

## Sensitivity of the Central and Eastern European Stock Market to Credit Rating Changes

Submitted: 18.01.18 | Accepted: 04.04.18

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The aim of the paper is to verify the influence of credit rating changes on the rates of return on shares taking into account the size of the credit rating agency. A review of literature about the mentioned relationship by type of sector has been prepared. The following hypothesis is proposed: The banks' share prices show a weaker reaction to credit rating changes than the entities outside the banking sector. The strongest impact of credit rating changes is observed for a downgrade. This hypothesis has been verified by using event study methods on data collected from Thomson Reuters Database through the years 1980 to 2015. The unobserved variables are long term issuer credit ratings given to banks and institutions outside the financial institutions. Rates of return on shares are used as observed variables.

**Keywords:** credit ratings, banking sector, non-financial sector, stock prices.

## Wrażliwość rynku akcji Europy Środkowo-Wschodniej na zmiany credit ratingów

Nadesłany: 18.01.18 | Zaakceptowany do druku: 04.04.18

Celem artykułu jest weryfikacja wpływu zmian credit ratingu na stopy zwrotu z akcji z uwzględnieniem wielkości agencji ratingowej. Przygotowano przegląd literatury na temat wspomnianych zależności przy uwzględnieniu rodzaju sektora. Zaproponowano następującą hipotezę badawczą: ceny akcji banków słabiej reagują na zmiany credit ratingów niż podmioty spoza sektora bankowego. Najsilniejszy wpływ zmian ratingu obserwuje się w przypadku jego obniżenia. Weryfikacja tej hipotezy została przeprowadzona za pomocą metod badania zdarzeń na danych zebranych z Thomson Reuters Database dla lat 1980–2015. Nieobserwowane zmienne to długoterminowe credit ratingi emitenta nadane bankom i podmiotom niebędącym instytucjami finansowymi. Jako zmienne zależne stosuje się stopy zwrotu z akcji.

**Słowa kluczowe:** credit rating, sektor bankowy, sektor niefinansowy, ceny akcji.

**JEL:** G14, G15, G21

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## 1. Introduction

Credit rating agencies are threatened as institutions of public trust. The information published by them influences the cost of capital. López-Salido et al. (2015) found that that time-variation in expected returns to credit market investors could be an important driver of economic fluctuations. They suggested that credit ratings in nearly 2 years influence a change of net debt issuance, while net equity issuance increases. Sants (2012) prepared research on daily data during a crisis (from September 2008 to August 2011) to verify the reaction of bond yields in the euro area. He found that all government bond yields relative to German ones rise for countries with weaker fiscal fundamentals. The mentioned situation can be an effect of the aggregation of risk factors and spillover effects from Greece. Country-specific credit ratings have played a key role in the development of spreads for Greece, Ireland, Portugal and Spain. Afonso et al. (2014) used notes proposed by the three main credit rating agencies to analyse bond yields and CDS spreads. They found out that negative changes exert a significant influence on the mentioned securities. The negative spillover effect between notes received by countries and entities has not been observed if companies are higher rated. Gibson et al. (2014) also confirmed the mentioned opinion. In their opinion, controlling for the economic and political fundamentals, spreads and ratings strongly interacted with each other during the crisis, producing effects well beyond those of then fundamentals, and with the interactions demonstrating high persistence.

The presented findings about the impact of credit rating agencies on the financial market allow for analysing the impact of credit rating changes on stock prices. As a result, the aim of the paper is to verify the influence of credit rating changes on the rates of return on shares taking into account the size of the credit rating agency. A review of literature on the mentioned relationship by type of sector has been prepared. The following hypothesis is proposed: The banks' share prices show a weaker reaction to credit rating changes than the entities outside the banking sector. The strongest impact of credit rating changes is observed for a downgrade. To verify the mentioned hypothesis, long term issuer credit ratings proposed by all CRAs have been used. The analysis has been prepared for entities from Central and Eastern Europe. According to the best knowledge of the author, no such research has been done before.

The paper is organized as follows. The first part of the article comprises a review of literature on the impact of credit rating changes on the rates of return on shares. Next, the methodology and data description are presented. The third section is the presentation of findings about the impact of credit rating changes on rates of return on shares of banks and non-banking entities. The last part comprises conclusions with the description of future research.

