

## **CREDIT RISK AND RATING REGULATION: A COMPARATIVE STUDY APPLIED TO THE CHINESE AND EUROPEAN FINANCIAL MARKETS**

**Xuheng TONG**

*University of Lorraine*

*13 Rue Michel Ney, 54000 Nancy, France*

*tong.xuheng@gmail.com*

**Abstract.** *An introduction to rating regulation starts to set the stage of the paper. The public intervention is necessary clearly revealed by recent crisis and justifies the importance of the research. It is also interesting to have a look at different approaches used by Chinese and European authorities under an evolutionary and comparative perspective. It provides us with a good example of sectoral and integrated supervisory system. Credit rating is firstly used for bond investors. Since bond market is less liquid and both Chinese and European stock market represent special characteristics, related to segmentation on one hand and integration: Euronext Paris, for instance, on the other hand, we chose to examine the informative impact of Credit Rating Changes (CRCs) on daily common stock returns of publicly listed companies (issuer ratings) and on the equivalence of the issued senior non-guaranteed bonds (issue ratings). The study covers 16 years since the new century where Credit Rating Agencies (CRAs) started to actively perform on both markets (from 01/01/2000 to 01/01/2016), the same methodology of a classic event study with market model enables us to compare and to analyze the results under different institutional environment between mature and emerging market. We found Wealth Redistribution Hypothesis (WRH) from bondholders to shareholders rather evident in Chinese market while in the French market, the results are in the line of theory framework and thus valid the Signaling Hypothesis (SH) in the literature, showing no significant Abnormal Returns (ARs) for upgrades and negative significance for downgrades. Secondly, we found that reactions of Chinese investors evolved into the different direction. They took downgrades as “bad news” before the crisis (2008) and “good new” afterward. As for French investors, there were significant positive reactions to upgrades independently to the period while significant negative reactions were observed only before and during the crisis to downgrades. The behavior of CRAs is the third angle to explore the subject. Migration tables showed that Chinese local CRAs, compared to “Big Three”, are systematically more generous in giving better ratings. Besides, we also witnessed a recent fast increase of market share of CRAs adopting investors-paying models, such as China Credit Rating Co. (CCRC) and Egan-Jones Ratings Company (EJR).*

**Keywords:** *rating regulation; Credit Rating Changes (CRCs); event study; Chinese and European financial market; institutional environment; financial crisis; local and global Credit Rating Agencies (CRAs).*

## Introduction

Credit Rating Agency (CRA), just as the name implies, is a kind of organization whose basic *function* is to assess the level of credit risk of the specific financial instrument and their issuers for both private and public entities. This appraisal will be concluded and disclosed in the form of rating to the public.

The paper starts with an introduction of different rating *regulation* present in China and in Europe. The different approach, *sectoral* and *integrated*, could be justified by the specialties of each market institutional environment. Jorion (2005) and Alsakka, Gwilym, Klusak and Tran (2015) both showed the change of regulatory regime could have incidences on ratings.

Then, we are going to examine *reactions* of common stock *investors* to Credit Rating Changes (CRCs) by calculating the Abnormal Returns (ARs). The purpose of this research is to verify or refute the hypothesis, based on theories and literature review departing generally from Anglo-Saxon stock markets. It is also interesting to see the influence of *financial crisis (2008)* playing in the game. The third interest of our research concerns the *behaviors* of both global and local CRAs, not only conceptually but also empirically.

Our work brings several *contributions*. Firstly, we concentrate on the Chinese stock market, a representative example of emerging market. There are few studies such as that made by Poon and Chan (2008). The objective of the study is to use a more general sampling and to cover a relatively comprehensive period (01/01/2000 to 01/01/2016). Besides, our study gets profound by a *comparison* with the French market, a representative *continental European market*. This perspective is rare: researchers are used to taking North American market as a benchmark. The choice is neither random. Chinese and French market present different *institutional environment* (segmentation and integration) and the evolution of rating *regulation approaches*. The day of Lehman Brothers' bankruptcy: 15/09/2008 marks the *crisis*, contributing as a separating point to analyze the general results. Thirdly, we plan to examine CRAs from the inside of the organization by *behaviors* of both local and global CRAs.

