Review of Socio-Economic Perspectives **Jaworska, P.C. pp. 49-83**
Vol. 2, No: 1 /June 2017

DOI: 10.19275/RSEP009

Received: 26.01.2017
Accepted: 30.05.2017

PREDICTION OF BANKING SECTOR CONDITION

Dr. Patrycja Chodnicka-Jaworska
Faculty of Management University of Warsaw, Poland
e-mail: pchodnicka@wz.uw.edu.pl

Abstract
The aim of the paper has been to analyse the European banking sector credit ratings. At first it has been presented the literature review that analyses the mentioned topic. As a result it has been put the following hypothesis: The banking sector credit ratings are strictly connected with the country's notes. In the paper have been presented methodologies of the credit ratings agencies, that are used during the estimation of the banks' default risks. The analysis of the condition of the banking sector has been prepared by using notes that are given by Fitch and S&P for banks from the Eurozone and Central and Eastern Europe. There have been collected data from the World Bank and reports prepared by the mentioned agencies.

***Key words*:** Credit rating, Default risk, Banking sector

***JEL Classification*:** G21, G24, G32.

Citation:

Jaworska, P.C. (2017). Prediction of Banking Sector Condition. Review of Socio-Economic Perspectives, Vol 2(1), pp. 49- 83**.** DOI: 10.19275/RSEP009

Introduction

Credit rating agencies are responsible for the reduction of the information between the issuers and investors. They main goal is to analyse and estimate the risk of the default. Credit rating agencies analyse three group of factors. To the first of them belong the financial indicators. The send one take into consideration the country's financial situation. The last of them are determinants connected with the particular sectors. The aim of the presented paper has been to analyse the European banking sector credit ratings. Banks are one of the most interested clients of credit ratings. They used notes for estimation the default risk of the borrowers. They also verify the investment decisions in the debt securities by the taking into account the credit rating. Notes are also significant during the cooperation between banks. In the paper have been put the following hypothesis: The banking sector credit ratings are strictly connected with the country's notes.

The paper consists on the three sections. The next section is the description of the methodology used by Moody and S&P. Next have been presented current researches that analyse the banking sector condition. In the third section has been described the current situation on the banking sector in Europe.

1. Methodology of estimation impact of macroeconomic factors on banks' credit ratings

1.1. Moody's Investor Service

One of the biggest credit rating agency is Moody's Investor Service. Notes given by the mentioned institution is type of the "stand – alone" and "all – in ratings". A stand-alone rating reflects the intrinsic strength of the institution and likelihood of default is analysed without the possibility of external support in future (Packer and Tarashev, 2011, p. 42). During the analysis Moody's Investor Service combine the following points, stage-by-stage, to generate ratings for each debt/creditor class:

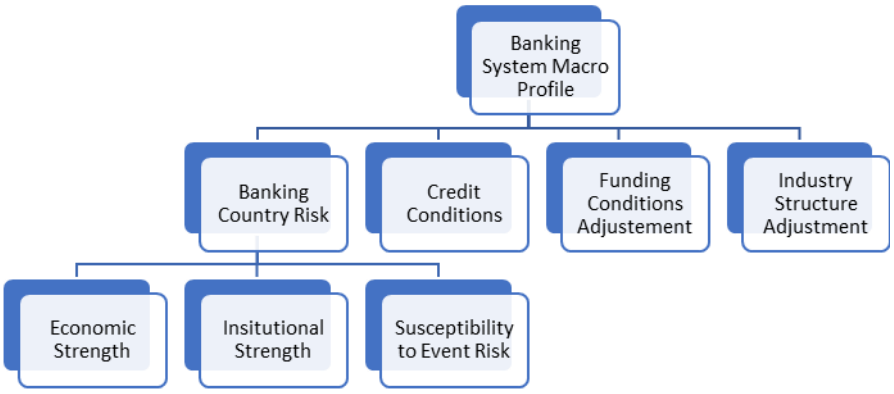
- assessment of a bank's standalone creditworthiness results in a baseline credit assessment (BCA). The BCA represents opinion regarding the bank's probability of standalone failure in the absence of external support;
- assessment of support from affiliates to determine our Adjusted BCA. At this stage in our analysis, "affiliates" refers to a parent, group or co-operative structure, for example;

- analysis of a "Loss Given Failure" (LGF). This assesses the impact of the bank's failure on the expected loss of each creditor class in response to

  different forms of expected resolution, firm-wide loss rates and liability structure. Moody's use this together with additional notching relating to other risks, to arrive at our preliminary rating assessment (PRA) for each rated instrument
- appraisal of the potential for government support being provided if needed, specific to each instrument class, to determine the final credit rating for each rated instrument as well as Counterparty Risk Assessment (Moody's , 2016a).

To analytic process are taken information about historical performance based on core credit metrics. Then are analyzed future trends in these credit metrics and quantitative adjustment. To verify the banks' credit risk are taken three components: macro profile, financial ratios and quantitative factors. The basic goal of the analysis is present the macroeconomic determinants impact on the banks' credit rating assessment. During the analytic process are taken factors presented on the graph 1.

Graph 1. Macro profile construction**.**



Source: own elaboration based on Moody's (2016).

Moody's Investor Service in methodology of assessment of bank's credit rating risk take into consideration 25 weight of impact of macro profile on the final note.

The first point of the analysis take into account banking country risk. In the mentioned group of factors, it can be distinguished:

- Economic strength,
- Institutional strength,

- Susceptibility to event risk.

Economic strength factors express the impact of macroeconomic factors on the banks financial environment. The previous researches take into analysis the impact of the business cycle measured by changes in GDP growth on the asset quality, earrings and their volatility and then on the solvency risk. In main of researches is explored the practicality of credit ratings phenomenon (Casaroni, 2015; Auh 2013; Freitag 2015). According to the Moody's Investor Service, larger, more developed economies have got the positive impact on the banking system and the condition of particular banks. For the assessment process, Moody's propose the following factors:

- Growth dynamics,
- Scale of the economy,
- National income,
- Adjustment factors.

The second group of banking credit risk are factors connected with the institutional strength. These group of factors analyses the impact of the legal framework on the condition of the banking sector. During the assessment process is analyzed the influence of the corruption, institutional weakness and inflation on the notes received by banks. The mentioned factors are classified on the following groups of determinants:

- Institutional framework and effectiveness,
- Policy credibility and effectiveness.

The last part of the banking credit risk analysis relies on the verification of the "susceptibility of event risk". Moody's to measure the impact of the mentioned factor, uses the following criteria:

- Political risk,
- Government liquidity risk,
- External vulnerability risk.

The mentioned factors and weight of the particular determinants with the indicators are presented in the table 1.

Table 1. Macroeconomic factors used by Moody's Investor Service to analyse banks' credit ratings macro profile.