## 2. Literature Review

Credit rating changes influence rates of return on bonds, CDS spreads, exchange rates or interest rates. Cavallo (2008) suggests that credit ratings and spreads are both noisy signals of fundamentals and suggest ratings add value if, controlling for spreads, they help explain other variables. Some research into the impact of credit rating changes on stock prices has been carried out. The literature review is divided into two parts. First, there is an analysis of findings about the impact of note changes on rates of return on shares of productive companies. Then, there is an overview of the mentioned relationship on the sample of banks. In some of previous research, the mentioned division has not been used. The use of such a classification is connected with different reactions of banks and non-financial entities. It can be an effect of stronger banking sector supervision (Schweitzer et al., 1992), specific regulations, type of activity and risk.

The analysis of the impact of credit rating changes on stock prices is presented in Table 1. The first analysis of the mentioned phenomenon was prepared by Hand et al. (1992), but they used monthly data. They did not find a statistically significant relationship between these variables. Using monthly data can give an incorrect result because of large volatility of the stock market. As a result, in later research the analysis was performed on daily data. One of the first studies on daily observations was conducted by Goh and Ederington (1993). The obtained results provide different findings. Some studies suggest that only a downgrade of credit ratings significantly influences rates of return on shares (Goh & Ederington, 1993; Followill & Martell, 1997; Dichev & Piotroski, 2001; Vassalou & Xing, 2003; Brooks, Faff, Hillier, & Hillie, 2004). In other studies, an upgrade of notes is also important for the stock market (Kraussl, 2005; Bae et al., 2007; Klimaviciene, 2011; Freitas et al., 2013; Fatnassi et al., 2014). In all studies, there is consensus that if a credit rating upgrade influences significantly the rates of return on shares, the reaction to downgrades is stronger than to note increases. In the analysis made, a different moment of reaction to the mentioned changes was observed.

Authors	Results
Hand, Holthausen, and Leftwich (1992)	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 and Ederington (1993)	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.

continued Tab. 1

Authors	Results
Followill and Martell (1997)	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 and Piotroski (2001)	1970–97; Moody's; 4727 rating changes, daily abnormal stock returns, significantly negative returns during the first month after a downgrade, no significant reaction for upgrades.
Vassalou and Xing (2003)	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.
Brooks, Faff, Hillier, and Hillie (2004)	1973–2001; S&P, Moody's, Fitch, Thompson; event window (-10; +10), only rating downgrades have a wealth impact on market returns; decreases in local currency ratings appear to impact no information to the market, whereas foreign currency rating downgrades are associated with significant wealth effects; only S&P and Fitch rating downgrades result in significant market falls; no evidence that emerging markets are particularly sensitive to rating changes or that markets react more severely to multiple rating changes.
Kraussl (2005)	1997–2000; S&P, Moody; credit rating agencies' influence on the size and volatility of emerging markets lending. Stronger reaction of stock prices to downgrades than upgrades of credit ratings and announcements.
Ferreira and Gama (2007)	1989–2003; negative reaction of 51 basis points to a credit rating downgrade of one notch in a common information spillover around the world; upgrades, however, have no significant impact on return spreads of countries abroad; closeness and emerging market status amplify the effect of a spillover; downgrade spillover effects at the industry level are more pronounced in traded goods and small industries.
Bae et al. (2007)	S&P; emerging markets, positive equity market reaction to credit rating initiation; initiation of ratings by S&P is associated with increased conservatism that is viewed favourably by investors.
Kaminsky and Schmukler (2002)	January 1990–June 2000; 16 countries emerging countries, panel regressions, event study, event window (-10; 10), changes of credit ratings not only directly impact stock and bond markets of the countries being rated, but also they contribute to cross-country contagion, particularly during crisis times and among neighbour countries; financial markets in countries with lower ratings are more affected by fluctuations in international markets.