The paper begins with background information concerning rating regulation and the corresponding institutional market environment in section I. Section II is devoted to the relative theory framework and a literature review of Credit Rating Changes (CRCs). The research design is going to be detailed in section III, along with the results presentation (section IV). The paper is finished by a descriptive analysis of CRAs' behaviors (section V).

### Setting the stage: rating regulation

The recent crisis witnessed some *dysfunctions* of the *information intermediary* and risk assessor and brought about a series of *criticisms* pointing to CRAs. Beyond all critics, public attention has shown, conversely, that the private organization is becoming an indispensable part of the *financial market* and it affects, indisputably,

the decisions of market actors, both *issuers* and *investors*, either individual or institutional.

Under this context, *Chinese and European* financial authorities have taken different paths to retrieve the *control of rating*, with different *regulation* philosophy. The choice of system is not random but should correspond to their respective *institutional environment*.

China adopts the *sectoral structure*, with People's Bank of China and other three separating regulators dedicating to financial domains (banking, market and insurance companies). Even though the lack of cooperation is considered as a natural drawback to being corrected, it meets current needs of regulation for a sector that is still at the preliminary stage and is highly *segmented*.

Contrary to the Chinese rating regulation, *European National Competent Authorities* intend to *conglomerate* their *supervisory structure* by increasing the participation of national central banks in *rating* supervision. It shows that, when the market economics has arrived on a certain stage, the artificial dividing border among financial activities should disappear, with the *complication* of financial products and the *universalization* of financial organizations. However, whether their choices *on the national level*, after the *regulatory reforms post-crisis* in 2011, *ESMA (European Securities Market Authorities)* has *harmonized* the rating regulation *on the European level*.

### **Theory framework and literature review**

According to the *Theory of information asymmetry*, problems of *moral hazard* would easily happen. Debtors may secretly take more risks at a low cost than they are allowed by the contract. Under this circumstance, CRAs work as a "coordinative mechanism" (Boot, Milbourn & Schmeits, 2006) between issuers (borrowers) and investors (lenders). Pinches and Shingleton (1978), and Kliger and Sarig (2000) agreed with the *Theory of information content*. Ederington, Yawitz and Roberts (1987), Griffin and Sanvicente (1982), and Elayan, Wei, Fayez and Meyer (2003) went further and considered ratings as private information, among which there are CRCs.

The notion of modification of ratings contains two meanings: "Upgrading" means the appreciation of issuers' ability to honor their debt or an increase of their overall financial situation; while "downgrading," means that CRAs lose faith on the creditworthiness of issuers or their obligations.

Since our theme accords attention only to *informative impact* on stock market, in the line of *Theory of Signal (Spencer)*, our concentration will focus on a series of paper on the same field, among which we may cite the works of Holthausen and Leftwich (1986), Glascock, Davidson and Henderson (1992), Hand, Holthausen and Leftwich (1992), Dichev and Piotroski (2001), and May (2010). The conclusion of research could be presented, in a general way, that "downgrade" has a negative significant impact on the market, but in the case of "upgrade", there was usually no obvious reaction statistically.

There are a few studies applied to a European country, for *France* (Francois-Heude & Paget-Blanc, 2004), *German* (Kenjegaliev, Duygun & Mamedshakhova, 2016), *Spain* (Abad-Romero & Robles-Fernandez, 2006, 2007) and *Sweden* (Li, 2004) and the results are quite mitigated.

With a fast development in economics, *emerging countries* start to attract the attention of the academic world, but the amount of paper is quite limited. Han et al. (2009) conducted a study about local markets of 26 developing countries and their study showed no informative impact of CRCs.

