

INFORMATION VALUE OF THE CREDIT RATING ON THE CREDIT DEFAULT SWAPS MARKET

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Abstract: The paper examines the impact of the countries' credit ratings changes on the cost of credit defaults swaps premium. It is assumed statistical significance abnormal returns due to changes in credit ratings assigned by the agencies. It is has been put the hipotesis that ratings events convey new information and lead to significant abnormal reactions. The study used the ratings assigned by Standard & Poor's and Moody's for the period from January 2005 to November 2015 and spreads for five-year senior unsecured CDS. To verify the hypothesis the event study method (by daily data) is applied.

Keywords: credit rating, credit derivatives swap, abnormal rates of return

INTRODUCTION

The role of the credit rating agencies is to analyzing and monitoring the asymmetry of the information problem on the financial market. They assess countries' and institutions' creditworthiness and ability to repayment of liabilities. The previous researches analyse and verify the quality and risk connected with the borrower. A lot of scientist examine how fast credit ratings react on the changes of debtor condition.

Credit rating agencies have so far been often criticized as a violation of their basic function in this regard. For example, Carlson and Hale [2005] using the game theory came to the conclusion that the existence of credit rating agencies may jeopardize the functioning of financial market stability and erode the system of balance. Bannier and Tyrell [2005] report that unique balance can be restored only by creating a clear and precise evaluation system, which will enable market participants to make independent assessment of the reliability, quality and

importance of credit ratings when making investment. The fact more accurate information and therefore more accurate ratings, the greater the consistency of decisions by investors, and therefore the market reacts as expected and accurately reflects the "quality" investment securities rated entities.

Credit rating agencies have to allocate the categories of risk to the issuer, depending on the assessment of the risk of insolvency, political and economic situation of the country. So far established three credit rating agencies having the largest scale of the operation, namely: Standard & Poor's Investor Service (S&P), Moody's Investors Service and Fitch Ratings. Although the industry led to different evaluation system the previous research results show a high correlation broadcast their evaluations. Researches conducted by Chodnicka [2013, 2014] show that credit ratings react in different periods of time for the publication of macroeconomic data. Furthermore, the survey methodology and analysis conducted using a panel data models suggest different sensitivities broadcast not on published information [Chodnicka 2014, 2015]. S&P focuses mainly on a prospective assessment of the likelihood of default. Moody's makes its decisions on the expected loss, which is a function of both probability of default and the expected recovery rate. Finally, Fitch takes into account both the probability of default and recovery rates [Elkhoury, 2009]. The problem from the point of view of the analyzes is the lack of detailed information on the methodology, conducted the risk assessment. Credit rating agencies does not expose methods give only general indicators taken into consideration in the evaluation.

The purpose of this article is to check and analyze the impact of changes in credit ratings of European countries broadcast on the cost of premiums for credit default swaps (CDS). In the first part of a review of the literature to date research and based on hypotheses created. Then describes the data and characterized the methodology applied. Chapter 4 is a description of the results, and the last is to present proposals and to try to discussions in the analyzed research problem.

LITERATURE REVIEW

It exists a lot of researches about the impact of credit ratings on the shares and bonds market¹. There have been found some researches about the impact of credit ratings changes on the financial markets². The most important are presented in the table below.

¹ Iankova et al. [2006]; Dichev, Piotroski [2001]; Steiner, Heinke [2001]; Gropp, Richards [2001]; Klinger, Sarig [2000]; Ederington, Goh [1998], Hite, Warga [1997], Kaserer [1995]; Goh, Ederington [1993], Wansely et al. [1992], Hand et al. [1992], Ederington et al. [1987], Wansley, Claurette [1985]; Pinches, Singleton [1978]; Weinstein [1977]; Grier, Katz [1976]

² Hull et al. [2004]; Norden, Weber [2004]; Norden [2004].