continued Tab. 1

Authors	Results
Norden and Weber (2004)	2000–02; Moody's, S&P, Fitch; 25 institutions, 567 090 quotes, event window (-90; 90), both markets not only anticipate rating downgrades but also reviews for a downgrade by all three agencies, reviews for a downgrade by S&P and Moody's exhibit the largest impact on both markets, the magnitude of abnormal performance in 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.
Linciano (2004)	1991–2003; Italian firms, Fitch, Moody, S&P; significant impact of credit rating downgrades and negative announcements; abnormal returns around the moment of announcement of the rating action.
Arezki et al. (2011)	2007–2010; European countries, examine the spillover effects of sovereign rating news on CDS spreads and stock market; downgrades lead to significant spillovers across countries.
Flores (2010)	Rating announcements effect on both domestic and foreign markets.
Klimaviciene (2011)	Moody's, S&P's, Fitch credit rating announcements; credit rating downgrades have a stronger impact than that positive events; significant price impact on the announcement day; differences in results for particular stock prices depend on Baltic stock markets, credit rating agency.
Freitas et al. (2013)	2000–2009; rating change, credit watch, Argentina, Brazil, Chile, Mexico; the impact is quite significant for rating downgrades but less relevant for rating upgrades and credit watches.
Afonso et al. (2014)	1995–2011; S&P, Fitch, Moody, credit rating announcements; EGARCH; upgrades do not have significant effects on volatility, but downgrades increase stock and bond market volatility.
Fatnassi et al. (2014)	2008–2012; Fitch, Moody, S&P; upgrades and downgrades affect both own country returns and other countries' returns; market reactions to foreign downgrades are stronger during the sovereign debt crisis period; negative news from rating agencies are more informative than positive news.
Almeida et al. (2016)	Reduction of investment as a result of rising costs of debt as an effect of downgraded credit ratings.

Tab. 1. Review of literature about the impact of credit rating changes on rates of return on non-financial shares

In the conducted research, Afonso et al. (2014) observed a contagion effect on the European financial markets as a result of announcements changing credit ratings. A downgrade in one country led to an increase in the volatility in other ones. An opposite relationship is observed for upgrades. The earnings and risk are reduced for portfolio returns owing to the use of credit ratings for volatility modelling with financial gains decreas-

ing with higher risk aversion. Bayar (2013) found a long term relationship existing between the stock prices index and credit ratings. On the other hand, in the short term, changes in credit ratings and foreign exchange rates had positive effects on the stock market index, but the interest rate had a negative impact on the stock index.

The analysis of research on the impact of the banks' credit rating changes on their rates of return on shares is presented in Table 2. As mentioned before, differences between the reaction of stock prices of banks and non-financial entities have been observed. The studies carried out also produce dissimilar results. Differences in rating policies across the three credit rating agencies have been observed and show evidence of interdependence in bank rating actions. S&P credit actions tend to be the more independent ones, while Moody's appears to be more cautious. As a result, stock prices react at various moments of publication of notes. Different periods of time and samples have been studied. In most studies, a significant impact of banks' credit rating downgrades and upgrades on the rates of return on their share prices was observed (Schweitzer et al., 1992; Hiu, Nuttawat, & Puspakaran, 2004; Alsakka et al., 2013; Chodnicka-Jaworska, 2016; Jones & Mulet-Marquis, 2014). This relationship is different than the findings on non-financial entities. Most studies emphasize only the negative influence of note changes. Taking into consideration different subsamples suggests that in some cases a significant impact of credit rating downgrades (Correa et al., 2012; Calderoni et al., 2009) or upgrades (Gan et al., 2014; Gropp & Richards, 2001) has been noticed. On the other hand, Bremer and Pettway (2001) found that a significant relationship had been only observed for the long period of estimation of the average of means in the event study methods (2 years).

The division of the sample exerts a strong impact on the obtained results. For example, Vassalou and Xing (2003) take into consideration the size of the capital market, the level of development of the economy and the probability of default. The obtained results suggest that the important moment for the abnormal rates of return is the moment before and after the publication of the information about the changes.

Authors	Results
Schweitzer et al. (1992)	Weaker stock price reaction to the banks' credit rating changes than non-financial institutions because of supervision. The bank regulators do hold back negative information, and bond rating agencies have a role in generating adverse information about banks to the capital market.
Gropp and Richards (2001)	1989–2000, S&P, Fitch, Moody's European banks' rating change, 186 events, the upgrade of credit ratings causes an increase in abnormal returns of 1.2% on the announcement day and 1.5% in the 3-day event window.