## Research design

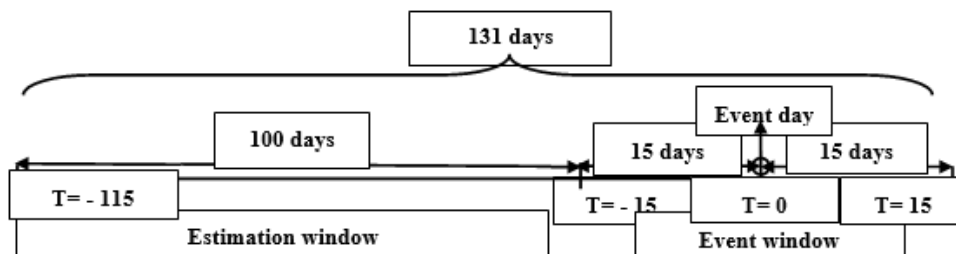
We adopt a traditional *methodology*, initiated by Brown and Warner (1984), Dyckman, Philbrick and Stephan (1984), Holthausen and Leftwith (1986) in studying the informative impact of CRCs. The use of *event study* (Table 1) requires *market information* of the exact day when CRCs happened and the database *Bloomberg* makes it easy to get day-to-day returns, either for daily common stock of a specifically listed company or for its corresponding index, from 01/01/2000 to 16/01/2016.

It should be noted here that in the Chinese market, there is dual share (30 dual shares for upgrading and 23 dual shares for downgrading in our sample), which makes an event could have double impact on both continental Chinese market and Hong Kong market segment separately.

**Table 1. General description of sample**

Total Non-Contaminated Sample		China		France	
Number of series		UP	DOWN	UP	DOWN
		282	141	110	158
Event Number		252	118		
Crisis	Before	31	33	39	61
	After	251	108	71	97
	Between			6	23

We fixed our estimation window at [-115,-15] for a period of 100 days and event windows [-15, +15] for 31 days (including event day), under which there are also some sub-windows to test results (Figure 1).



**Figure 1. Window description**

Chinese individual share investors are famous for their speculative spirit. Instead of investing in the value of a listed company, they care more about price differences in a *short-term*, which makes it probable for them to be more sensitive to financial information circulated on the market. As an effect, we take a short period for the event window and a relatively long period for an estimation window but it also brings the worry of contamination.

As the comparative sample, we constituted same windows for the French market. We are aware of the importance to expand the windows for a mature market as indicated by several similar articles (Francois-Heude & Paget-Blanc, 2004; Kenjegaliev et al., 2016).

The statistics described in the table are all *non-contaminated* in the meaning that during the period of 131 trading days, we exclude events with other CRC(s) happened during the estimation window as well as during the event window.

According to Followill and Martell (1997, p.81), it is important to “knowing the precise timing of the arrival of event information” by “eliminat(ing) announce events contaminated by extraneous, contemporaneous information events or events proceeded by the announcement by the other major rating agency.”

We should admit that without the control of concurrent sovereign rating(s) influence and other possible financial release or reports, our non-contaminated sample may be still contaminated to some extent. A necessary adjustment should be made to avoid the problems in the following study.

In order to get Abnormal Returns (ARs), Average Abnormal Returns (AARs) and Cumulative Average Abnormal Returns (CAARs), we use following formulas: Firstly, by using daily common stock price for both market ( $P_m$ ) and individual equity ( $P_i$ ), we get  $R_{mt}$  and  $R_{it}$  on day  $t$  respectively:

$$R_{it} = \text{Ln} (P_{i,t} / P_{i-1,t}) \quad (1)$$

with  $R_{it}$ : actual common stock return observed for individual equity  $i$  on day  $t$ .

$$R_{mt} = \text{Ln} (P_{m,t} / P_{m-1,t}) \quad (2)$$

with  $R_{mt}$ : market return on day  $t$ , where we take three separated indexes (obtained from *Bloomberg*) as market reference: SHASHR index and SZASHR Index for A shares listed in *Shanghai Stock Exchange* and *Shenzhen Stock Exchange* respectively; HSML100 Index for Chinese companies listed in H share segment in Hong Kong. The reason to choose them instead of the others is that these indexes compound the largest sample of companies in each listing place.

