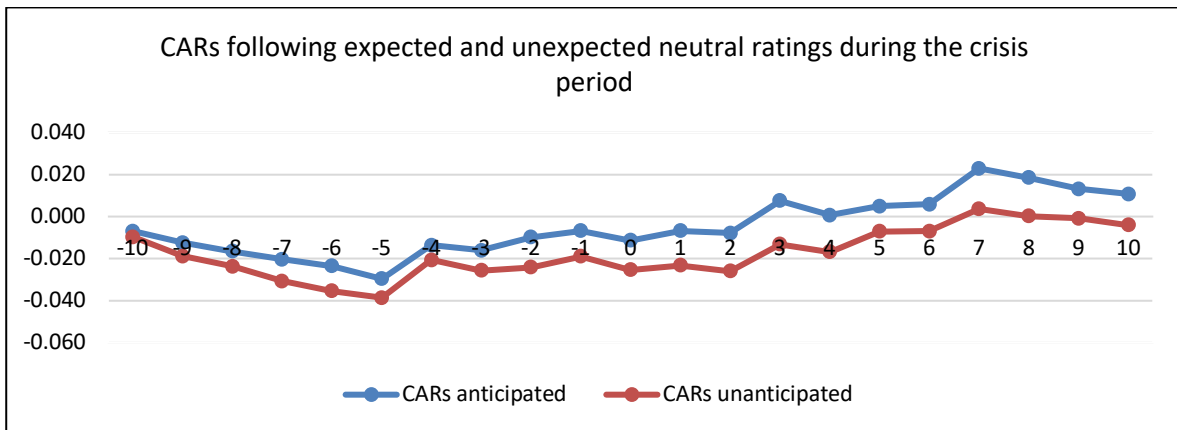


Figure 6: The evolution of CARs according to expected and unexpected neutral ratings during the crisis period

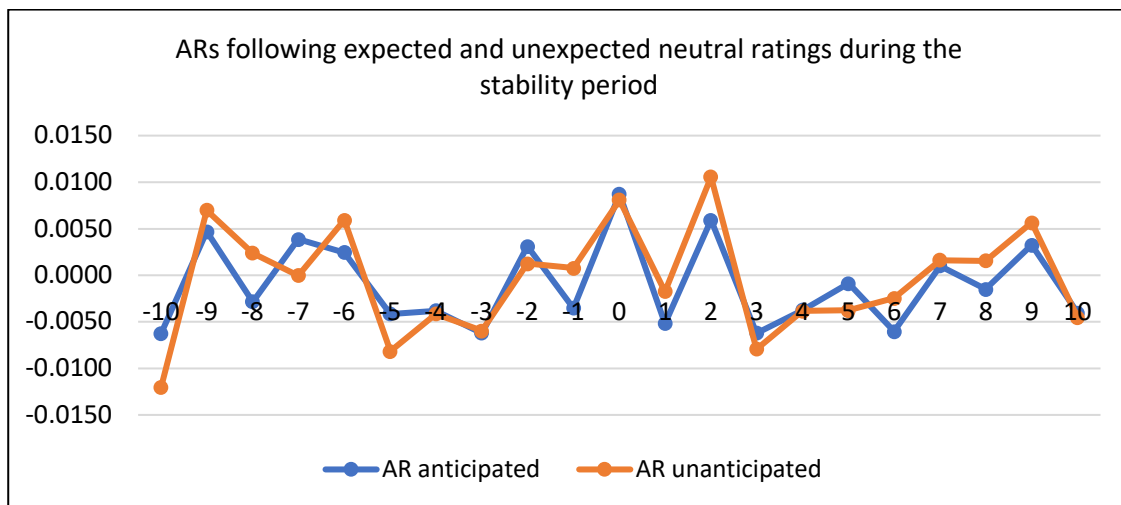


Figure 7: The evolution of ARs according to expected and unexpected neutral ratings during the stability period.

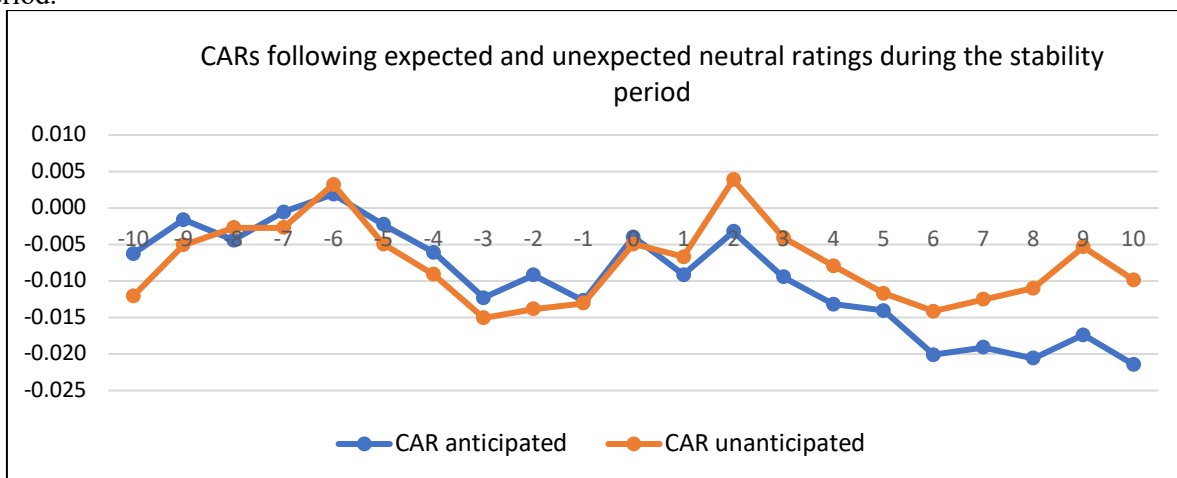


Figure 8: The Evolution of CARs according to expected and unexpected neutral ratings during the stability period

In order to validate the results found previously, tests for differences in means were applied to the ARs and CARs. Table (5) shows significant differences in means following announcements of expected versus unexpected neutral ratings during the crisis period. In fact, in terms of ARs, these differences are recorded after the rating announcement, i.e. on days d+1 (1.9%), d+2 (2.9%), d+3 (3.4), d+5 (2.7%) and d+7 (3.5%). In terms of CARs, they ranged from day d+3 (2.9%) to d+10 (2.6%).