Broad Rating Factor	**Rating sub-factor**	**Weight**	**Indicators**
Economic Strength	Growth Dynamics	50%	Average Real GDP Growth
			Volatility in Real GDP
			WEF Global Competitiveness Index
	Scale of the Economy	25%	National GDP (in USD)
	National Income	25%	GDP per capita (PPP, in USD)
	Adjustment Factors	1-6 scores	Diversification
			Credit Boom
Institutional Strength	Institutional Framework and Effectiveness	75%	Worldwide Government Effectiveness Index
			Worldwide Rule of Law Index
			Worldwide Control of Corruption Index
	Policy Credibility and Effectiveness	25%	Inflation Level
			Inflation Volatility
	Adjustment Factor	1-6 scores	Track Record of Default
Susceptibility to Event Risk	Political Risk	Max Function	Domestic Political Risk
			Geopolitical Risk
	Government Liquidity Risk	Max Function	Fundamental Metrics
			Market Funding Stress
	Banking Sector Risk	Max Function	Strength of Banking System
			Size of Banking System
			Funding Vulnerabilities
	External	Max	(Current Account Balance +

	Vulnerability Risk	Function	FDI)/GDP
			External Vulnerability Indicator
			Net International Investment Position/GDP

Source: Own elaboration based on Moody's (2016a, 2016b).

Moody's Investor Service, the same like others credit ratings agencies from the "Big three" uses the scoring methods to analyses the impact of the banking credit risk on the particular banks' credit ratings. To verify the mentioned phenomenon it is employed the 15 group of risk, from very high, high, moderate, low and very low. As a result of combination of the economic and institutional strength scoring analysis is received matrix presented on the table 2. Combining economic resiliency and susceptibility to event risk is introduced on the table 3.

Table 2. Banking Country Risk: Combining Economic and Institutional Strength

Institutional Strength \ Economic Strength	VH+	VH	VH-	H+	H	H-	M+	M	M-	L+	L	L-	VL+	VL	VL-
VH+	VH+	VH+	VH+	VH	VH	VH-	VH-	H+	H+	H	H	H-	H-	M+	M
VH	VH+	VH	VH	VH-	VH-	H+	H+	H	H	H-	H-	M+	M+	M	M-
VH-	VH+	VH	VH-	VH-	H+	H+	H	H	H-	H-	M+	M+	M	M	L+
H+	VH	VH-	VH-	H+	H+	H	H	H-	H-	M+	M+	M	M	M-	L+
H	VH	VH-	H+	H+	H	H	H-	H-	M+	M+	M	M	M-	M-	L
H-	VH-	H+	H+	H	H	H-	H-	M+	M+	M	M	M-	M-	L+	L
M+	VH-	H+	H	H	H-	H-	M+	M+	M	M	M-	M-	L+	L+	L-
M	H+	H	H	H-	H-	M+	M+	M	M	M-	M-	L+	L+	L	L-
M-	H+	H	H-	H-	M+	M+	M	M	M-	M-	L+	L+	L	L	VL+

L+	H	H-	H-	M+	M+	M	M	M-	M-	L+	L+	L	L	L-	VL+
L	H	H-	M+	M+	M	M	M-	M-	L+	L+	L	L	L-	L-	VL
L-	H-	M+	M+	M	M	M-	M-	L+	L+	L	L	L-	L-	VL+	VL
VL+	H-	M+	M	M	M-	M-	L+	L+	L	L	L-	L-	VL+	VL+	VL-
VL	M+	M	M	M-	M-	L+	L+	L	L	L-	L-	VL+	VL+	VL	VL-
VL-	M	M-	L+	L+	L	L	L-	L-	VL+	VL+	VL	VL	VL-	VL-	VL-

Source: Moody's (2016a).

Table 3. Banking Country Risk: Combining Economic Resiliency and Susceptibility to Event Risk.

Susceptibility to Event Risk \ Economic Resiliency	VH+	VH	VH-	H+	H	H-	M+	M	M-	L+	L	L-	VL+	VL	VL-
VH+	VS	VS-	VS-	S+	S	S-	S-	M+	M	M-	W+	W+	W	W-	VW+
VH	VS	VS-	VS-	S+	S	S-	S-	M+	M	M-	W+	W+	W	W-	VW+
VH-	VS	VS-	VS-	S+	S	S-	S-	M+	M	M-	W+	W+	W	W-	VW+
H+	VS	VS-	VS-	S+	S	S-	M+	M	M-	W+	W+	W	W-	VW+	VW+
H	VS	VS-	VS-	S+	S	S-	M+	M	M-	W+	W+	W	W-	VW+	VW+
H-	VS	VS-	VS-	S+	S	S-	M+	M	M-	W+	W	W-	VW+	VW+	VW
M+	VS-	VS-	S+	S	S-	S-	M	M-	W+	W+	W	W-	VW+	VW+	VW
M	VS-	VS-	S+	S	S-	S-	M	M-	W+	W	W-	VW+	VW+	VW	VW-
M-	VS-	S+	S	S-	S-	M+	M-	W+	W+	W	W-	VW+	VW+	VW	VW-
L+	VS-	S+	S	S-	S-	M+	M-	W+	W+	W-	VW+	VW+	VW	VW-	VW-
L	S+	S	S-	S-	M+	M	W+	W+	W	W-	VW+	VW+	VW	VW-	VW-
L-	S+	S	S-	S-	M+	M	W+	W+	W	VW+	VW+	VW	VW-	VW-	VW-
VL+	S	S-	S-	M+	M	M-	W+	W	W-	VW+	VW+	VW	VW-	VW-	VW-

	VL	S	S-	S-	M+	M	M-	W+	W	W-	VW+	VW	VW-	VW-	VW-	VW-
	VL-	S-	S-	M+	M	M-	W+	W	W-	VW+	VW+	VW	VW-	VW-	VW-	VW-

Source: Moody's (2016a).

The next group of factors taken into consideration by the Moody's Investor Service to the assessment process are "credit conditions" factors. To analyse the impact of the mentioned determinant are verified two sub-factors: level of private sector credit/GDP and growth in private sector credit/GDP.

The first of the mentioned determinant is a basic measure of the leverage. To verify the impact of the level of private sector credit to GDP is also used the scoring method. This ratio is classified on a scale from 1 to 15 by using data from the World Bank database, where 1 present the lowest value of risk, and 15 the highest one. The application of the level of private sector credit to GDP is threaten in literature as a good measure of the credit condition of the economy. Higher levels of debt are the natural consequence of financial deepening as economies develop and, hence, may be more sustainable for some mature economies than for others.

The growth in the relation of the private sector credit to GDP helps to analayse the deviation between credit and economic activity. The research literature precise it as an important indicator of greater risk-taking, which often precedes a crisis. The same like in the private sector to GDP ratio analysis, in the scoring method is taken 1-15 scale. Moody's (2016 a) emphasis that the accumulation of debt is sometimes associated with the natural process of financial deepening in developing economies, or sustainable increases in asset prices, and rapid growth does not necessarily signal the same risks in different economies.

Table 4. Combining private sector credit and its rate of change.

Private sector credit/GDP: 70:weight	Change in private sector credit/GDP: 30% weight															
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

	6	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	7	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	8	1	1	1	1	1	1	1	1	1	1	1	1	2	2	2
	9	1	1	1	1	1	1	1	1	1	1	2	2	2	3	3
	10	1	1	1	1	1	1	1	1	2	2	2	3	3	3	4
	11	1	1	1	1	1	2	2	2	2	3	3	3	4	4	4
	12	1	1	1	2	2	2	3	3	3	3	4	4	4	5	5
	13	1	2	2	2	3	3	3	4	4	4	4	5	5	5	6
	14	2	2	3	3	3	4	4	4	5	5	5	5	6	6	6
	15	3	3	3	4	4	4	5	5	5	6	6	6	6	7	7

Source: Moody's (2016a).