Secondly, under the 100-days estimation window, we have 100  $R_{it}$  and 100 corresponding  $R_{mt}$ . With the help of SPSS (by the function of “simple regression”), we could get two coefficients from the equation:

$$R_{it} = \alpha_i + \beta_i * R_{mt} \quad (3)$$

Then, we calculate  $R_{nt}$  (expected return for each stock  $i$  on day  $t$  during event window(s)  $[p,q]$ ) by market model:

$$R_{nt} = \hat{\alpha}^i + \hat{\beta}^i * R_{mt} \tag{4}$$

with  $\hat{\alpha}^i$  and  $\hat{\beta}^i$  obtained above by equation (3)

We could get AR by

$$AR = R_{it} - R_{nt} \tag{5}$$

with AR: difference between return observed in reality and return expected by stock investors.

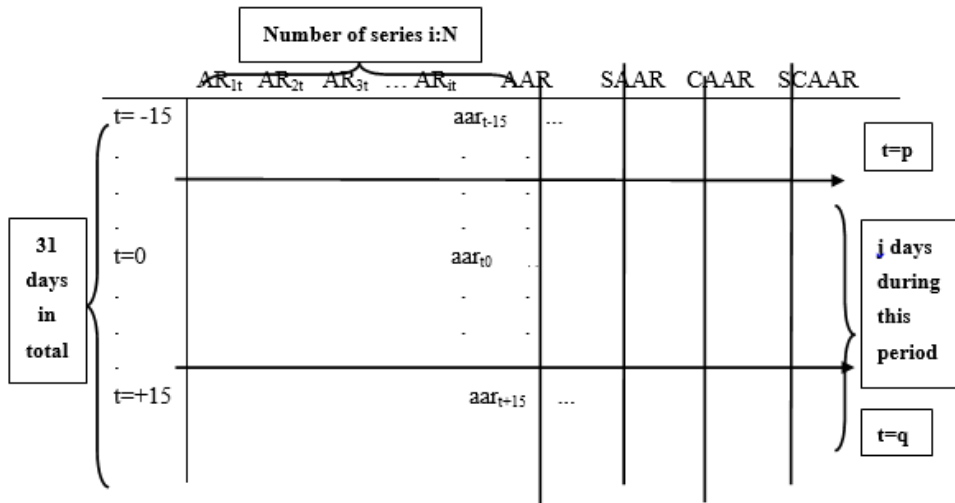


Figure 2. Calculation of AAR and CAAR

On a certain day  $t$ , AAR and SAAR (standardized average abnormal return) are calculated by the following equations:

$$AAR_t = \text{Sum} (AR_{1t} : AR_{it}) / N \tag{6}$$

$$SAAR_t = AAR_t / S(AAR)_t \sum_{i=1}^N AR_{it} / N \tag{7}$$

$$\text{With } S(AAR)_t = \text{STDEV} (AAR_{1t} : AAR_{it}) / \sqrt{N} \tag{8}$$

CAAR are related to testing windows. Taking a random period of  $[p,q]$  from the total 31 days of the event (Figure 2), we have:

$$CAAR = \sum_{t=p}^q AAR_t \quad [1 \leq p, q \leq 31] \tag{9}$$

The T-test follows the same spirit previously and we used SPSS to facilitate the calculation.

## Results presentation

### General results for Chinese market

The results of tests are split into two tables by type of CRCs: upgrades (282 series) – Table 2 – and downgrades (141 series) – Table 3.