Table 1. Literature review previous studies

Authors/ market	Results
Holthausen, Leftwich [1986] - stocks	1977 – 82, Moody's, S&P, 1014 rating changes, 256 Credit Watch S&P, daily abnormal stock returns, event window (-300; 60), significantly negative reaction after downgrades, no significant abnormal performance for upgrades
Glascok et al. [1987] - stocks	1977 – 81, Moody's, 162 rating changes, daily abnormal stock returns, event window (-90;90), significantly negative abnormal stock returns before and around downgrades, reversal after day zero (publication date)
Hand et al. [1992] – stocks, bonds	1977 – 82/1981- 83, Moody's, S&P, 1100 rating changes and 250 Credit Watch S&P, window spanning stock and bond returns, significantly negative abnormal stock and bond returns for downgrades and unexpected additions to S&P Credit Watch, no significant abnormal returns for upgrades
Goh, Ederington [1993] - stocks	1984 – 86, Moody's, daily abnormal stock returns, event window (-30;30), significantly negative returns for downgrades due to earnings deterioration, positive abnormal returns for downgrades due to increased leverage
Followill, Martell [1997]- stocks	1985 – 86, Moody's, 66 reviews and actual rating changes, daily abnormal stock returns, event window (-5;5), significantly negative returns at reviews for downgrades, negligible abnormal performance around actual downgrades
Dichev, Piotroski [2001] - stocks	1970 – 97, Moody's, 4727 rating changes, daily abnormal stock returns, significantly negative returns during the first month after downgrade, no significant reaction for upgrades
Vassalou, Xing [2003] - stocks	1971 – 99, Moody's, 5034 rating changes, monthly abnormal stock returns, event window (-36;36), stock returns in rating event studies should be adjusted by size, book – to market and default risk, increase of default loss indicator before and decrease after downgrades
Katz [1974] - bonds	1966 – 72, S&P, 115 bonds from 66 utilities, monthly yield changes, event window (-12;5), no anticipation, abnormal performance during 6-10 weeks after downgrades
Grier, Katz [1976] - bonds	1966 – 72, S&P, 96 bonds from utilities and industrials, monthly yield changes, event window (-4;3), anticipation only for industrials, price changes after downgrades stronger
Hettenhouse, Sartoris [1976] - bonds	1963 – 73, S&P, Moody's, 46 bonds from 66 utilities, monthly yield changes, event window (-6;6), small anticipation before downgrades, no reaction to upgrades
Weinstein [1977] - bonds	1962 – 74, Moody's, 412 bonds from utilities and industrials, monthly abnormal bond returns, event window (-6;7), early anticipation but no abnormal performance during 6 months before the event and no reaction afterwards
Wansley et al. [1992] - bonds	1982 – 84, S&P, 351 bonds, weekly abnormal bond returns, event window (-12;12), significantly negative returns in the week of downgrades, no significant response to upgrades
Hite, Warga [1997] - bonds	1985 – 95, S&P, Moody's, 1200 rating changes, monthly abnormal bond returns, event window (-12;12), significantly negative abnormal returns during 6 months before downgrades
Reisen, von Maltzan [1999] - bonds	1989 – 97, 29 countries, 152 credit rating changes, changes in country ratings on sovereign risk as measured by the yield spreads of domestic financial instruments relative to mature market benchmarks, significant only the possible downgrade, especially for ratings below investment - grade
Kraussl [2000] - bonds	1990, VAR model, impact of credit rating on the bond yield spreads, unexpected sovereign credit rating change does not necessarily have an immediate impact on emerging market bond yield spreads
Steiner, Heinke [2001] - bonds	1985 – 96, S&P, Moody's, 546 rating changes, 182 watch listings, daily abnormal bond returns, event window (-180; 180), significantly negative abnormal returns starting 90 days before downgrades and negative watch listings, evidence for overreaction directly after the event
Hull et al. [2003]- CDS	1998 – 02, Moody's, rating changes, reviews and outlooks, adjusted CDS spread changes, event window (-90;10); significantly positive adjusted CDS spread changes before negative rating events
Norden, Weber [2004] – CDS, stocks	2000 – 02, Moody's, S&P, Fitch, 25 institutions, 567090 quotes, event window (-90;90), both markets not only anticipate rating downgrades but also reviews for downgrade by all three agencies, reviews for downgrade by S&P and Moody's exhibit the largest impact on the both markets, the magnitude of abnormal performance in the both markets is influenced by the level of the old rating, previous rating events and, only in the CDS market by the pre-event average rating level by all agencies.

Source: own elaboration

The presented literature review suggests that it has been noticed the lack of analyses about the impact of credit ratings changes on the CDS spreads. The previous researches take into consideration the differentiated databases, but in practice it has not presented the analyses for the impact of European countries' credit ratings on the CDS spreads. The presented groups of observations are not homogenic, as a result the received findings are differentiated. The received results suggest that on the one hand, rating agencies argue that credit ratings contain new information. Rating agencies convey macroeconomic and political information to the markets through their ratings. On the other hand, rating agencies have been heavily criticised for not being able to correctly predict the current situations and bankruptcies [Kaserer, 1995]. This criticism has grown even more in the financial crisis after 2007. The agencies are accused of not anticipating, but merely mirroring what the markets have already priced in the securities of a given reference entity. Up to 70 - 90 per cent of credit ratings can be explained by models using only publicly available accounting information [Cantor, Packer, 1996; Chodnicka, 2013, 2014, 2015]. As a result it has been put the following hypothesis:

Hypothesis 1: Rating events convey new information and lead to statistically significant abnormal reactions.