Table 5. Banks' credit rating macro profile scoring.

Broad Rating Factors	Sub – factor indicators		VH+	VH	VH-	H+	H	H-	M+	M	M-	L+	L	L-	VL+	VL	VL-
Economic Factors	Average Real GDP Growth	Min	>4.50	4	3.5	3	2.75	2.5	2.25	2	1.75	1.5	1.25	1	0.75	0.5	<0.5
		Max		4.9	3.99	3.49	2.99	2.74	2.49	2.24	1.99	1.74	1.49	1.24	0.99	0.74	
	Volatility in Real GDP Growth	Min	<1.44	1.44	1.66	1.76	1.96	2.11	2.20	2.29	2.49	2.64	2.85	3.14	3.36	3.72	>3.95
		Max		1.65	1.75	1.95	2.10	2.19	2.28	2.48	2.63	2.84	3.13	3.35	3.71	3.94	
	WEF Global Competitiveness Index	Min	>4.98	4.61	4.52	4.45	4.39	4.31	4.26	4.22	4.10	4.03	3.95	3.90	3.84	3.75	<3.75
		Max		4.97	4.46	4.51	4.44	4.38	4.30	4.25	4.21	4.09	4.02	3.94	3.89	3.83	
	Nominal GDP (USD bn)	Min	>1000	500	400	300	250	200	175	150	125	100	75	50	25	10	<10
		Max		9999	499	399	299	249	199	174	149	124	99	74	49	24	
	GDP per capita (PPP,	Min	>351	3013	2591	2404	2040	1800	1629	1358	1186	1065	8577	770	591	4320	<432

	USD)		75	0	8	5	2	1	7	7	3	6		8	9		0
		Max		35175	30129	25917	24044	20401	1800	16296	13586	11862	10655	8576	7707	5918	
	Credit Boom																
	Diversification																
Institutional Strength - Institutional Framework and Effectiveness (75%)	Worldwide Government Effectiveness Index (50%)	Min	>1.14	1.01	0.85	0.48	0.34	0.25	0.11	-0.01	-0.1	-0.17	-0.35	-0.41	-0.5	-0.72	<-0.72
		Max		1.13	1.00	0.84	0.47	0.33	0.24	0.10	-0.02	-0.11	-0.18	-0.36	-0.42	-0.51	
	Worldwide Rule of Law Index (25%)	Min	>0.98	0.81	0.64	0.48	0.26	0.06	-0.08	-0.15	-0.29	-0.35	-0.45	-0.57	-0.71	-0.82	<-0.82
		Max		0.97	0.80	0.63	0.47	0.25	0.05	-0.09	-0.16	-0.30	-0.36	-0.46	-0.58	-0.72	
	Worldwide Control of Corruption	Min	>1.03	0.82	0.56	0.32	0.13	-0.06	-0.19	-0.29	-0.39	-0.44	-0.58	-0.64	-0.79	-0.91	<-0.91

	Index (25%)	Max		1.02	0.81	0.55	0.31	0.12	-0.07	-0.20	-0.30	-0.40	-0.45	-0.59	-0.65	-0.80	
Institutional Strength – Policy Credibility and Effectiveness (25%)	Inflation (50%)	Min	1.3	1.2	1.1	1	0.9	0.8	0.7	0.6	0.5	0.4	0.3	0.2	0.1	0	<-0.01
		Max		1.29	1.19	1.09	0.99	0.89	0.79	0.69	0.59	0.49	0.39	0.29	0.19	0.09	
		Min	2.49	2.5	3	3.5	4	5	6	8	10	12.5	15	17.5	20	22.5	>25
		Max		2.99	3.49	3.99	4.99	5.99	7.99	9.99	12.49	14.99	17.49	19.99	22.49	24.99	
	Inflation Volatility (50%)	Min	<1.2	1.2	1.4	1.7	2	2.1	2.5	2.6	2.7	3.1	3.4	3.6	3.8	4.5	>5.6
		Max		1.39	1.69	1.99	2.09	2.49	2.59	2.69	3.09	3.39	3.59	3.79	4.49	5.59	
Institutional Strength – Adjustment Factor (1- 6 scores)	Track Record (N/A)																

Susceptibility to Event Risk – Political Risk (max. function)	Domestic Political Risk – Worldwide Voice and Accountability Index															
	Domestic Political Risk – GDP per capita															
	Geopolitical Risk															
Susceptibility to Event Risk – Government Liquidity Risk (max. function)	Fundamental Metrics – Gross – Gross Borrowing Requirement/GDP	Min	>40	37.6	35.1	32.6	30.1	27.6	25.1	22.6	20.1	17.6	15.1	12.6	10.1	5.1	<5
		Max		40	37.5	35	32.5	30	27.5	25	22.5	20	17.5	15	12.5	10	
	Non – Resident Share of General Government Debt	Min	95.1	90.1	85.1	80.1	75.1	70.1	65.1	60.1	55.1	50.1	45.1	40.1	35.1	30.1	<30
		Max	100	95	90	85	80	75	70	65	60	55	50	45	40	35	

	Market Funding Stress – Market Implied Ratings		Caa3 - C	Caa2	Caa1	B3	B2	B1	Ba3	Ba2	Ba1	Baa 3	Baa 2	Baa 1	A3	A1-A2	Aaa-Aa3
Susceptibility to Event Risk – Banking Sector (max. function)	Strength of Banking System – Average Baseline Credit Assessment (BCA)		caa3 - c	caa2	caa1	b3	b2	b1	ba3	ba2	ba1	baa3	baa2	baa 1	a3	a2	a1-aaa
	Size of Banking System – Total Domestic Bank Assets/GDP	Min	>195. 65	165. 48	131. 95	120. 15	108. 62	97.6 2	91.0 5	87.0 4	76.0 8	65.9 4	60.8 4	54.5 7	49.3 3	39.1 7	<39. 16
		Max		195. 64	165. 47	131. 94	120. 14	108. 61	97.6 1	91.0 4	87.0 3	76.0 7	65.9 3	60.8 3	54.5 6	49.3 2	

	Funding Vulnerabilities Banking System Loan/Deposit	Min	>260	250.1	225.1	200.1	180.1	160.1	140.1	120.1	100.1	90.1	80.1	70.1	60.1	50.1	<50
		Max		260	250	225	200	180	160	140	120	100	90	80	70	60	
Susceptibility to Event Risk – External Vulnerability Risk (max. function)	(Current Account Balance +FDI Inflows)/GDP	Min	<-35	-35	-30	-25	-20	-15	-10	-8	-6	-5	-4	-3	-2	-1	>0
		Max		-30.1	-25.1	-20.1	-15.1	-10.1	-8.1	-6.1	-5.1	-4.1	-3.1	-2.1	-1.1	0	
	External Vulnerability Indicator	Min	>400	300.1	250.1	200.1	180.1	160.1	140.1	120.1	100.1	90.1	80.1	70.1	60.1	50.1	<50
		Max		400	300	250	200	180	160	140	120	100	90	80	70	60	
	Net International Investment Position/GDP	Min	<-350	-299.9	-249.9	-199.9	-149.9	-99.9	-74.9	-49.9	-24.9	0.1	10.1	20.1	30.1	40.1	>40
		Max		-350	-300	-250	-200	-150	-100	-75	-50	-25	0	10	20	30	

Source: own elaboration based on Moody's (2016a, 2016b).