Table 5: Mean difference tests of ARs and CARs according to expected or unexpected neutral ratings during the crisis period

Adjusted stock return model					Market model			
Jr(t)	AR	t-stat	CAR (dce)	t-stat	AR	t-stat	CAR (dce)	t-stat
-10	-0.0115	-1.159	-0.0115	-1.159	-0.0114	-1.150	-0.0043	-0.435
-9	-0.0100	-1.004	-0.0215**	-2.163	-0.0132	-1.329	-0.0060	-0.599
-8	-0.0052	-0.527	-0.0268***	-2.690	-0.0136	-1.366	-0.0095	-0.950
-7	-0.0016	-0.163	-0.0284***	-2.854	-0.0099	-0.997	-0.0101	-1.011
-6	-0.0096	-0.964	-0.0380***	-3.819	-0.0134	-1.349	-0.0116	-1.170
-5	-0.0053	-0.530	-0.0433***	-4.349	-0.0167	-1.676	-0.0207**	-2.077
-4	0.0240**	2.408	-0.0193*	-1.941	0.0138	1.382	-0.0065	-0.648
-3	-0.0050	-0.498	-0.0243**	-2.439	-0.0039	-0.388	-0.0065	-0.64
-2	0.0130	1.301	-0.0113	-1.137	0.0125	1.258	0.0043	0.428
-1	0.0032	0.322	-0.0081	-0.815	0.0118	1.182	0.0054	0.544
0	-0.0048	-0.479	-0.0129	-1.294	0.0058	0.587	0.0028	0.278
1	0.0076	0.764	-0.0053	-0.530	0.0184*	1.845	0.0096	0.9693
2	0.0127	1.275	0.0074	0.745	0.0283***	2.846	0.0102	1.02
3	0.0012	0.116	0.0086	0.861	0.0337***	3.384	0.0281***	2.823
4	-0.0051	-0.515	0.0034	0.346	0.0131	1.312	0.0183*	1.835
5	0.0040	0.398	0.0074	0.745	0.0266***	2.676	0.0169	1.696
6	-0.0169	-1.695	-0.0095	-0.950	0.0097	0.977	0.0185*	1.861
7	0.0242**	2.430	0.0147	1.480	0.0348***	3.499	0.0422***	4.238
8	-0.0151	-1.522	-0.0004	-0.042	0.0072	0.726	0.0368***	3.697
9	-0.0178	-1.784	-0.0182*	-1.827	-0.0004	-0.042	0.0270***	2.713
10	-0.0002	-0.018	-0.0184*	-1.845	0.0061	0.612	0.0253**	2.540

AR: Abnormal Return, CAR: Cumulative Abnormal Return.

*, ** and *** represent significance at the 10%, 5% and 1% thresholds respectively.

In a context of stability, the results recorded (table 6) converge with those found in a context of crisis, but to a lesser extent in terms of amplitude. In fact, the differences between ARs were significant only on the day of the announcement d0 (1%) and d+6 (-1%). The differences between coaches were significant, ranging from d+1 (-1.2%) to d+10 (-3.4%).

As a final step, we analyzed the impact of the crisis on investor reacted to the announcements of neutral ratings. To do this, we applied tests for differences in means between the ARs and CARs observed following the announcement of expected then unexpected ratings between the two periods of crisis and stability

Table 7 shows the differences in the averages of the significant ARs recorded three days before the official announcement of the expected neutral rating on day d-4 (2%) and after the announcement on d+3 (2.2%) and d+7 (1.7%). Similarly, in terms of CARs, the average differences recorded are significant before and after the announcement of the rating, i.e. on days d-7, d-6, d-5 and the days from d+3 to d+10.

Table 6: Mean difference tests of ARs and CARs following expected or unexpected neutral ratings during the stability period

Adjusted stock return model					Market model			
Jr(t)	AR	t-stat	CAR (dce)	t-stat	AR	t-stat	CAR (dce)	t-stat
-10	-0.0039	-0.770	-0.0039	-0.770	-0.000	-0.095	-0.0005	-0.095
-9	0.0022	0.449	-0.0016	-0.321	0.002	0.473	0.0019	0.378
-8	-0.0063	-1.258	-0.0079	-1.580	-0.005	-1.605	-0.0061	-1.226
-7	0.0054	1.088	-0.0025	-0.491	0.007	1.543	0.0016	0.316
-6	-0.0033	-0.657	-0.0057	-1.148	-0.001	-0.200	0.0006	0.115
-5	-0.0030	-0.595	-0.0087	-1.743	-0.000	-0.028	0.0004	0.087
-4	-0.0020	-0.398	-0.0107**	-2.142	-0.003	-0.698	-0.0031	-0.611
-3	-0.0017	-0.340	-0.0124**	-2.482	-0.006	-1.291	-0.0095*	-1.902
-2	0.0038	0.754	-0.0086	-1.727	0.0050	0.994	-0.0045	-0.908
-1	-0.0074	-1.474	-0.0160***	-3.202	-0.007	-1.565	-0.0124**	-2.473
0	0.0085	1.699	-0.0075	-1.502	0.009*	1.871	-0.0030	-0.602
1	-0.0099*	-1.983	-0.0174***	-3.486	-0.008	-1.723	-0.0116**	-2.325
2	-0.0021	-0.423	-0.0195***	-3.909	0.0013	0.261	-0.0103**	-2.06
3	-0.0029	-0.580	-0.0224***	-4.489	-0.004	-0.901	-0.0148***	-2.96
4	0.0021	0.413	-0.0204***	-4.076	-0.003	-0.728	-0.0185***	-3.692
5	0.0035	0.697	-0.0169***	-3.378	0.0020	0.403	-0.0164***	-3.289
6	-0.0118**	-2.356	-0.0287***	-5.735	-0.009*	-1.918	-0.0260***	-5.208
7	0.0002	0.040	-0.0285***	-5.694	0.0004	0.076	-0.0257***	-5.131
8	-0.0075	-1.501	-0.0360***	-7.196	-0.004	-0.913	-0.0302***	-6.044
9	0.0013	0.251	-0.0347***	-6.944	0.0008	0.157	-0.0294***	-5.887
10	-0.0035	-0.705	-0.0383***	-7.650	-0.003	-0.714	-0.0330***	-6.601