According to the efficient market hypothesis, a market is said to be efficient if prices in that market reflect all available information. A market has semi-strong efficiency if prices fully reflect all readily-available public information—past prices, economic news, earnings reports, etc. Tests of semi-strong efficiency are those that study stock price movements following announcements, such as stock splits or earnings announcements. As a result market can react faster on the condition of countries' economies. The previous analysis can suggest that markets are not the same sensitive on the negative and positive changes of credit ratings. More important for the potential investor can be the decision about decrease than increase of credit ratings. As a result it is put the hypothesis:

Hypothesis 2: CDS market react stronger on the decrease than increase of countries' credit ratings.

The presented literature review and practice knowledge of Author suggests that it exists the lack of researches about the impact of countries' credit ratings changes on CDS spreads. Most of researches are based on the analyses of the bond and stock market. The presented studies have been usually on the US-listed companies. This paper extends the previous researches on the analyses of the reaction of the CDS market on the credit ratings changes given for European countries. In previous researches has been only analysed the impact of long – term issuer credit ratings, there have not been verified the short-term notes.

DATA DESCRIPTION AND METHODOLOGY

The data on the rating events are collected from Thomson Reuters database. There have been included rating events from Standard & Poor's (S&P) and Moody's over the period from January 2005 to November 2015. For the preparation of the analysis, the long and short term issuer credit ratings are taken into consideration. For better understanding problem, according to the second hypothesis, credit ratings are divided on investment and speculative groups. For each reference entity resulting from the process above, daily CDS spread have been collected. CDS spreads for five-year senior unsecured contracts are chosen, as this is by far the most liquid contract. The analysis is made for European countries³. The sample is little different for particular credit rating agencies. As a result there exists some changes in CDS spreads taking into consideration.

It has been used classic event study methodology to analyse the influence of rating events on CDS spreads. The impact of country's credit rating changes announcements on changes in their CDS spread, and capture the cumulative impact of those announcements over a few days, has been verified. The methodology of event study requires aggregation of the abnormal differences in variable within each event window to construct cumulative abnormal differences (CAD), taking an assumption that none other factors occurred in that time. As the CDS there have been taken daily differences of the spread and the daily logarithmized differences representing the percentage adjust.

Following Greatrex [2009], the event window consist of the 20 trading days prior to the actual event, the event date (i.e. the announcement day), and the 20 days after the actual event. Thus, it includes a total of 41 trading days, which is referred to as the [-20, +20] time interval. The [-1, +1] time period is the announcement window of the study, while the [-20,-2] and [+2, +20] time periods is referred to as the pre- and post announcement window respectively. The day of the publication of the rating event is defined as day 0.

In the event study methodology statistical tests are based on abnormal differences, which means the difference between the actual daily spread difference value on each day of the event window and the expected spread difference value measured as the average daily spread change over the previous 250 working days of estimation window. This way we obtain abnormal differences, which we test whether they are statistically greater than zero using t-Student statistic in proper pooling samples. Parametric tests attribute an equal chance to achieve both positive and negative deviations from expectations. A small number of observations may

³ Albania, Armenia, Austria, Belarus, Belgium, Bosnia and Hercegovina, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Finland, France, Georgia, Germany, Greece, Hungary, Island, Ireland, Italy, Latvia, Lichtenstein, Lithuania, Luxemburg, Macedonia, Malta, Moldavia, Monaco, Montenegro, Netherland, Norway, Poland, Romania, Russia, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey, Ukraine, Great Britain.

weaken the power of statistical tests, suggesting the need to consider both the economic and statistical significance of results.

To create multiple sets of similar events, it has been classified announcements into two event types, downgrades and upgrades of the rating. Then it has been pooled within each sample of event type across countries.