Table 6. Credit conditions scoring.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Private Sector Credit/GDP in % (70%)															
Min	<20	20	25.01	30.01	35.01	40.01	50.01	60.01	75.01	100.01	125.01	150.01	175.01	200.01	>400
Max		25	30	35	40	50	60	75	100	125	150	175	200	400	
Change in Private Sector Credit/GDP (during 3 years; in %; 30%)															
Min	<-30	-30	-19.99	-9.99	-7.99	-4.99	-2.99	0.01	3.01	5.01	8.01	10.01	15.01	20.01	>30
Max		-20	-10	-8	-5	-3	0	3	5	8	10	15	20	30	

Source: own elaboration based on Moody's (2016a, 2016b).

More important impact of the mentioned ratio is the nominal value of the private sector credit to GDP than the change of it. The weight of the first one is 70%, and the second one only 30%. The combination of the mentioned factors is presented on the table 4.

The matrix of the scoring of banks' credit rating macro profile is presented in the table 5 and credit condition scoring on the table 6.

Table 7. Credit Conditions Notching.

Credit Conditions Score								
Banking Country Risk		1	2	3	4	5	6	7
	Very Strong	0	-1	-2	-3	-4	-6	-8
	Very Strong -	0	-1	-2	-3	-4	-6	-7
	Strong+	0	-1	-1	-2	-4	-5	-7
	Strong	0	-1	-1	-2	-3	-5	-6
	Strong-	0	0	-1	-2	-3	-4	-5
	Moderate+	0	0	-1	-2	-2	-4	-5
	Moderate	0	0	-1	-1	-2	-3	-4
	Moderate-	0	0	0	-1	-2	-3	-4
	Weak+	0	0	0	-1	-1	-2	-3
	Weak	0	0	0	0	-1	-2	-2
	Weak-	0	0	0	0	0	-1	-2
	Very Weak+	0	0	0	0	0	-1	-1
	Very Weak	0	0	0	0	0	0	-1
	Very Weak-	0	0	0	0	0	0	0

Source: Moody's (2016a).

Funding conditions are measured by using the following factors:

- market funding measures – measured for example by the LIBOR – OIS spread, which is the difference between a bank borrowing rate (LIBOR) and the overnight indexed swap (OIS)
- central bank balance sheets.

Industry structure factor is measured by Herfindahl – Hirschman indices and the combined domestic market share of the system's five largest banks.

Table 8. Example of Macro Profile Summary**.**

Rating Factors	Sub-Factor Weighting	Indicator	Factor Score
Factor 1. Economic Strength			**VH+**
Growth Dynamics	50%	VH-	
Average Real GDP Growth (2009-2018F)		2.7	
Volatility in Real GDP Growth (Standard Deviation, 2004 -2013)		0.9	
WEF Global Competitiveness Index (2013)		5.1	
Scale of the Economy	25%	VH+	
Nominal GDP (USD bn, 2013)		1502	
National Income	25%	VH+	
GDP per Capita (PPP, USD, 2013)		45138	
Factor 2. Institutional Strength			**VH+**
Institutional Framework and Effectiveness	75%	VH+	
World Bank Government Effectiveness Index (2012)		1.62	
World Bank Rule of Law Index (2012)		1.75	
World Bank Control of Corruption Index (2012)		1.76	
Policy Creditability and Effectiveness	25%	VH+	
Inflation Level (%, 2009 – 2018F)		2.46	
Inflation Volatility (Standard Deviation, 2004 – 2013)		0.81	
Factor 3. Susceptibility to Event Risk (Max. Function)			**L+**
Political Risk			
Government Liquidity Risk			

External Vulnerability Risk			
Banking VS	**Country**		**Risk**
Credit Conditions			
Private Sector Credit/GDP	70%	126	0
3-Year Change in Private Sector Credit/GDP (PP)	30%	-0.2	
Banking System Macro Profile before funding and industry adjustments VS			
Funding Conditions Adjustment			-1
Industry Structure Adjustment			1
Banking VS	**Sector**	**Macro**	**Profile**

Source: Moody's (2016a).

The example of the of macro profile analysis of the process of banks' credit ratings assessment is presented on the table 8. The analysis by using scoring credit rating gives relatively a lot of advantages and disadvantages. A big threat is the possibility of quick obsolescence of the system and the inability to adapt quickly to change. For example, as a result of rapid changes in the economy, you may find that the factors taken to assess as a criterion change, which will lead to the uselessness of the system. Therefore, from modern systems capabilities required to adapt them to changing realities, and the best upgrade so. scoring tables. Many of the problems arises also a selection of evaluation criteria and the appropriate number of points. Some of the criteria can be considered as having no direct impact on the probability of insolvency of the company. Number of points assigned by the system sometimes seems illogical. There is even discrimination against certain groups of operators.

The selection criteria for the evaluation of data collected only from a group of companies, which was awarded a rating. Analyzed is also too small a number of factors examined subject.

Credit rating agencies use the scoring method because of the following advantages:

- Simplicity,
- The homogeneity of the process of credit rating,

- Reducing the number of "bad debtors"
- The possibility of increasing the delegation of powers to the rating,
- The possibility of a flexible policy of rating assessment by management
- Increasing labor productivity.

The result of the estimation banking macro profile and the financial analysis presents table 9.

Table 9. Relation between macro profile and financial analysis.

Financial ratio																
Macro Profile		VS+	VS	VS-	S+	S	S-	M+	M	M-	W+	W	W-	VW+	VW	VW-
	VS+	aaa	aaa	aa1	aa1	aa2	aa3	a1	a3	baa1	baa2	ba1	ba3	b2	caa1	caa3
	VS	aaa	aa1	aa1	aa2	aa3	a1	a2	a3	baa1	baa3	ba1	ba3	b2	caa1	caa3
	VS-	aa1	aa1	aa2	aa2	aa3	a1	a2	baa1	baa2	baa3	ba2	b1	b2	caa1	caa3
	S+	aa1	aa2	aa2	aa3	a1	a2	a3	baa1	baa2	ba1	ba2	b1	b3	caa1	caa3
	S	aa2	aa2	aa3	a1	a2	a3	baa1	baa2	baa3	ba1	ba3	b1	b3	caa1	caa3
	S-	aa3	aa3	a1	a2	a3	a3	baa2	baa3	ba1	ba2	ba3	b2	b3	caa2	caa3
	M+	a1	a1	a2	a3	a3	baa1	baa2	baa3	ba2	ba3	b1	b2	b3	caa2	caa3
	M	a2	a2	a3	baa1	baa1	baa2	baa3	ba1	ba2	ba3	b1	b3	caa1	caa2	caa3
	M-	a3	a3	baa1	baa2	baa3	baa3	ba1	ba2	ba3	b1	b2	b3	caa1	caa2	caa3
	W+	baa1	baa2	baa2	baa3	ba1	ba2	ba2	ba3	b1	b2	b3	b3	caa1	caa2	caa3
	W	baa2	baa3	ba1	ba1	ba2	ba3	ba3	b1	b2	b3	b3	caa1	caa2	caa2	caa3
	W-	baa3	ba1	ba2	ba3	ba3	b1	b2	b2	b3	b3	caa1	caa1	caa2	caa2	caa3
	VW+	ba1	ba3	ba3	b1	b2	b2	b3	b3	caa1	caa1	caa2	caa2	caa2	caa3	caa3
	VW	ba3	b1	b2	b3	b3	caa1	caa1	caa1	caa2	caa2	caa2	caa2	caa3	caa3	caa3
	VW-	b1	b3	caa1	caa1	caa2	caa2	caa2	caa3	caa3	caa3	caa3	caa3	caa3	caa3	caa3