AR: Abnormal Return, CAR: Cumulative Abnormal Return.

*, ** and *** represent significance at the 10%, 5% and 1% thresholds respectively.

Table 7: Mean difference tests of ARs and CARs following expected neutral ratings during the periods of crisis versus stability

Jr(t)	Adjusted stock return model				Market model			
	AR	t-stat	CAR (dce)	t-stat	AR	t-stat	CAR (dce)	t-stat
-10	0.0029	0.345	0.0029	0.345	-0.0007	-0.086	-0.0007	-0.086
-9	-0.0117	-1.376	-0.0088	-1.031	-0.0100	-1.178	-0.0108	-1.265
-8	-0.0027	-0.315	-0.0114	-1.347	-0.0014	-0.161	-0.0121	-1.426
-7	-0.0070	-0.826	-0.0185**	-2.173	-0.0077	-0.901	-0.0198	-2.328
-6	-0.0039	-0.460	-0.023***	-2.633	-0.0056	-0.657	-0.0254	-2.985
-5	0.0018	0.212	-0.0206**	-2.421	-0.0020	-0.232	-0.0274	-3.217
-4	0.0177**	2.081	-0.0029	-0.339	0.0199**	2.335	-0.0075	-0.882
-3	-0.0034	-0.401	-0.0063	-0.740	0.0037	0.438	-0.0038	-0.443
-2	0.0023	0.270	-0.0040	-0.469	0.0030	0.357	-0.0007	-0.085
-1	0.0035	0.416	-0.0005	-0.053	0.0067	0.789	0.0060	0.703
0	-0.0170**	-2.004	-0.0175**	-2.057	-0.0133	-1.563	-0.0073	-0.859
1	0.0075	0.882	-0.0100	-1.174	0.0097	1.142	0.0024	0.282
2	-0.0093	-1.089	-0.0192**	-2.264	-0.0071	-0.831	-0.0047	-0.548
3	0.0171**	2.007	-0.0022	-0.256	0.0216**	2.541	0.0169*	1.992
4	-0.0058	-0.685	-0.0080	-0.939	-0.0030	-0.357	0.0139	1.635
5	0.0022	0.264	-0.0057	-0.674	0.0050	0.592	0.0189**	2.227
6	0.0040	0.473	-0.0017	-0.200	0.0070	0.819	0.0259***	3.046
7	0.0145	1.708	0.0128	1.507	0.0161*	1.894	0.0420***	4.940
8	-0.0068	-0.795	0.0061	0.712	-0.0029	-0.340	0.0391***	4.600
9	-0.0134	-1.582	-0.0074	-0.870	-0.0086	-1.016	0.0305***	3.584
10	-0.0028	-0.330	-0.0102	-1.200	0.0016	0.185	0.0320***	3.770

AR: Abnormal Return, CAR: Cumulative Abnormal Return.

*, ** and *** represent significance at the 10%, 5% and 1% thresholds respectively.

When the ratings are unexpected (table 8), the results do not differ too much. This shows that the crisis context influences investors' reaction to expected neutral announcements more than to unexpected announcements.

Overall, the results for neutral ratings show, firstly, that the reaction to expected neutral ratings is significantly greater than that to surprise ratings in terms of amplitude. This reaction can be explained by the increased risk aversion of investors during the crisis. Indeed, investors are losing confidence in the information published by rating agencies and are relying on their own thoughts and expectations when making decisions about their financial assets.

Similarly, the short market reaction during periods of stability is explained by the low information content of neutral ratings, given the neutral nature of this type of information, which has no significant

instability effect on the markets. This result is in line with those previously found for bad rating announcements. This conclusion validates the second hypothesis (H2) relating to neutral rating announcements.

Secondly, the results of the test analyses the impact of the crisis on investor reaction to the announcements of neutral ratings are as follows results which show that the context of the crisis influences the reaction of investors to expected neutral ratings announcements more than to unexpected announcements. This result validates the third hypothesis (H3) of this study concerning neutral notations.

Table 8: Mean difference tests of ARs and CARs following unexpected neutral ratings during the periods of crisis versus stability