**Table 2. General results for upgrades**

Day	AAR	t	p value	Significance
-5	-0.31%	-3.09	0.22%	***(-)
-2	-0.12%	-0.74	46.14%	
-1	-0.36%	-2.42	1.61%	**(-)
0	-0.15%	-1.08	28.11%	
1	0.13%	0.65	51.60%	
2	0.02%	0.17	86.79%	
Pre-window	CAAR	t	p value	Significance
[-5, 0]	-1.07%	-2.66	0.82	***(-)
[-2, -1]	-0.47%	-2.02	4.43%	**(-)
[-2, 0]	-0.61%	-2.10	3.64%	**(-)
[-1, 0]	-0.49%	-2.21	2.78%	**(-)
<b>Post-window and Around window</b>	<b>No significance</b>			

\*, \*\*, \*\*\* indicate respectively, 10%, 5%, 1% level of significance (two-tails tests) to see if the results are significantly different from 0. *Idem. Supra.*

**Table 3. General results for downgrades**

Day	AAR	t	p value	Significance
-2	-0.49%	-2.49	1.4%	**(-)
-1	-0.01%	-0.04	96.5%	
0	<b>0.41%</b>	<b>2.02</b>	<b>4.5%</b>	<b>**(+)</b>
1	-0.28%	-1.27	20.7%	
2	0.44%	2.37	1.9%	**(+)
Pre-window	CAAR	t	p value	Significance
[-2, -1]	-0.49%	-1.81	7.3%	*(-)
[-2, 0]	-0.08%	-0.26	79.9%	
[-1, 0]	0.41%	1.57	11.9%	
Post-window	CAAR	t	p value	Significance
[0, 1]	0.13%	0.44	65.9%	
[0, 2]	0.58%	1.74	8.4%	*(+)
[1, 2]	0.16%	0.66	50.9%	
<b>Around window</b>	<b>No significance</b>			

Both upgrades and downgrade proved the validation of *WRH*, put forward among others, by Abad-Romero & Robles-Fernandez (2006 & 2007) for the Spanish market. More specifically, there is negative *anticipation* with significance on the day before the event ( $t_{-1}$ ) for upgrades.

There was truly a short negative reaction before the event of downgrades, but the market corrected their behaviors very quickly afterward. For the date of the event, investors reacted positively to the bad information and the effect lasted only shortly to  $t_{+2}$ .

### **Results for French market**

The results on French market is more predictable, based on general results of CRCs present in theory and in literature, with no significance for upgrades and negative significance for downgrades, thus the *SH* is valid.

The study of Francois-Heude and Paget-Blanc (2004), covering the relatively short period (01/01/2001 to 31/05/2003) showed significant negative CAARs before the downgrading and positive CAARs after the event. We did find CAARs in the same direction under the same event period (Table 4), but our effect does not last as long as theirs does, nor was significance observed for the post-event.

**Table 4. Results on French market**

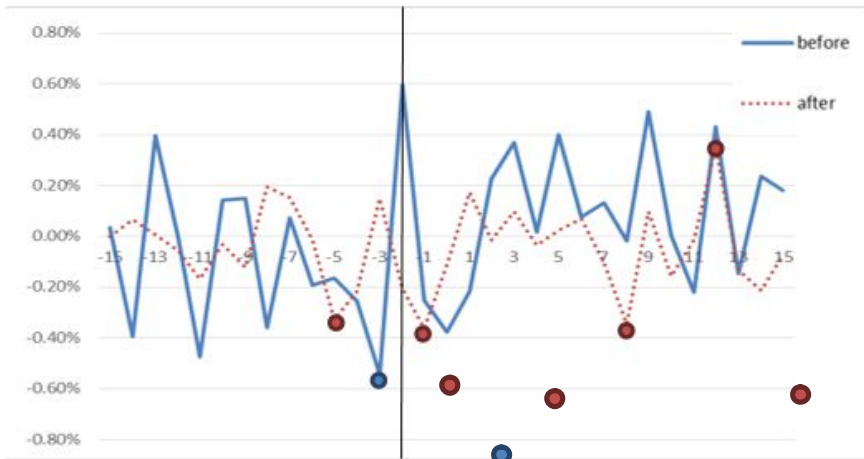
Up	AR (100) - No significance			
Down	AAR(158)	t test	p value	Significance
-2	-0.10%	-0.48	63.10%	
-1	-0.44%	-1.97	5.04%	*(-)
0	-0.17%	-0.71	47.79%	
1	-0.33%	-1.67	9.76%	*(-)
2	-0.25%	-1.29	19.81%	
	CAAR	t test	p value	Significance
[-1,0]	-0.62%	-1.73	8.56%	*(-)
[0,1]	-0.51%	-1.55	12.33%	
[-1,1]	-0.95%	-2.27	2.48%	**(-)
[-2,2]	-1.30%	-2.47	1.47%	**(-)