Source: Moody's (2016).

1.2. Standard & Poor's Financial Service

The second credit rating agency that has been taken to the analysis is the Standard& Poor's Financial Service and its banks' credit ratings methodology.

According to the previous researches (Chodnicka 2014, 2015, Chodnicka – Jaworska, 2015 a, b) financial market strongly react on the changes in the S&P's credit ratings. The possibility of the change of the credit ratings leads to the correction on the capital market between 30 to 180 days before the change. The strongest reaction is observed during 30 days before and after the change (Chodnicka – Jaworska 2015a , b).

The previous researches take into consideration the same factors of credit rating assessment for all types of credit rating. The analysis proposed by the Standard & Poor's Financial Service consist of the following steps:

- Business risk assessment
  - Economic risk,
  - Industry risk,
  - Management/strategy,
  - Market position,
  - Diversification,
- Overall financial risk assessment
  - Financial reporting & accounting analysis,
  - Earnings,
  - Financial flexibility,
  - Capitalization,
- Overall enterprise risk management assessment
  - Market and interest rate risk,
  - Credit risk,
  - Liquidity and funding risk.

In the table 10 are presented determinants of the banking macro profile. The presented factors are completely different than those proposed by Moody's Investor Service for the assessment macro – profile analysis. As a result during the comparison between those two types of credit ratings should be taken into consideration all the same determinants or different catalogue for the particular credit rating type.

Table 10. Standard&Poor's macroeconomic profile of banks' credit ratings

Factor	Subfactor adjustments	Additional adjustments
Economic Risk		
Economic resilience	Economic structure and stability Macroeconomic policy flexibility Political risk	GDP per capita

Factor	Subfactor adjustments	Additional adjustments
Economic imbalances	*Expansionary phase* Private sector credit growth Equity prices Current account balance and external debt position or *Correction phase* Expected impact on the banking sector	Atypical change in private sector credit growth or assets prices Commercial real estate prices
Credit risk in the economy	Private sector debt capacity and leverage Lending and underwriting standards Payment culture and rule of law Sovereign government credit stress	Currency movements or price volatility Country specific characteristics
Institutional framework	Banking regulation and supervision Regulatory track error Governance and transparency	
Competitive dynamics	Risk appetite Industry stability Market distortions	
System – wide funding	Core customer deposits External funding Domestic debt capital markets Government role	Non – loan assets

Source: S&P(2013).

The same like in the case of Moody's Investor Service analysis, Standard &Poor's uses the scoring method to verify the banking credit rating risk. In Moody's assessment process is taken 15 numerical and literal scale. In the case of S&P's research each factor is scored on numerical scale from 1 (very low risk) to 6

(extremely high risk). To each risk score are classified the point scale. The score scale is presented in the table below.

Table 11. Scoring factors using by the S&P to analyse the country and banking risk.

Relative risk description	Risk score	Points
Very low risk	1	1
Low risk	2	2
Intermediate risk	3	3
High risk	4	5
Very high risk	5	7
Extremely high risk	6	10

Source: S&P(2013).

For the analytic process each factor receives from 1 to 10 points. Then points are summered and counted on the economic risk or industry score. The presentation of the rescale process is included on the table 12. If the risk is highest, the risk score rises, and if the risk is lowest, the risk score is declined.

Table 12. Determining Economic Risk and Industry Risk Factors

Point total for the three economic or industry risk factors	Economic risk or industry risk score
3-4	1
5-6	2
7-8	3
9-10	4
11-12	5
13-14	6
15-17	7
18-20	8
21-23	9
24-30	10

Source: S&P(2013).

As a result of the estimation process is received a matrix, that is presented in the table 13. The matrix is a combination of economic and industry risk. If the value of score is higher, the risk rises.

Table 13. Matrix of Economic and Industry Risk Score

Industry risk											
Economic risk		1	2	3	4	5	6	7	8	9	10
	1	1	1	2	3	3	4				
	2	1	2	2	3	4	4	5			
	3	2	2	3	3	4	5	5	6		
	4	3	3	3	4	4	5	6	7	7	
	5	3	4	4	4	5	5	6	7	8	9
	6	4	4	5	5	5	6	7	7	8	9
	7		5	5	6	6	7	7	8	8	9
	8			6	7	7	7	8	8	9	10
	9				7	8	8	8	9	9	10
	10					9	9	9	10	10	10

Source: S&P(2013).

In all presented banks' credit rating methodologies is presented the impact of the macroeconomic situation of particular countries on the credit risk assessment. In the presented methodologies, credit rating agencies do not take into consideration the country credit rating. The analysis presented above suggests that banks' and countries' credit rating are strictly connected.

2. Literature review

In current researches the most popular are analyses about factors influencing on the countries and corporate credit ratings. It has been observed the lack of the studies about determinants of banks' notes. In most researches the analysis has been prepared for financial indicators, connected with the liquidity, assets quality,

capital adequacy, management quality and efficiency.[1] In the presented paper will be described the literature review about the impact of the macroeconomic factors and banking sector determinants on the banks' notes.

One of the most important factor that has been taken into consideration to analyse the banks' credit ratings is the GDP growth. The mentioned factor play an significant role during the estimation of the banks' notes. The mentioned opinion has been presented in the researches prepared by Chodnicka-Jaworska (2017). The other opinion has been presented by Bissoondoyal-Bheenick & Treepongkaruna (2011). According to their analyses the macroeconomic variables and market risk factors do not seem to be contributing factor in explaining the banks' credit ratings. Caporale et. al. (2012) verified the impact of the country risk on banks' notes. They found that banks in some countries have systematically higher ratings than others.

The analysis of the impact of the business cycle on credit ratings by taken into consideration the stability of notes has been prepared by Altman and Rijken (2005). The influence of the prosperity and recession has been verified for countires (Giacomino, 2013; Freitag, 2015), banks (Bangia et al., 1999; Fei et al., 2012) and companies credit ratings (Cesaroni, 2015; Isakin, David, 2015; Iannotta et al., 2013). The researches have been prepared mainly for the American market (Amato, Furfine, 2003; Auh, 2013).