Jr(t)	Adjusted stock return model				Market model			
	AR	t-stat	CAR (dce)	t-stat	AR	t-stat	CAR (dce)	t-stat
-10	0.0106	1.6452	0.0106	1.6452	0.0102	1.5858	0.0102	1.5858
-9	0.0005	0.0843	0.0112	1.7296	0.0011	0.1770	0.0114	1.7628
-8	-0.0037	-0.578	0.0074	1.1511	-0.0037	-0.573	0.0077	1.1899
-7	0.0000	0.0076	0.0075	1.1588	0.0006	0.0915	0.0083	1.2814
-6	0.0024	0.3717	0.0099	1.5304	0.0007	0.1117	0.0090	1.3931
-5	0.0041	0.6375	0.0140**	2.1679	0.0043	0.6609	0.0132**	2.0540
-4	-0.0083	-1.281	0.0057	0.8868	-0.0079	-1.232	0.0053	0.8220
-3	-0.0002	-0.024	0.0056	0.8633	-0.0012	-0.179	0.0041	0.6430
-2	-0.0069	-1.067	-0.0013	-0.204	-0.0059	-0.912	-0.0017	-0.269
-1	-0.0070	-1.091	-0.0084	-1.295	-0.0065	-1.009	-0.0082	-1.278
0	-0.0038	-0.585	-0.0121*	-1.879	-0.0012	-0.184	-0.0094	-1.462
1	-0.0100	-1.553	-0.022***	-3.432	-0.0069	-1.065	-0.0163**	-2.527
2	-0.03***	-3.731	-0.046***	-7.1639	-0.02***	-3.139	-0.037***	-5.6673
3	0.0130**	2.0164	-0.0332***	-5.1475	0.0129*	1.9963	-0.0237	-3.6710
4	0.0014	0.2150	-0.0318***	-4.9325	-0.0014	-0.2243	-0.0251***	-3.8953
5	0.0018	0.2741	-0.0300***	-4.6583	0.0003	0.0404	-0.0249***	-3.8549
6	0.0091	1.4137	-0.0209***	-3.2447	0.0101	1.5716	-0.0147**	-2.2833
7	-0.0095	-1.4661	-0.0304***	-4.7108	-0.0096	-1.4820	-0.0243***	-3.7652
8	0.0009	0.1362	-0.0295***	-4.5745	0.0030	0.4711	-0.0212***	-3.2942
9	0.0056	0.8635	-0.0239***	-3.7110	0.0042	0.6506	-0.0171***	-2.6436
10	-0.0062	-0.9543	-0.0301***	-4.6653	-0.0031	-0.4801	-0.0201***	-3.1236

AR: Abnormal Return, CAR: Cumulative Abnormal Return.

*, ** and *** represent significance at the 10%, 5% and 1% thresholds respectively.

5.2.2. The reaction of stock markets to anticipated good ratings compared with unexpected ratings during the crisis period.

Figures (09) and (10) below show that the announcement of a good rating in advance of a crisis has no impact on the financial market in terms of ARs. However, in terms of CARs, the impact is significantly negative from three days before the announcement to the last day of the window, i.e. from day d-3 (-9%) to day d+10 (-10%).

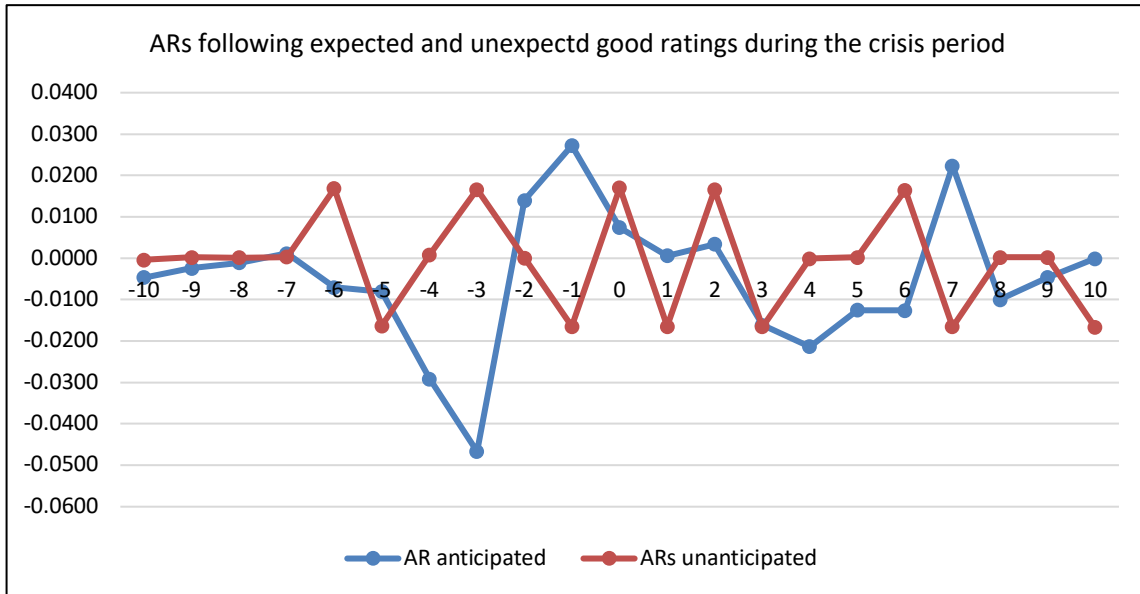


Figure 9: The evolution of ARs according to expected and unexpectd good during the crisis period