From the point of view of methodology, our event window was not long enough, compared to other studies on mature markets, to examine significance around the window (-30 to 30 day), which left an improvement in the future.

### **Result breakdown on Chinese market pre/post crisis**

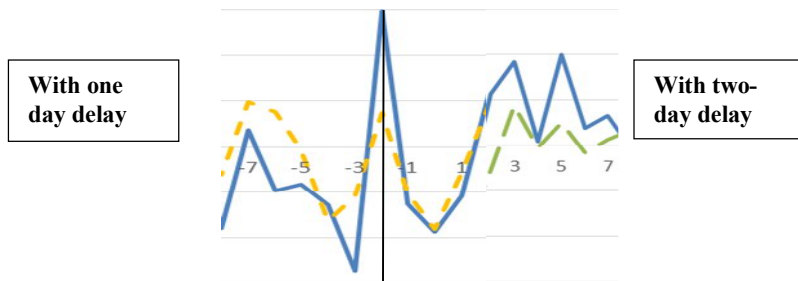
The breakdown of general results (Figure 3) brings us to the second interest of our *comparative study* inspired by Dardour (2008): an examination of the market reaction to the crisis (2008).





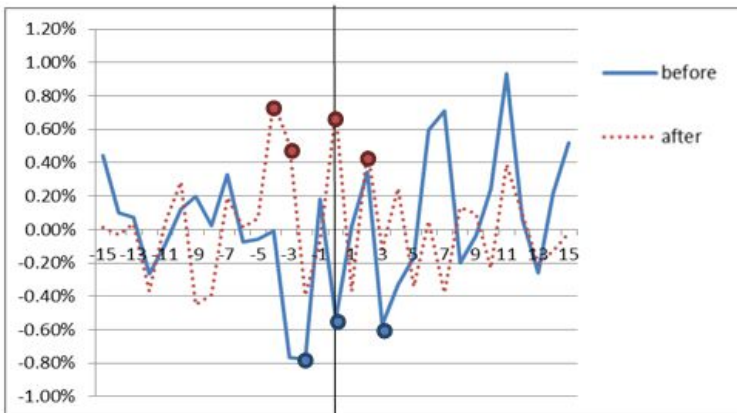
**Figure 3. Reaction of Chinese investors in front of upgrades pre/post crisis**

The behavior of investors remained similar in the case of upgrades. If we change the “after curve” slightly with one or two-day delay (Figure 4), we may observe that the modified “after curves” correspond very plausibly to the “before curve” for the window [-7, 7] around the event.



**Figure 4. Modified “after curve” with one or two-day delay**

Once separating the sample, significant ARs were observed for both periods in the case of downgrades (Figure 5).



**Figure 5. Reaction of Chinese investors in front of downgrades pre/post crisis**

From the market standpoint, investors' behaviors changed totally from one direction to the other. They perceived downgrades as "bad news" for window [-2, 3] while after the breakout of crisis (2008), the *WRH* was confirmed for the window [-4, 2].

### **Result breakdown on French market before, after and during crisis**

There are significant positive reactions to upgrades independently to a period of time (Table 5). The only difference is that investors delayed their reactions with the time going as if they started to wait for other confirmation to the rating information.