*continued Tab. 2*

Bremer and Pettway (2001)	Japanese banks' credit rating changes; only for the long period of time (2-year mean), the negative, statistically significant impact of credit rating downgrades.
Calderoni et al. (2009)	2002–2007, Moody's banks' credit rating changes, significant cumulative abnormal returns for downgrades in a two day window and during the event window, upgrades insignificant.
Hiu, Nuttawat and Puspakaran (2004)	Credit rating announcements significantly influence stock prices both in the case of positive and negative changes; short-term credit ratings insufficient; in a small but liquid stock market credit rating agencies only provide limited informational value to the investors.
Vassalou and Xing (2003)	The size of the capital market, the level of development of the economy and the probability of default, the important moment for abnormal rates of return is the moment before and after the publication of the information about the changes.
Jones and Mulet-Marquis (2014)	US banks, short-term abnormal returns are exhibited to both upgrades and downgrades, US domestic banks experience significantly larger negative abnormal returns to downgrades than international banks listed in the US.
Doherty, Kartasheva and Phillips (2012)	S&P, A.M. Best; S&P required higher standards to assign a rating similar to the one assigned by A.M. Best and higher-than-average quality insurers in each rating category of A.M. Best chose to receive a second rating from S&P.
Correa et al. (2012)	1995–2011, banks from 37 countries, sovereign credit rating downgrades have a large negative effect on bank stock returns for banks with governments' support; stronger results for banks in advanced economies where governments more often support institutions; sovereigns and domestic banks as markedly interconnected because of government guarantees.
Alsakka et al. (2013)	European bank ratings assigned by Moody, S&P, Fitch during the last debt crisis; sovereign rating downgrades and negative watch signals have strong effects on bank rating downgrades, especially in PIIGS countries; differences in rating policies across the three credit rating agencies.
Gan et al. (2014)	Stock prices react during the first few days after the upgrade, it was not sustained in the 60 day period.
Chodnicka-Jaworska (2016a)	More significant impact of downgrades than upgrades of credit ratings; the upgrade is significant during the publication event moment.

*Tab. 2. Review of literature about the impact of credit rating changes on rates of return on banks' shares*

The conducted research analyses suggest the existence of differences between results obtained for share prices of banks and non-financial institutions. The studies have been presented only for notes given by the three

main credit rating agencies, that means Fitch, Moody and S&P. As a result, there are no studies on the impact of small and big recognizable CRAs on the mentioned securities. According to the best knowledge of the author, the impact of note changes on the rates of return on shares of Central and Eastern European banks and non-financial entities has not been verified. Consequently, the aim of the paper is to verify the influence of credit rating changes on the rates of return on shares taking into account the size of the credit rating agency. The review of literature on the mentioned relationship has been prepared, based on the type of sector. The following hypothesis is proposed: The banks' share prices show a weaker reaction to credit rating changes than the entities outside the banking sector. The strongest impact of credit rating changes is observed for a downgrade. The obtained results allow for comparing the reaction of prices of bank and non-banking stock to credit rating changes in Central and Eastern Europe. The event study methodology and data described in the next section have been used to make the analysis.

### **3. Methodology and Data Description**

The basic goal of the article is to analyse the influence of credit rating changes on the rates of return on shares taking into account the size of the credit rating agency. The analysis has been conducted on daily data from 1995 to 2015 for Central and Eastern European<sup>1</sup> institutions listed on stock exchanges. The information has been collected from Thomson Reuters Database. Logarithmised daily rates of return on shares of banks and production institutions are used as a dependent variable. The long term issuer credit ratings published by small and big CRAs are analysed.

Event study methods are used to verify the mentioned hypothesis. The basic goal of the mentioned method is to verify the response of the rates of return on banks' shares to credit rating changes in a short period of time. The research has been conducted for three periods by using cumulative rates of return. The first period relies on the verification of abnormal rates during the pre-event window. This window comprises abnormal changes in rates of return from 31 to 2 days before the event. The event period covers four days starting from one day before the event date and ending on the second day after the event. It allows us to catch better absorption of news, which may be appropriate because some credit rating changes were unprecedented. The post-event window represents 30 days after the event. The methodology of event study requires the aggregation of abnormal differences in the variable within each event window to construct cumulative abnormal differences (CAD), taking an assumption that none other factors occurred in that time.