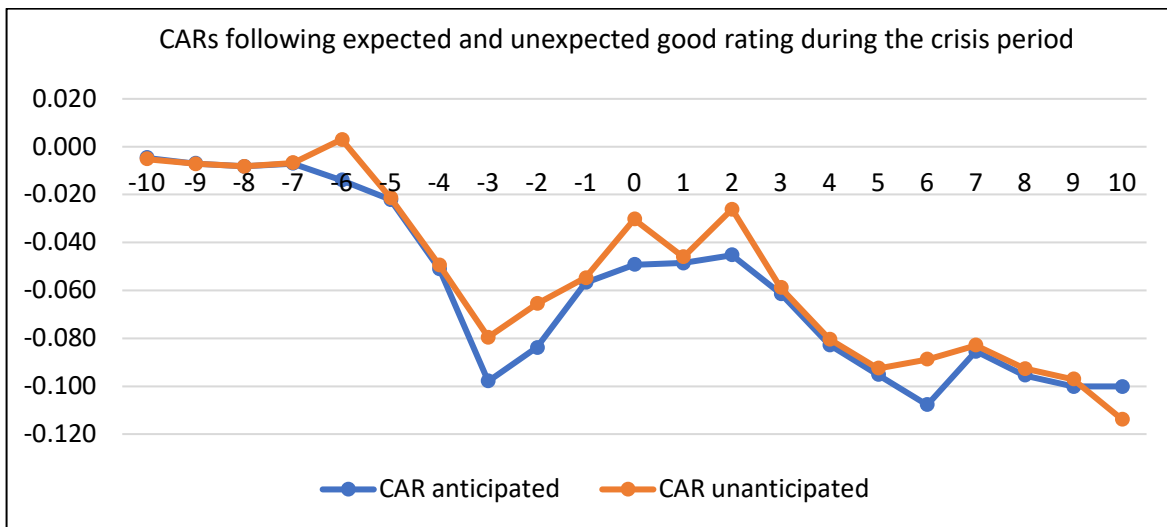


Figure 10: The evolution of CARs according to expected and unexpectd good ratings during the crisis period

For unexpected good announcements, the results recorded post announcement are slightly significant in terms of both ARs and CARs. This shows that an unexpected good announcement does not have a considerable impact, unlike unexpected bad announcements.

These results confirm the asymmetry of reaction between good and bad rating changes, particularly in a crisis context (Steiner and Heinke, 2001; Norden and Weber, 2004). They also help to validate the second hypothesis (H2) of this study concerning good ratings. Moreover, these ratings have a significant impact after the announcement when they are unexpected, unlike unexpected good announcements which do not have a considerable effect.

In a context of stability, the results do not differ from those found in a context of crisis. Figures (11) and (12) show the ARs and CARs observed following expected and unexpected good rating announcements during the stability period.

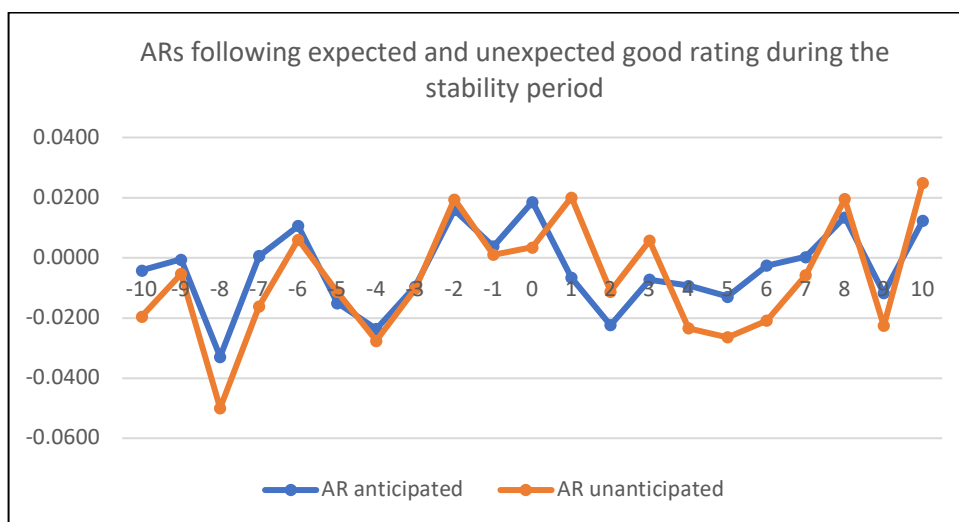


Figure 11: The evolution of ARs following the expected and unexpected good ratings during the stability period

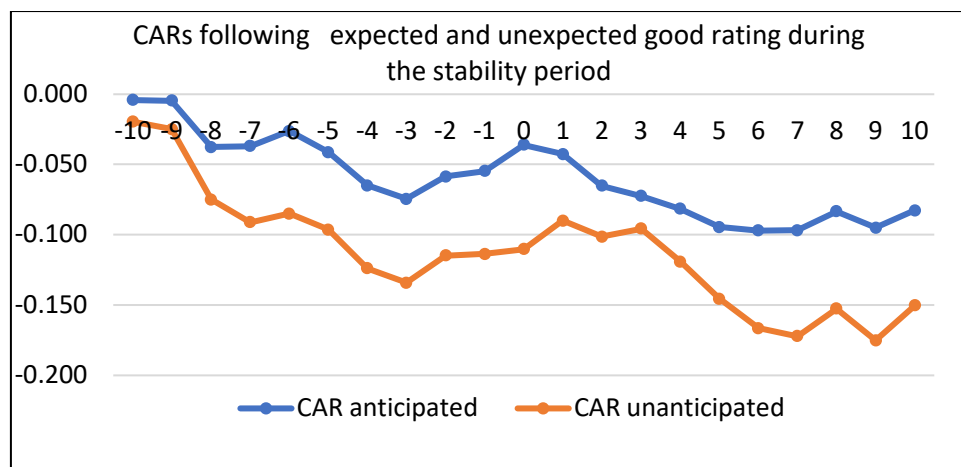


Figure 12: The evolution of CARs following expected and unexpected good ratings during the stability period

When good ratings are published in advance, the ARs recorded are significant before the announcement, i.e. d -8 (-3%) and d -4 (-2.8%), as well as on the day of the announcement d 0 (3%) and a few days later, i.e. d +2 (-2.8%) and d +8 (2.1). For their part, the CARs recorded are largely significant and negative from day d-8 (-3.7) to d+10 (-8.2%), which shows that the expected good ratings have a major impact on investor decisions.

However, the announcement of an unexpectedly good rating had no impact on the market, which is explained by the insignificant ARs recorded. In terms of CARs, the market reacted significantly from d-8 (-3%) to d+10 (-6.7%).

To test the robustness of the results obtained, we applied tests of differences in means between the different sub-samples. Table (9) below shows the differences in averages between RAs and CARs following expected versus unexpected good ratings during the crisis period.