Rixtel et al. (2015) found that the "market timing" measured by the low interest rates drove issuance before but not during the crisis. During the crisis funding became more important than its cost. They suggested also that the stronger banks, also form the peripheral countries, receive the better access to longer-term funding markets, even during crisis periods.

The analysis has been prepared also by using the concentration ratio. The mentioned determinant has been measured by the Herfindahl -Hirschmann index or the value of the assets of the biggest three banks to the total value of assets. The researches prepared by Hau et al. (2012) suggests that the concentration ratio play an significant role for the estimation of the banks' credit ratings. The analysis of the mentioned ratio is strictly connected with the "too big to fail" phenomenon.

Wheelock and Wilson (2000) verified the impact of the default risk on the merger and acquisition on the banking sector. They found that inefficiency increases the risk of failure while reducing the probability of a bank's being acquired. The insolvency a bank improve the probability of the acquisition.

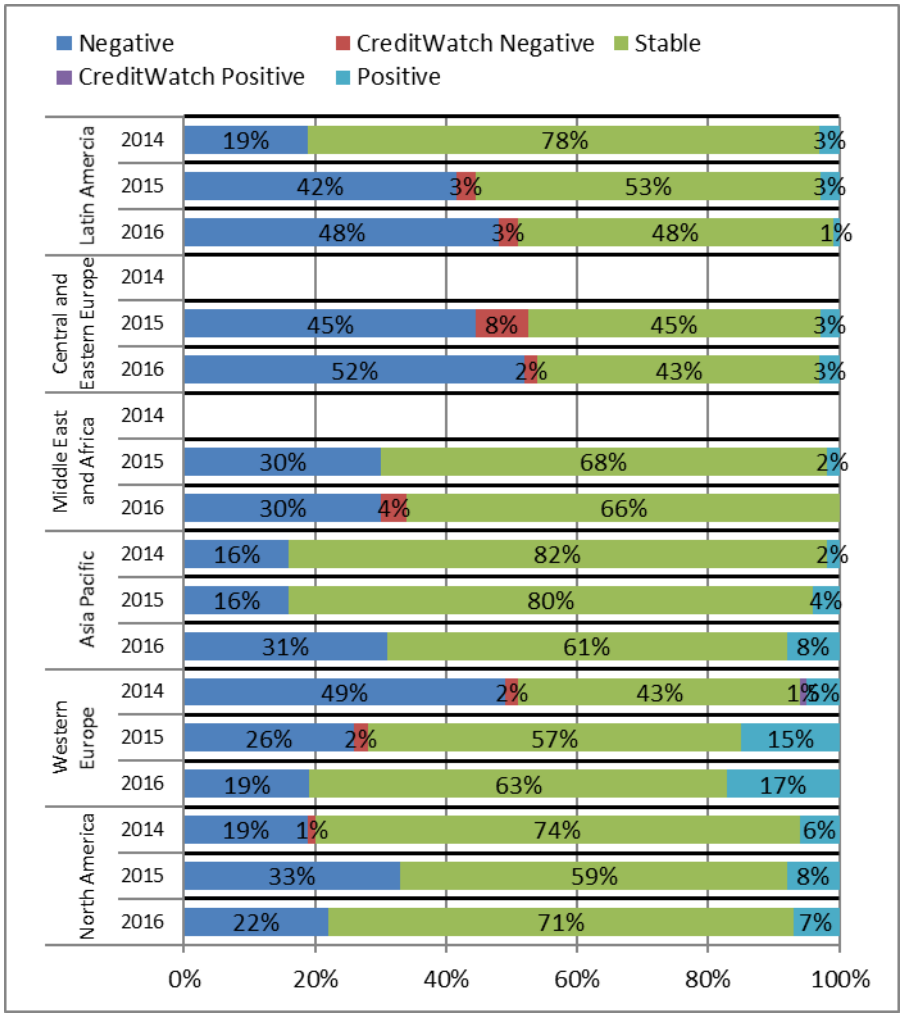
[1] Shen et al. (2012), Bellotti et al. (2011a; 2011b), Bissoondoyal-Bheenick & Treepongkaruna (2011) Ötker-Robe & Podpiera (2010), Hassan & Barrell (2013), Poon et al. (2009), Hau et al. (2012).

As a result the next step of the research relies on the analysis of the condition of the banking by taking into consideration notes that are prepared by three biggest credit ratings agencies for countries.

3. The analysis of the condition of the banking sector.

The analysis of the condition of the banking sector has been started on the presentation of trends on notes that are given for banking sector by S&P. The results of analysis has been introduced in the table 14.

Table 14. S&P banking sector credit ratings trends.



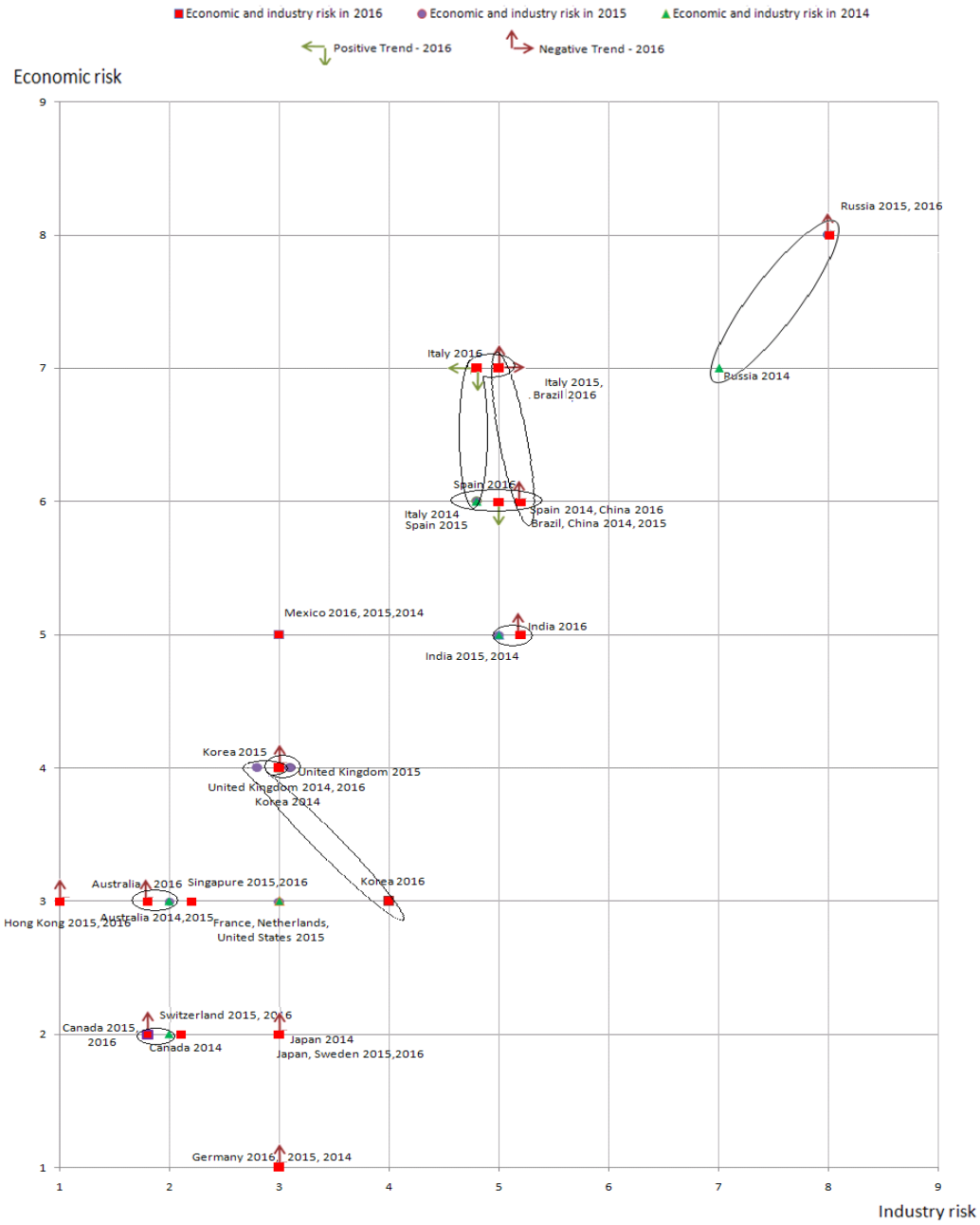
Source: own elaboration based on S&P (2014, 2015, 2016).