**Table 5. Results for upgrades before, after and during crisis**

<b>Before</b>	<b>AAR(39)</b>	<b>t test</b>	<b>p value</b>	<b>Significance</b>
-2	0.35%	1.41	16.62%	
-1	0.06%	0.19	85.35%	
0	0.47%	2.01	5.19%	*(+)
1	-0.19%	-0.71	48.22%	
2	-0.06%	-0.16	87.24%	
<b>After</b>	<b>AAR(71)</b>	<b>t test</b>	<b>p value</b>	<b>Significance</b>
0	0.07%	0.37	70.94%	
1	-0.05%	-0.25	80.47%	
2	0.38%	1.93	5.76%	*(+)
<b>Between 01/09/2007 and 01/01/2009</b>	<b>AAR(6)</b>	<b>t test</b>	<b>p value</b>	<b>Significance</b>
0	0.77%	1.05	34.02%	
1	1.39%	3.02	2.94%	***(+)
2	-1.11%	-1.66	15.81%	

As for downgrades (Table 6), significant negative informative impacts were expected only before and during the crisis (we chose the same period as did by Kenjegaliev et al., 2016). After 2008, investors stopped to take this kind of information seriously.

**Table 6. Results for downgrades before, after and during crisis**

<b>Before</b>	<b>AAR(61)</b>	<b>t test</b>	<b>p value</b>	<b>Signification</b>
-2	-0.01%	-0.03	97.83%	
-1	-0.47%	-1.26	21.34%	
0	-0.92%	-2.25	2.83%	**(-)
1	-0.38%	-1.24	21.98%	
2	-0.19%	-0.56	57.54%	
	<b>CAAR</b>	<b>t test</b>	<b>p value</b>	<b>Signification</b>
[-5,0]	-1.68%	-2.32	2.37%	**(-)
[-1,0]	-1.39%	-2.40	1.95%	**(-)
[0,1]	-1.30%	-2.54	1.36%	**(-)

[-2,2]	-1.97%	-2.52	1.45%	**(-)
[-1,1]	-1.77%	-2.85	0.59%	***(-)
<b>After</b>	<b>AR (97) - no signification</b>			
<b>During</b>	<b>AAR(23)</b>	<b>t test</b>	<b>p value</b>	<b>Signification</b>
-2	0.37%	0.57	57.24%	
-1	-1.62%	-1.82	8.29%	
0	-2.29%	-2.43	2.36%	**(-)
1	-0.77%	-0.99	33.38%	
2	-0.08%	-0.17	86.77%	
	<b>CAAR</b>	<b>t test</b>	<b>p value</b>	<b>Signification</b>
[-4,0]	-4.71%	-3.23	0.39%	***(-)
[-1,0]	-3.90%	-2.82	0.99%	***(-)
[-1,1]	-4.68%	-3.02	0.63%	***(-)

July of 2011 marked two events during European Debt Crisis: *European Union* decided to help Greece for the second around (German and France are main creditors) and *ESMA* became the sole regulator for CRAs in Europe. Hence, we split the results but found no special significant reaction after the new regulatory regime, which “mean that a consistent effect [...] is not discernible” in the line of Alsakka (2015, p.275).

### Descriptive analysis of CRAs' behaviors

There are some *conceptual* speculations about over-positive ratings on the Chinese market, claimed by Kennedy (2003) among others. The kind of judgment reflects an awkward situation of rating industry at the present moment where the *reputation* mechanism is far too weak and the *competition* is not healthily established.

The situation is clarified by following migration tables.