Table 9: Mean difference tests of ARs and CARs according to expected versus unexpected good ratings during the crisis period

Adjusted stock return model					Market model			
J(t)	AR	t-stat	CAR (dce)	t-stat	AR	t-stat	CAR (dce)	t-stat
-10	0.0050	0.2290	0.0050	0.2290	-0.0042	-0.1939	-0.0042	-0.1939
-9	-0.0133	-0.6083	-0.0083	-0.3793	-0.0026	-0.1199	-0.0069	-0.3138
-8	-0.0051	-0.2329	-0.0134	-0.6122	-0.0013	-0.0574	-0.0081	-0.3712
-7	-0.0104	-0.4768	-0.0238	-1.0890	0.0009	0.0418	-0.0072	-0.3294
-6	-0.0326	-1.4874	-0.0564**	-2.5764	-0.0239	-1.0899	-0.0311	-1.4193
-5	0.0088	0.4039	-0.0476**	-2.1725	0.0082	0.3757	-0.0229	-1.0436
-4	0.0083	0.3799	-0.0393*	-1.7926	-0.0300	-1.3684	-0.0528**	-2.4120
-3	-0.07***	-3.1607	-0.108***	-4.9534	-0.063**	-2.8910	-0.116***	-5.3030
-2	0.0124	0.5653	-0.096***	-4.3881	0.0139	0.6345	-0.102***	-4.6685
-1	0.052**	2.3940	-0.0437*	-1.9941	0.0437*	1.9936	-0.058***	-2.6748
0	-0.014	-0.6423	-0.057***	-2.6364	-0.0096	-0.4402	-0.068***	-3.1151
1	0.0266	1.2147	-0.0311	-1.4217	0.0171	0.7788	-0.051**	-2.3362
2	-0.0161	-0.7360	-0.0473**	-2.1576	-0.0131	-0.5985	-0.064***	-2.9348
3	0.0068	0.3119	-0.0404*	-1.8457	0.0004	0.0162	-0.063***	-2.9186
4	-0.024	-1.1065	-0.064***	-2.9522	-0.0213	-0.9712	-0.085***	-3.8898
5	0.0038	0.1738	-0.06***	-2.7784	-0.0127	-0.5808	-0.097***	-4.4706
6	-0.035	-1.6056	-0.096***	-4.3840	-0.0290	-1.3248	-0.126***	-5.7954
7	0.0389*	1.7764	-0.057***	-2.6075	0.0388*	1.7737	-0.088***	-4.0217
8	0.0023	0.1050	-0.054**	-2.5026	-0.0102	-0.4641	-0.098***	-4.4858

9	0.0045	0.2044	-0.0503**	-2.2982	-0.0048	-0.2214	-0.103***	-4.7072
10	0.0229	1.0479	-0.0274	-1.2503	0.0166	0.7589	-0.086***	-3.9483

AR: Abnormal Return, CAR: Cumulative Abnormal Return.

*, ** and *** represent significance at the 10%, 5% and 1% thresholds respectively.

The results obtained show that, during a crisis period, the differences in averages between the RAs are slightly significant before the rating announcement, i.e. on d -3 (-6.3%), as well as after the announcement on d+1 (4%) and d+7 (3.8%). In terms of CARs, the mean differences between the ARs were largely significant and negative from d-8 (-3.7%) to d+10 (-8.2%).

Thus, the negative impact of early good announcements in times of crisis is explained by the negative reaction of investors to a good rating announcement. In fact, the latter take advantage of positive information that reflects a good image of the financial health of their financial assets and start by overselling their assets (Goh and Ederington, 1998).

In periods of stability, the market’s reaction to expected versus unexpected good changes does not differ from that observed in periods of crisis. In fact, table (44) below shows that the differences between the RAs are significant on the day of the announcement d 0 (3.4%) and the two days that follow, i.e. d+1 (-3.4%) and d+2 (-3.4%). In terms of CARs, these differences are also significant on the day of the announcement d0 (3.8%) and on the days that follow, from d+2 (-3%) to d+6 (-2.8%).

Table (10): Mean difference tests of ARs and CARs according to expected versus unexpected good ratings during the stability period

J(t)	Adjusted stock return model				Market model			
	AR	t-stat	CAR (dce)	t-stat	AR	t-stat	CAR (dce)	t-stat
-10	0.0104	0.7065	0.0104	0.7065	0.0112	0.7646	0.0112	0.7646
-9	0.0193	1.3162	0.0297**	2.0227	0.0043	0.2954	0.0156	1.0599
-8	-0.0144	-0.9783	0.0154	1.0444	-0.0159	-1.0784	-0.0003	-0.0185
-7	0.0183	1.2452	0.0337**	2.2896	0.0175	1.1872	0.0172	1.1687
-6	0.0135	0.9191	0.0472***	3.2088	0.0152	1.0338	0.0324**	2.2025
-5	-0.0224	-1.5208	0.0248	1.6879	-0.0187	-1.2708	0.0137	0.9317
-4	-0.0218	-1.4841	0.0030	0.2038	-0.0197	-1.3417	-0.0060	-0.4100
-3	0.0033	0.2264	0.0063	0.4302	-0.0086	-0.5865	-0.0146	-0.9964
-2	0.0203	1.3778	0.0266*	1.8079	0.0124	0.8414	-0.0023	-0.1550
-1	0.0086	0.5846	0.0352**	2.3925	0.0066	0.4509	0.0044	0.2960
0	0.0392***	2.6669	0.0744***	5.0595	0.0337**	2.2920	0.0380**	2.5880
1	-0.0331**	-2.2538	0.0412***	2.8056	-0.0334**	-2.2712	0.0047	0.3168
2	-0.0497***	-3.3814	-0.0085	-0.5757	-0.0336**	-2.2864	-0.0290*	-1.9696
3	-0.0317**	-2.1594	-0.0402***	-2.7351	-0.0201	-1.3696	-0.0491***	-3.3392