RESULTS

The results received from event study prepared for the European countries give some interesting observations. At first changes on the credit ratings assessment give abnormal return for the CDS market according to the first hypothesis. The impact of the information about mentioned changes is stronger before the moment of the event, and its weaker over time, for the Moody's long term issue rating. According to the second more important for the CDS market are downgrades. During the preannouncement window, the downgrade of the Moody's long term issue rating influence on the increase of the CDS spread of the analysed European countries. The mentioned spreads rise on 355 basis points. During the event window, these spreads are changed on 152 basis point, and for the postannouncement window on 111 basis points. As a result the nominal value of the cumulated spreads reacts before the moment of publication of information about credit rating changes. The mentioned reaction is little different for the Standard & Poor's Investor Service information. At first it has been analysed the impact of long term issue rating on the CDS spreads. The mentioned variable increase the value of cumulated CDS spreads, before the moment of publication the information about downgrade, on 280 basis points. During the event window this change is on only 80 points, and in the post event moment the CDS spreads rise on 280 basis points. As a results the CDS market reacts stronger on the information about changes in the S&P's long term issue rating after the moment of publication, than in case of the Moody's credit rating changes. The downgrade of the S&P's short term issue rating influences stronger on the CDS market than the long term one. The impact of the mentioned credit rating changes increase the cumulated CDS spread during: the preannouncement window on 330 basis points; the event window on 133 basis points and the postannouncement window on 366 basis points. In the case of the Standard and Poor Investor Service, credit ratings influence with the similar strength before and after the moment of the event on the CDS spreads.

The second pooling is made for the upgrade. In the case of the influence of the Moody's long term issue rating on the CDS spreads is not observed. The nominal value of the mentioned spreads increase before the moment of event on the 8 points, during the event window decrease on 3 points and after the credit rating change also increase on the nearly 8 points. The CDS market react in the different way on the changes proposed by the Standard & Poor's Investor Service. Both for the long and short term issue credit rating changes is observed the negative impact on the cost of capital. The increase of the credit rating decrease the CDS spreads.

The mentioned relationship is weaker for the long term issue ratings, because in the period of the preannouncement window CDS spreads are decreased on 52 basis points, during the event window the mentioned variable is lower on the 7.5 basis points and in the postannouncement window the countries' CDS spreads are lower on 82 basis points. The changes of CDS spreads for the short term issue rating proposed by Standard & Poor's Investor Service decrease the cumulative value of the CDS spreads as follows: before the event moment on 220 basis points, during the event moment on 27 points and after the event moment on 220 basis points. The mentioned results are interpreted as differences from the mean of 250 working days.

Table 2. The impact of changes of Moody's long term issue rating, S&P's long and short term issue ratings on the CDS spreads changes for European countries

CDS spread	Moody's long term			S&P's long term			S&P's short term		
	Coef.	t	P>t	Coef.	t	P>t	Coef.	t	P>t
Downgrade									
[-20;-2]	355.96	61.34	0.00	279.81	83.45	0.00	331.41	47.89	0.00
[-1;+1]	152.95	40.52	0.00	79.34	66.97	0.00	133.01	52.52	0.00
[+2;+20]	111.36	74.13	0.00	278.44	69.22	0.00	366.54	43.76	0.00
Upgrade									
[-20;-2]	8.20	68.03	0.00	-52.08	-19.81	0.00	-220.19	-61.25	0.00
[-1;+1]	-2.87	-91.28	0.00	-7.50	-18.17	0.00	-27.81	-47.48	0.00
[+2;+20]	7.67	59.02	0.00	-82.66	-34.93	0.00	-219.46	-61.12	0.00

Source: own calculations

The analysis of the percentage changes of the CDS spreads as an effect of the European countries' credit rating changes is presented in the Table 3. In the case of downgrade of the Moody's long term issue rating in the preannouncement window, it is observed the 3% increase of the CDS spread. During the event window, the mentioned spread rise on 2.5%, but for the postannouncement window the percentage changes of the CDS spreads are corrected (decrease of the CDS spreads on 3.5%). The CDS market is more sensitive on the publication of changes in credit ratings by the Standard & Poor's Investor Service. As a result of downgrade the S&P's long term issue credit rating, the mentioned spread increase before the moment of the event on 7.6%. For the moment of publication of the information the CDS spread rise on 3.5%, but changes during the period of time after the announcement are unimportant. For the pool of the changes of the short term issue ratings the situation is similar (7% increase before publication, 5% increase during the event window and 3% correction). The observation of the percentage changes of the European countries' CDS spreads suggest that the CDS market is more sensitive on the Standard& Poor's credit ratings changes. CDS spreads rise during the preannouncement window, smaller changes are observed for the moment of publication of the information and during the postannouncement window are noticed market corrections.