**Table 7. Migration of local ratings for upgrades**

Local ratings		Last ratings (investment grade)										
CRCs		aaa	aaa-	aa+	aa	aa-	a+	a	a-	bbb+	bbb	bbb-
<b>Current ratings</b>	aaa+	1		18	1							
	Aaa		3	23	5		1					
	aaa-			4								
	aa+					39	8	1				
	Aa						46	10	2			
	aa-							18	1			
	a+								2	1		
	A									2		
	a-										1	
	bbb+											1

one exception :  
 bb to bbb+  
**Total 190 events**

**Table 8. Migration of global ratings for upgrades**

Global ratings		Last ratings (investment grade)					Last ratings (speculative grade)								
CRCs		a+	A	a-	bbb+	bbb	bbb-	bb+	bb	bb-	b+	b	b-	ccc+	ccc
<b>Current ratings</b>	aa-	3													
	a+		6				40 events	20 events							
	a			10	2										
	a-				7	1									
	bbb+					6									
	bbb						5								
	bbb-							2							
	bb+								5						
	bb									6			1		
	bb-										3				
	b+											1	1		
	b														
	b-													1	
	ccc+														2

**Total 62 events**

To be detailed, Chinese local CRAs (Lianhe, Chenxin, Dagong, SBCR, among others) issued three times more upgrades than global CRAs (Big Three: Moody's, S&P and Fitch). All changes for local upgrades (with one exception) went from aa- and the initial ratings were above investment grade while for the migration of global upgrades, all changes are below aa-. In addition to that, local CRAs do not spare more than one-notch-increase; however, this kind of actions is rare to see for global CRAs.

**Table 9. Migration of local ratings for downgrades**

Local ratings	aaa	aaa-	aa+	aa	aa-	a+	a	a-	bbb+	bbb	bbb-	bb	b+	b	b-	ccc
aa+	4															
aa	1	3														
aa-			7													
a+				2												
a																
a-							2									
bbb+							1	1								
bbb								2								
bbb-										3						
bb+										1	6					
bb-												1				
b+										1						
b								1								
ccc												1		2		
cc													1		1	1
c												1			1	

Total 44 events

**Table 10. Migration of global ratings for downgrades**

Global ratings	aa	aa-	a+	a	a-	bbb+	bbb	bbb-	bb+	bb	bb-	b+	b	b-	ccc+	ccc
aa-	2															
a+		2														
a																
a-				1												
bbb+				1	3											
bbb						2										
bbb-							3									
bb+								6								
bb									5							
bb-									1	14						
b+										1	13					
b												10				
b-													1	2		
ccc+													2	1		
ccc															1	1
ccc-																1

ccc- to d  
Total 74  
events

It is interesting to see the global CRAs issue more downgrades than local CRAs, in contrast. The latter had fewer changes below investment grade than their global

counterpart did, but they did not hesitate to downgrade an issuer or their issues by several notches for one modification, as long as ratings dropped to a low level (speculation grade). “Big Three” seemed more careful and chose to take a notch down for a single time more often.

As for French market, European Medium-Small CRAs haven’t had chances to access to rate publicly listed companies and S&P issued more than half of ratings, followed by Moody’ and Fitch in terms of rating numbers.

Additionally, EJR had an important increase in recent years (2011). The same situation happened also in China for CCRC (since 2014), which is famous for their *investors-pay models*.

## Conclusion

After the event study with the market model, we found *WRH* valid for the Chinese market and *SH* valid for the French market. Chinese investors took downgrades as “bad news” before the crisis and “good new” afterward while French investors started to take them as “no news” after the crisis, which is new phenomenon considering the before and during the period.

The third evidence of the paper showed that local CRAs, compared to “Big Three”, are systematically more generous in giving better ratings. There is an additional fast increase of market share of CRAs adopting investors-paying models in our sample for both Chinese and French market.

As for perspective, we are going to extend the study scope in the following research and to include more European countries. The first step is to see if the results obtained in France could be generalized in the entire continental Europe. The second step is to apply the methodology to the United Kingdom, and eventually to Eastern and Central Europe, in order to have a relatively complete version of intra-European comparison and to compare the results better with Chinese market, not only from the institutional market environment, rating regulatory regime but also from the level of market development.

Technically speaking, the classic methodology needs to be developed and we are perfecting the coding skill for software R to facilitate calculation process. Finally, a detailed analysis of CRAs' organizational and operational strategies should be improved, which could help us to understand the *infor-mediary* from both outside (investors and issuers) and inside of the organization.

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