4	0.0134	0.9106	-0.0268*	-1.8246	0.0049	0.3347	-0.0442***	-3.0045
5	0.0108	0.7373	-0.0160*	-1.0872	0.0006	0.0412	-0.0436***	-2.9634
6	0.0252	1.7121	0.0092	0.6249	0.0158	1.0776	-0.0277*	-1.8858
7	0.0140	0.9526	0.0232	1.5775	0.0065	0.4403	-0.0212	-1.4455
8	0.0038	0.2597	0.0270*	1.8372	0.0073	0.4970	-0.0139	-0.9486
9	-0.0002	-0.0137	0.0268*	1.8235	-0.0010	-0.0651	-0.0149	-1.0136
10	-0.0096	-0.6512	0.0172	1.1723	-0.0003	-0.0173	-0.0152	-1.0310

AR: Abnormal Return, CAR: Cumulative Abnormal Return.

*, ** and *** represent significance at the 10%, 5% and 1% thresholds respectively.

The results show the existence of a significant reaction after the actual occurrence of the expected versus unexpected good rating announcements. These results are in line with those previously found for bad ratings and also converge with those previously found by (Purda, 2007) who showed the similarity of reactions to expected and unexpected ratings in terms of amplitude during periods of stability.

The final objective is to analyse the impact of the crisis on investor reaction to good rating announcements. The two tables (11) and (12) present the results of the tests for differences in means between ARs and CARs observed following the announcement of the expected good ratings between the two periods of crisis and stability.

Table 11: Mean difference tests of ARs and CARs according to expected good ratings in the period of crisis versus stability

Jr(t)	Adjusted stock return model				Market model			
	AR	t-stat	CAR (dce)	t-stat	AR	t-stat	CAR (dce)	t-stat
-10	0.0260	1.2496	0.0260	1.2496	-0.0005	-0.0252	-0.0005	-0.0252
-9	-0.0235	-1.1286	0.0025	0.1210	-0.0018	-0.0887	-0.0024	-0.1139
-8	0.0236	1.1360	0.0261	1.2569	0.0318	1.5288	0.0294	1.4149
-7	-0.0049	-0.2370	0.0212	1.0200	0.0005	0.0251	0.0300	1.4400
-6	-0.0223	-1.0711	-0.0011	-0.0512	-0.0176	-0.8482	0.0123	0.5918
-5	-0.0003	-0.0135	-0.0013	-0.0646	0.0070	0.3346	0.0193	0.9264
-4	0.0192	0.9234	0.0179	0.8587	-0.0055	-0.2640	0.0138	0.6624
-3	-0.0468**	-2.2482	-0.0289	-1.3895	-0.0372*	-1.7901	-0.0235	-1.1276
-2	0.0004	0.0178	-0.0285	-1.3717	-0.0019	-0.0934	-0.0254	-1.2211
-1	0.0350	1.6805	0.0064	0.3088	0.0234	1.1240	-0.0020	-0.0971
-0	-0.0330	-1.5886	-0.0266	-1.2798	-0.0112	-0.5370	-0.0132	-0.6341
1	0.0139	0.6701	-0.0127	-0.6096	0.0073	0.3487	-0.0059	-0.2854
2	0.0349	1.6791	0.0222	1.0695	0.0258	1.2421	0.0199	0.9567
3	-0.0019	-0.0927	0.0203	0.9768	-0.0090	-0.4305	0.0109	0.5262
4	-0.0212	-1.0172	-0.0008	-0.0404	-0.0121	-0.5818	-0.0012	-0.0556
5	0.0130	0.6245	0.0121	0.5841	0.0004	0.0199	-0.0007	-0.0357

6	-0.0068	-0.3263	0.0054	0.2578	-0.0100	-0.4830	-0.0108	-0.5188
7	0.0051	0.2470	0.0105	0.5048	0.0220	1.0571	0.0112	0.5383
8	-0.0220	-1.0555	-0.0115	-0.5508	-0.0234	-1.1251	-0.0122	-0.5868
9	0.0126	0.6075	0.0012	0.0567	0.0071	0.3416	-0.0051	-0.2453
10	-0.0109	-0.5228	-0.0097	-0.4660	-0.0124	-0.5962	-0.0175	-0.8415

AR: Abnormal Return, CAR: Cumulative Abnormal Return.

*, ** and *** represent significance at the 10%, 5% and 1% thresholds respectively.

Table (12) shows that a significant difference in average ARs was recorded three days before the official announcement of the anticipated good rating, i.e. on d-3 (-3.7%). In terms of CARs, there was no significant difference in mean values.

Tableau 12: Mean difference tests of ARs and CARs according to unanticipated favourable ratings in periods of crisis versus stability