The analysis has been made according to the size of credit rating agencies. The big CRAs include Fitch, S&P and Moody. The rest of CRAs are classified to the sample of small CRAs. The divisions according to upgrades and downgrades of credit ratings and to banking and non-banking institutions have also been made.

The significance of the impact of the mentioned credit rating changes is verified by using t- Student test. A small number of observations may weaken the power of statistical tests, suggesting the need to consider both the economic and statistical significance of results.

The decomposition method of credit ratings is presented in Table 3.

Moody's Long-term Issuer Rating (Foreign)		S&P's Long-term Issuer Rating (Foreign)		Fitch Long-term Issuer Rating		Fitch Bank Individual Rating		Fitch Bank Support		Moody's Bank Financial Strength		Moody's Long-term Bank Deposit		Fitch Long-term Issuer Default Rating		S&P Long-term Insurer Financial Strength	
Rating	Code	Rating	Code	Rating	Code	Rating	Code	Rating	Code	Rating	Code	Rating	Code	Rating	Code	Rating	Code
Aaa	100	AAA	100	AAA	100	A	100	1	100	A+	100	Aaa	100	AAA	100	AAA	100
Aa1	95	AA+	95	AA+	94,74	A/B	90,90909	2	80	A	93,33333	Aa1	95,45455	AA+	94,74	AA+	95
Aa2	90	AA	90	AA	89,47	B	81,81818	3	60	A-	86,66667	Aa2	90,90909	AA	89,47	AA	90
Aa3	85	AA-	85	AA-	84,21	B/C	72,72727	4	40	B+	80	Aa3	86,36364	AA-	84,21	AA-	85
A1	80	A+	80	A+	78,95	C	63,63636	5	20	B	73,33333	A1	81,81818	A+	78,95	A+	80
A2	75	A	75	A	73,68	C/D	54,54545	NR	0	B-	66,66667	A2	77,27273	A	73,68	A	75
A3	70	A-	70	A-	68,42	D	45,45455	WD	-5	C+	60	A3	72,72727	A-	68,42	A-	70
Baa1	65	BBB+	65	BBB+	63,16	D/E	36,36364			C	53,33333	Baa1	68,18182	BBB+	63,16	BBB+	65
Baa2	60	BBB	60	BBB	57,89	E	27,27273			C-	46,66667	Baa2	63,63636	BBB	57,89	BBB	60
Baa3	55	BBB-	55	BBB-	52,63	E/F	18,18182			D+	40	Baa3	59,09091	BBB-	52,63	BBB-	55
Ba1	50	BB+	50	BB+	47,37	F	9,090909			D	33,33333	Ba1	54,54545	BB+	47,37	BB+	50
Ba2	45	BB	45	BB	42,11	NR	0			D-	26,66667	Ba2	50	BB	42,11	BB	45
Ba3	40	BB-	40	BB-	36,84	WD	-5			E+	20	Ba3	45,45455	BB-	36,84	BB-	40
B1	35	B+	35	B+	31,58					E	13,33333	B1	40,90909	B+	31,58	B+	35
B2	30	B	30	B	26,32					E-	6,66667	B2	36,36364	B	26,32	B	30
B3	25	B-	25	B-	21,05					WR	-5	B3	31,81818	B-	21,05	B-	25
Caa1	20	CCC+	20	CCC	15,79							Caa1	27,27273	CCC	15,79	CCC+	20
Caa2	15	CCC	15	CC	10,53							Caa2	22,72727	CC	10,53	CCC	15
Caa3	10	CCC-	10	C	5,26							Caa3	18,18182	C	5,26	CCC-	10
Caa	5	CC	5	RD	-5							Caa	13,63636	RD	-5	CC	5
C	0	NR	0	D	-5							Ca	9,090909	D	-5	NR	0
WR	-5	SD	-5	WD	-5							C	4,545455	WD	-5		
NULL	0	NULL	0	NR	0							WR	-5	NR	0		
		D	-5														