The analysis of banks from Latin America suggests that the mentioned institutions are threaten as more risky in 2017 than it was in 2015. The proportion of the negative outlooks and reduction of the positive notes. The same situation has been

observed for banks from the Central and Eastern Europe and Asia Pacific. In the case of Middle East and Africa the situation is stable. Banks from Western Europe and North America are threaten as more stable than in previous years. The main aim of the paper is to analyse the condition of the banking sector in Europe, as a result the broader analysis will be presented for the mentioned area.

The prediction of the World Bank and International Monetary Fund suggest that Western Europe countries will have got problems with the modest economic growth and increasing level of the political risk. This situation can be connected with the Brexit negotiations. In most of the mentioned countries are also planned the elections. The analysis of the risk of the activity of banks presented in the figure 2, suggest that banks will have got problems in a three areas. The first of them is the low profitability of their business models. There have been also presented ideas of the restrictive regulatory requirements. The interest rates are also still low, in most cases below zero. The toxic assets that have got Spanish, Ireland, Italian and Portuguese banks will also create problems on the financial market. The instable situation on the financial market can create encourage the ECB to purchase bonds. Low interest rates can help to maintain the low borrowing costs. On the other hand they will reduce the possibility of increase the earnings. As a result banks can take more risky decisions to create profits. The mentioned situation can create pressure from stakeholders. Some of banks like Commerzbank, ING or Lloyds presented in last months the downsizing plans. The expected ROE for the biggest 50 banks is 6% (S&P, 2016). On the other hand the cost of the capital is estimated on 10%. The described gap will create consolidation moves. This situation can be observed in the case of German France, Italy or Spain. It can be noticed the digitalization trend, especially in Nordic banks. Banks will also have problems with the regulations changes, like such as Basel's pending refinements of capital requirements, including changes to enhance comparability of RWAs, the final design of the long-term funding requirements and leverage ratio, and MREL requirements (S&P, 2016).

Figure 2. S&P Economics and industry risk relationship.

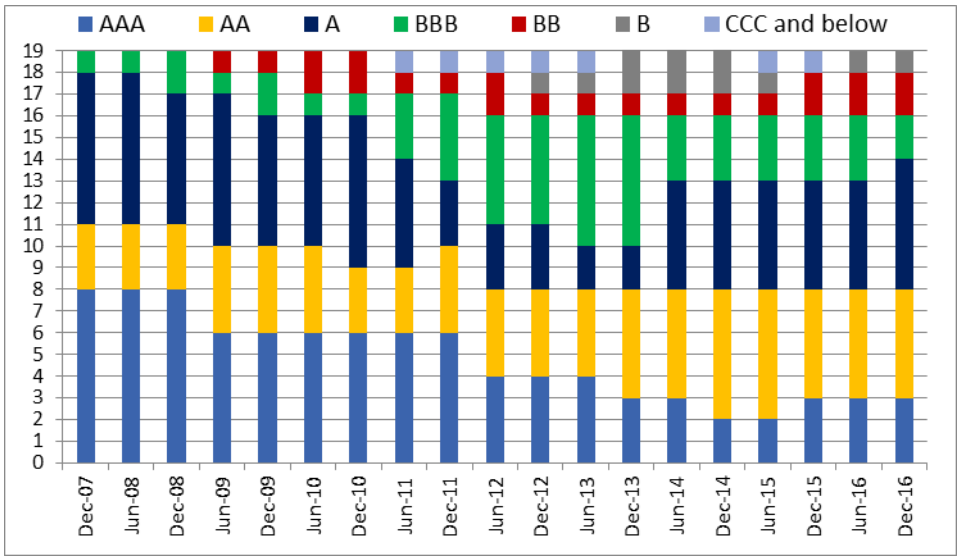


Source: Own elaboration based on S&P (2014, 2015, 2016).

The analysis of country's credit ratings of the European Union suggests that the macroeconomic risk of the banking sector in the presented countries rose during the last years. At the moment the relation between the investment and speculative

notes is better than in previous year. The mentioned relationship confirm the hypothesis that has been put at the beginning of the paper.

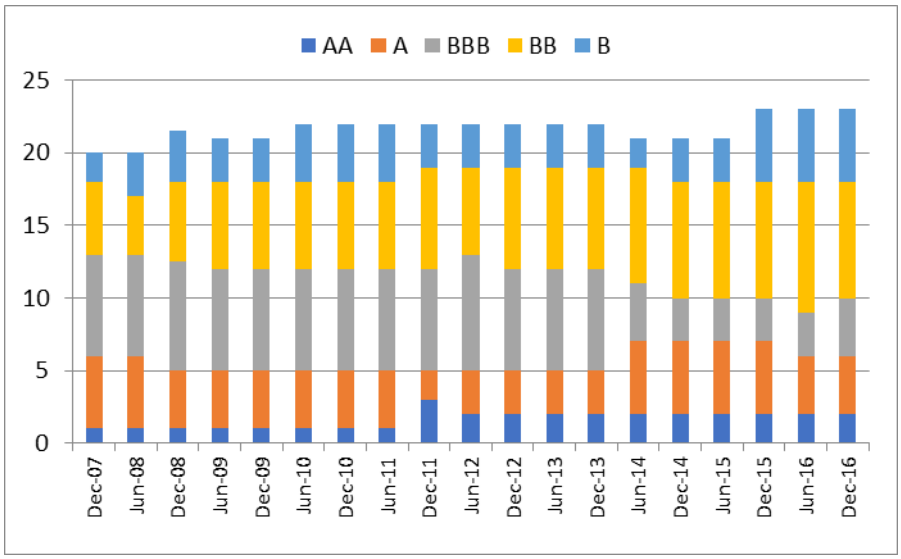
Table 15. European Union credit ratings changes presented by S&P .