Adjusted stock return model					Market model			
J(t)	AR	t-stat	CAR (dce)	t-stat	AR	t-stat	CAR (dce)	t-stat
-10	0.0314*	1.9849	0.0314*	1.9849	0.0150	0.9469	0.0150	0.9469
-9	0.0092	0.5820	0.0406**	2.5669	0.0051	0.3243	0.0201	1.2711
-8	0.0143	0.9081	0.0549***	3.4749	0.0172	1.0887	0.0373**	2.3599
-7	0.0238	1.5075	0.0787***	4.9824	0.0171	1.0797	0.0543***	3.4395
-6	0.0238	1.5066	0.1025***	6.4890	0.0214	1.3559	0.0758***	4.7955
-5	-0.0315*	-1.9924	0.0710***	4.4966	-0.0199	-1.2625	0.0558***	3.5330
-4	-0.0109	-0.6918	0.0601***	3.8048	0.0048	0.3009	0.0606***	3.8339
-3	0.0258	1.6319	0.0859***	5.4368	0.0175	1.1049	0.0780***	4.9388
-2	0.0082	0.5217	0.0941***	5.9585	-0.0035	-0.2196	0.0746***	4.7191
-1	-0.0089	-0.5620	0.0853***	5.3965	-0.0137	-0.8641	0.0609***	3.8550
0	0.0202	1.2802	0.1055***	6.6767	0.0322**	2.0357	0.0931***	5.8907
1	-0.0458***	-2.8984	0.0597***	3.7783	-0.0432***	-2.7336	0.0499***	3.1572
2	0.0013	0.0846	0.0610***	3.8629	0.0053	0.3375	0.0552***	3.4947
3	-0.0405**	-2.5635	0.0205	1.2994	-0.0294*	-1.8634	0.0258	1.6313
4	0.0165	1.0418	0.0370**	2.3412	0.0141	0.8917	0.0399**	2.5230
5	0.0200	1.2672	0.0570***	3.6084	0.0137	0.8694	0.0536***	3.3924
6	0.0535***	3.3888	0.1106***	6.9972	0.0348**	2.2029	0.0884***	5.5954
7	-0.0198	-1.2508	0.0908***	5.7464	-0.0104	-0.6573	0.0780***	4.9381
8	-0.0204	-1.2934	0.0704***	4.4530	-0.0059	-0.3755	0.0721***	4.5626
9	0.0080	0.5037	0.0783***	4.9567	0.0110	0.6960	0.0831***	5.2585
10	-0.0434***	-2.7465	0.0349***	2.2101	-0.0293	-1.8529	0.0538***	3.4057

AR: Abnormal Return, CAR: Cumulative Abnormal Return.

*, ** and *** represent significance at the 10%, 5% and 1% thresholds respectively.

However, when good ratings come as a surprise (i.e. are not anticipated), the results found are very different from those recorded for expected announcements. In fact, the differences between ARs were significant and positive on the day of the announcement d_0 (3%) and on $d+6$ (3.5%). However, the differences between CARs were largely significant and positive from d_0 (9.3%) to $d+10$ (5.4%).

To sum up, the results for good ratings show, firstly, that the market reacts significantly to good announcements whether it is a period of crisis or a period of stability. However, the reaction to unexpected good ratings is less intense than that to expected ratings. This conclusion validates the second hypothesis (H2) concerning good rating announcements.

Secondly, the test analyses the impact of the crisis on the reaction of investors with good ratings produces results that diverge from those found for investors with bad ratings. These results allow us to reject the third hypothesis (H3) of this study for the good ratings.

Overall, these conclusions once again validate the asymmetry of investor reaction to bad versus good (ratings, even in times of crisis. Furthermore, these results clearly show that investors do not react to good ratings, since this type of rating does not provide them with any unknown informations to guide their financial decisions.

6. Conclusion

In this article, we study the reaction of stock markets to rating announcements expected or unexpected by the market in a crisis context by conducting an empirical study on the MENA stock market. The study sample is made up of 148 rating announcements for listed companies in the countries in this zone. The study covers the period from 2010 to 2022. This period covers the two major crises, the political crisis and the COVID-19 health crisis.

First, we divided the samples according to the anticipation criterion. For each type of rating, we have distinguished between anticipated ratings and surprise ratings. The rating is considered to be early if the CAR is significant over the 120 days preceding the announcement. Otherwise, the rating is assumed to be unexpected or surprise.

Then, in order to measure the impact of expected versus unexpected ratings on the stock market, we carried out event studies for each type of announcement (expected or unexpected) and according to the period (crisis or stability).

Finally, we analyzed the impact of the crisis on investor reaction to rating announcements. More specifically, we have detected whether the crisis context amplifies the reaction to expected ratings more than to unexpected ratings. To do this, we applied tests for differences in means between the different samples according to the type of rating and the period.

The results obtained showed, firstly, the existence of a statistically significant association and correlation between the crisis and the anticipation of ratings, for both bad and neutral ratings. These ratings are more pronounced in times of crisis. In contrast, the insignificance of the results for good ratings reflects the absence of correlation between the two variables, which shows that the crisis does not favour the anticipation of good ratings.

Secondly, a study of the market's reaction to expected versus unexpected ratings during a crisis led to the following conclusions: For bad ratings in times of crisis, investors react more intensely to expected downgrades than to unexpected ones. The crisis is also amplifying the reaction of investors to expected bad ratings.

For neutral ratings, the results obtained converge with those found for downgrading ratings. However, this reaction is less intense in terms of amplitude. For good ratings, the results show that the reaction to unexpected good ratings is less intense than that to expected good ratings. However, the crisis context does not influence investor reaction to expected ratings.

Overall, these conclusions once again validate the asymmetry of investor reaction to expected downgrades compared with expected upgrades in times of crisis. These results reflect investors' loss of confidence in the information published by the rating agencies. This reaction highlights the irrational behavior of investors in times of crisis (Michayluk and Neuhauser, 2006). Similarly, the market's weak reaction to good announcements is explained by the fact that this type of announcement does not provide them with any unknown information to guide their financial decisions.

In conclusion, our research work may be useful for certain economic players. For rating agencies, the study shows the importance of the rating role for financial players, which pushes rating agencies to control the timeliness of publication and to ensure the quality of ratings in order to mitigate and reduce information asymmetry on financial markets and conflicts of interest. Also, it allows them to take account of the specific characteristics of stock markets in less developed countries, which are fragile and less resistant to shocks and events.

For investors, the results of this research highlight the informational role of ratings published on financial markets during crises, which represent a benchmark and a basic criterion on which an investor's investment decision is based. In addition, these results encourage companies and their managers to better guarantee the transparency and credibility of their ratings, to help investors make the right choice of shares and sectors.

Our contribution lies, firstly, in the study of the research problem on a sample of less developed countries and in the two contexts (crisis or stability). Secondly, the crises studied (political crisis and health crisis) are of different types other than financial. And finally, the use of the two different empirical models and robustness tests to guarantee the robustness of the results obtained.

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