Tab. 3. Linear decomposition of credit ratings

## 4. Findings

The analysis has been carried out in three groups. According to the first part of the testing of the presented hypothesis, a classification of credit ratings changes into upgrades and downgrades was prepared. The results of the estimation are presented in the table below. The findings suggest that more information about downgrades has been published by CRAs in Central and Eastern Europe over the last 20 years. The findings suggest also that only a rating upgrade has a statistically significant impact on abnormal rates of return on shares. Stock prices react after the moment of publication of information about changes.

change	upgrade	downgrade
<i>pre-event window</i>		
_cons	0.00646	0.0292
	1.14	-1.62
<i>N</i>	99	245
<i>event window</i>		
_cons	0.005	0.00549
	(-1.22)	-0.61
<i>N</i>	99	245
<i>post-event window</i>		
_cons	0.0098*	0.00459
	(-1.77)	-0.57
<i>N</i>	99	245

Tab. 4. Impact of credit rating changes on the rates of return of companies in Central and Eastern Europe

The obtained results suggest that different findings can emerge for particular sectors. As a result, an analysis of the impact of credit rating changes on the rates of return on shares of companies from the banking and the non-financial sectors has been performed. The final findings are presented in Table 5. The presented results suggest that bank stock prices react to upgrades and downgrades at different moments. If CRAs published information about a decrease of notes, a statistically significant impact has been noticed during the pre-event window. The abnormal rates of return are lower by 5.1 p.p. For upgrades, the reaction has been observed during the moment of publication of information. The increase of credit ratings has a weaker impact on abnormal rates of return. The strength of the reaction is similar to that described in the literature. The analysis of data also suggests that banks are more often interested in receiving credit ratings than other institutions. The credit rating agencies more often carry out assessments of entities from the banking sector.

sector change	Banking sector		Non-financial institutions sector	
	upgrade	downgrade	upgrade	downgrade
pre-event window				
_cons	0.0005	-0.0514*	0.0207*	-0.0197
	-0.07	-1.99	-1.74	(-1.47)
N	70	166	23	73
event window				
_cons	0.0110**	-0.0144	0.0154	-0.0184*
	(-2.99)	-1.14	-1.39	(-1.96)
N	70	166	23	73
post-event window				
_cons	0.0098	0.00754	-0.0117	0.00329
	(-1.53)	-0.72	(-0.89)	-0.28
N	70	166	23	73

Tab. 5. Impact of credit rating changes on the rates of return of companies in Central and Eastern Europe according to the type of sector

The impact of credit rating upgrades on the rates of return has also been tested. Results are presented in Table 6. In Central and Eastern Europe, notes are given only by the three biggest credit rating agencies. Fitch long-term issuer default ratings have the most important impact. Before the moment of publication, abnormal rates of return are higher by 3.3 p.p. and during the event window – 1.2 p.p. Stock prices react during the same period of time in the case of Moody's bank financial strength and Moody's long term bank deposit ratings. The number of downgrades is small; as a result, the effects of estimation can be weakened by tests.

agency	Fitch Long-term Issuer Default Rating	Fitch Long-term Issuer Rating	Moody's Long-term Issuer Rating	S&P Long-term Issuer Rating	Fitch Bank Individual Rating	Fitch Bank Support	Moody's Bank Financial Strength	Moody's Long-term Bank Deposit	S&P Long-term Insurer Financial Strength
change	upgrade								
pre-event window									
_cons	0.0334*	0.00428	0.0105	0.00333	-0.0016	0.00314	0.0119***	0.0191**	0.0211
	-1.74	-0.4	-0.52	-0.36	(-0.08)	-0.17	(-5.28)	(-2.12)	-0.59
N	19	15	5	27	4	4	4	15	6
event window									
_cons	0.0118*	-0.0106	0.0111	0.00819	-0.012	-0.0046	0.0175*	0.0265***	0.00175
	(-1.74)	(-1.27)	-0.95	-0.88	(-0.97)	(-0.48)	-1.89	(-2.79)	-0.06
N	19	15	5	27	4	4	4	15	6
post-event window									
_cons	-0.013	-0.0152	0.045*	-0.0064	-0.0092	0.022*	-0.0026	-0.0054	0.0205
	(-1.01)	(-1.02)	(-1.79)	(-0.56)	(-0.60)	(-1.65)	(-0.15)	(-0.42)	-0.65
N	19	15	5	27	4	4	4	15	6