In the case of the upgrade of the Moody's long term issue credit ratings, before the moment of event CDS spreads rise on 3.4%. The decrease of the mentioned spreads is noticed during the moment of publication information about upgrade. After the publication CDS are market is unsensitised on the analysed determinant. The situation for the S&P's long term issue rating is little different. The CDS spread increases in the preannouncement window (2%), is insensitive during the publication and decreases (4%) in the postannouncement window. The positive change of the short term countries' credit ratings causes the reduction of the CDS spreads on nearly 5% before and after the publication of the information. During the event window the mentioned spreads are insensitive on the credit rating changes in the short term.

Table 3. The impact of changes of Moody's long term issue rating, S&P's long and short term issue ratings on the percentage changes of CDS spreads for European countries

CDS spread	Moody's long term			S&P's long term			S&P's short term		
	Coef.	t	P>t	Coef.	t	P>t	Coef.	t	P>t
Downgrade									
[-20;-2]	0.0298	46.59	0.00	0.0762	107.18	0.00	0.0669	72.53	0.00
[-1;+1]	0.0256	52.57	0.00	0.0348	125.39	0.00	0.0534	117.84	0.00
[+2;+20]	-0.0352	-76.13	0.00	-0.0037	-7.08	0.00	-0.0286	-36.44	0.00
Upgrade									
[-20;-2]	0.0340	50.72	0.00	0.0236	35.99	0.00	-0.0427	-54.85	0.00
[-1;+1]	-0.0281	-125.38	0.00	0.0000	-0.20	0.84	0.0067	30.55	0.00
[+2;+20]	0.0096	10.22	0.00	-0.0384	-73.08	0.00	-0.0472	-51.5	0.00

Source: own calculations

CONCLUSIONS

The purpose of this article is to check and analyze the impact of changes in credit ratings of European countries broadcast on the cost of premiums for credit default swaps (CDS). In the first part of a review of the literature to date research and based on hypotheses created. There are put two hypothesis. The first one reads as follows: Rating events convey new information and lead to statistically significant abnormal reactions. The second one is: CDS market react stronger on the decrease than increase of countries' credit ratings. Both of them are verified by using the event study method. Credit rating changes convey new information. The change of credit rating implies the change of CDS spread above the mean for 250 trading days observations. For the changes of the Moody's long term issue rating the nominal value of the cumulated spreads reacts before the moment of publication of information about credit rating changes. The mentioned situation is little different for the Standard & Poor's Investor Service information. The CDS market verifies stronger the information about changes in the S&P's long term issue rating after the moment of publication, than in case of the Moody's credit rating changes. The downgrade of the S&P's short term issue rating influences stronger on the CDS

market than the long term one. In the case of the Standard and Poor Investor Service, credit ratings influence with the similar strength before and after the moment of the event on the CDS spreads. The second pooling is made for the upgrade. In the case of the influence of the Moody's long term issue rating on the CDS spreads is not observed. The CDS market react in the different way on the changes proposed by the Standard & Poor's Investor Service. Both for the long and short term issue credit rating changes is observed the negative impact on the cost of capital. The mentioned relationship is weaker for the long term issue ratings. The changes of CDS spreads for the short and long term issue rating proposed by Standard & Poor's Investor Service decrease the cumulative value of the CDS spreads stronger before after the moment of the event.

The observation of the percentage changes of the European countries' CDS spreads suggests that the CDS market is more sensitive on the Standard & Poor's credit ratings changes. CDS spreads rise during the preannouncement window, smaller changes are observed for the moment of publication of the information and during the postannouncement window are noticed market corrections. In the case of the upgrade of the Moody's long term issue credit ratings, before the moment of event CDS spreads rise. The decrease of the mentioned spreads is noticed during the moment of publication information about upgrade. After the publication CDS are market is unsensitised on the analysed determinant. For the pool of the S&P's long term issue credit rating changes, the CDS spread increases in the preannouncement window, is insensitive during the publication and decreases in the postannouncement window. The positive change of the short term countries' credit ratings causes the reduction of the CDS spreads before and after the publication of the information. During the event window the mentioned spreads are insensitive on the credit rating changes in the short term.

As a result the European CDS market is sensitive on the changes of the countries' credit ratings. The scale of impact of the mentioned changes is different for the particular credit rating agencies. More important is information publicised by Standard & Poor's Investor Service. The moment and strength of reaction is also strictly differentiated.

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