Tab. 6. Impact of credit rating upgrades on the rates of return of companies in Central and Eastern Europe according to the type of credit rating agency

The results of the impact of downgrades of credit ratings are presented in Table 7. The strongest reaction has been noticed in the case of the banking sector. For example, before the publication of information about the decrease of Fitch bank individual ratings, the abnormal rates of return are lower by 7.05 p.p. On the other hand, the mentioned stock prices react to Fitch bank support ratings during the post-event window (the rates of return decrease by 2.57 p.p.). In the case of the S&P long term issuer financial strength notes, a significant impact of changes has been observed during the event window. Stock prices of other companies react after the publication of information about changes. The rates of return are lower by 2.07 p.p. and 2.2 p.p. during and after the event window, respectively.

agency	Fitch Long-term Issuer Default Rating	Fitch Long-term Issuer Rating	Moody's Long-term Issuer Rating	S&P Long-term Issuer Rating	Fitch Bank Individual Rating	Fitch Bank Support	Moody's Bank Financial Strength	Moody's Long-term Bank Deposit	S&P Long-term Insurer Financial Strength
u	downgrade								
<i>pre-event window</i>									
_cons	0.0129	-0.0004	0.00378	-0.0297	-0.0705*	0.0109	0.052	0.103	-0.0303
	-0.63	(-0.03)	-0.11	(-1.57)	-2.12	-0.89	-1.03	-1.5	(-0.94)
N	32	16	12	43	10	19	42	53	17
<i>event window</i>									
_cons	-0.0144	-0.0207*	-0.0277	0.00031	0.0175	-0.0257	0.0316	0.0338	-0.0302*
	(-1.51)	(-1.79)	(-1.17)	-0.02	-1.06	(-1.37)	-0.98	-1.19	(-1.81)
N	32	16	12	43	10	19	42	53	17
<i>post-event window</i>									
_cons	0.0134	-0.0226*	0.0068	-0.0044	0.0156	-0.0257*	-0.0035	0.0158	0.0019
	-1.08	-1.81	-0.31	(-0.23)	-0.61	(-1.65)	(-0.16)	-0.7	-0.05
N	32	16	12	43	10	19	42	53	17

Tab. 7. Impact of credit ratings downgrades on the rates of return of companies in Central and Eastern Europe according to the type of credit rating agency

## 5. Conclusions

Credit rating agencies play a significant role on the financial market. As a result, the aim of the paper is to verify the influence of credit rating changes on the rates of return on shares taking into account the size of the credit rating agency. The following hypotheses have been put forth: The banks' share prices show a weaker reaction to credit rating changes than the entities outside the banking sector. The strongest impact of the credit rating changes is observed for a downgrade. Both types of changes have been verified based on long term issuer credit ratings proposed by all CRAs by using event study methods. The conducted analysis suggests that in the case of companies in Central and Eastern Europe credit rating agencies more often decrease than increase notes. Also, banks are more

often interested in the assessment of default risk. It can be connected with the corresponding banking and international cooperation. According to some national regulations and informal international rules, banks need to have credit ratings. The entities from non-financial sectors are usually interested in receiving notes if they want to issue debt securities. The described situation can suggest that there may be demand for credit ratings in the mentioned area. On the other hand, only some listed companies issue debt securities. Only a dozen companies from 2 000 entities listed on the stock exchanges have credit ratings. The mentioned situation is completely different than in the case of a developed financial market.

The performed analysis suggests also that banks' stock prices are more sensitive to credit rating changes than other non-financial institutions. The mentioned situation can be explained by two reasons. The first one is that foreign investors can be more interested in investing in companies from the banking sector. The second one can be related to the trust in supervisors. Differentiated is also the moment of reaction of the financial market taking into account the type of credit rating agency. The author will make an effort to analyse the impact of credit rating changes on stock prices by taking into account the size of the credit rating agency, the type of issuer and the level of economic development on a larger sample of entities from all over Europe and then all rated companies from around the world.

### Endnotes

- <sup>1</sup> According to the OECD classification: Albania, Bulgaria, Croatia, the Czech Republic, Hungary, Poland, Romania, the Slovak Republic, Slovenia, Estonia, Latvia and Lithuania.

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