Source: S&P (2016b).

Banks form the CEE area has been in the similar situation. The same like Western Europe banks, Russian financial institutions are under pressure to adjust their business model to a low-growth and high-risk environment. On the other hand the situation on the financial market of Russia can also influence on the banks' notes. The World Bank and IMF assume the modest rise of the GDP, interest rates and consumption growth. The positive macroeconomic environment should influence positively on the condition of banks from Hungary, Slovenia, or Czech Republic. The opposite situation can be observed in the case of the Bulgarian and Croatian institutions, because of the high value of the nonperforming loans. On the other hand in Poland the bank asset tax and increasing regulatory costs will reduce the banking sector notes.

Table 16. Central and Eastern Europe credit ratings changes presented by S&P .



Source: S&P (2016c).

According to the S&P opinion the same like in the case of the European Union banking sectors, in the CEE will be observed the concertation trend. The mentioned situation can increase pressure on private banks to generate higher profits. In Russia has been observed the trend of the reduction of the smaller players, and higher risk for banks. The sanctions will also influence negatively on the condition of the banking sector. Russian banks received during 2014 – 2015 period of time support from the authorities, as a result the situation on the capitalization and liquidity of sector has been stabilized. Few private banks can have been identified as systemically important.

Banks in CEE continue to improve their benefits on the domestic market. Czech and Romanian banks are in a stable position, while the condition of the Hungarian institutions will be decreased because their profitability. Slovakian banks will also benefit from more favourable business environment. Banks in Bulgaria and Slovenia will increase their assets quality, connected with the condition of the nonperforming loans. In the case of the Polish banks the concentration on the banking sector will increase the profitability. The changes in the banking sector opinion has been presented in the table 17.

Table 17. Central and Eastern Europe banks' credit ratings changes presented by Fitch .

	POL	**CZE**	**SLK**	**HUN**	**BUL**	**ROM**	**SLN**
BSI	bbb	a	WD	bb	bb	bb	bb
Rating Outlook	•	•	•	•	•	•	•
Sector Outlook	•	•	•	•	•	•	•
Asset quality	bbb	a	bbb	b	bb	bb	bb
Trend	•	•	•	•	•	•	•
Profitablility	bbb	a	a	b	bb	bb	b
Trend	•	•	•	•	•	•	•
Capitalisation	bbb	a	a	bb	bb	bb	bb
Trend	•	•	•	•	•	•	•
Funding	bbb	a	a	bb	bb	bb	bb
Trend	•	•	•	•	•	•	•

Source: Fitch (2017).

Conclusions

The analysis of the condition of the banking sectors in European Union and the Central and Eastern Europe confirm the hypothesis, that the banking sector credit ratings are strictly connected with the country's notes. The presented findings and the current analysis of the methodology used by the biggest three credit rating agencies suggest that in most cases the three factors are taken into consideration. The first of them is the GDP growth. The next one is the concertation ratio of the banking sector. The significant impact has got also the value of the interest rates. Credit rating agencies during the presentation of the outlooks of the banking sectors notes verify also the financial condition of the presented institutions. The main group of factors that are taken into analysis are asset quality, profitability, capitalization and funding indicators. Because of the lack of data connected with the estimation of the outlook trends, it cannot be prepared the statistical and econometrical analysis for the whole banking sector. It can be prepared the verification of the condition of the particular bank. It should be obligation to publish trends by credit rating agencies. The mentioned situation will help to analyse the risk of the banking sector.

References

Altman, E.I., Rijken, H.A. (2005). "The effects of rating through the cycle on rating stability, rating timeliness and default prediction performance". *Working paper*.

Amato, J.D., Furfine, C.H. (2003). "Are credit ratings procyclical?". *BIS Working Papers*, 129.

Auh, J.K. (2013). "Procyclical Credit Rating Policy". *World Bank Working Papers.*

Bangia, A., Diebold, F., X., Schuermann, T. (1999). "Ratings Migration and the Business Cycle, With Applications to Credit Portfolio Stress Testing". *Wharton Working Paper*, 00-26.

Bellotti T., Matousek R., Stewart C. (2011a). "A note comparing support vector machines and or-dered choice models' predictions of international banks' rating". *Decision Support Systems*, 51(3), p. 682- 687.

Bellotti T., Matousek R., Stewart C. (2011b). "Are rating agencies' assignments opaque? Evidence from international banks". *Expert Systems with Applications*, 38(4), p. 4206-4214.

Bissoondoyal-Bheenick E., Treepongkaruna S. (2011). "An analysis of the determinants of bank ratings: comparison across ratings agencies". *Australian Journal of Management*, 36(3), p. 405 –424.

Caporale, G.M., Matousek, R., Stewart, C. (2009). „Rating assignments: Lessons from international banks". *Economics and Finance Discussion Paper, Brunel University*, 09-19.

Cesaroni, T. (2015). "Procyclicality of credit rating systems: How to manage it". *Journal of Economics and Business*, 82, 62–83

Chodnicka - Jaworska, P. (2015). "Credit Rating Determinants for European Countries". *Global Journal of Management and Business*, 15(9-C).

Chodnicka – Jaworska, P. (2015a). "Wpływ zmian credit ratingów na rynek CDS w krajach europejskich – event study", during the publication proces.

Chodnicka – Jaworska, P. (2015b). „Information value of the credit rating on the credit default swaps market", during the publication process.

Chodnicka-Jaworska, P. (2017). „Macroeocnomic aspects of banks' credit ratings. Equilibrium". *Quarterly Journal of Economics and Economic Policy* (in press).

Fei, F., Fuertes, A-M., Kalotychou, E. (2012). „Credit Rating Migration Risk and Business Cycles". *Journal of Business Finance and Accounting*, 39 (1-2), 229-263.

Fitch Ratings (2017). *Emerging Europe Sovereign and Bank Outlook.*

Freitag, L. (2015). "Procyclicality and Path Dependence of Sovereign Credit Ratings: The Example of Europe". *Economic Notes*, 44(2), 309-332.

Giacomino, P. (2013). "Are Sovereign Credit Ratings Pro-Cyclical? A Controversial Issue Revisited in Light of the Current Financial Crisis". *Rivista di Politica Economica*, 4, 79-111.

Hassan O.A.G, Barrell R. (2013). "Accounting for the determinants of banks' credit ratings". *Brunel University of London Economics and Finance Working Paper Series*, 13-02.

Hau H., Langfield S., Marques-Ibanez D. (2012). *Bank ratings what determines their quality?,* EBC Working Paper Series, vol. 1484, October.

Iannotta, G., Nocera, G., Resti, A. (2013). "Do investors care about credit ratings? An analysis through the cycle". *Journal of Financial Stability*, 9(4), 545–555.

Isakin, M., David, A. (2015). "Bayesian Persuasion in Credit Ratings, the Credit Cycle, and the Riskiness of Structured Debt". *Working Papers from Department of Economics, University of Calgary*, 13.

Moody's Investors Service. (2016). *Rating Methodology. Banks*

Moody's Investors Service. (2015). *Rating Methodology. Sovereign Bond Ratings.*

Moody's Investors Service. (2013). *Rating Methodology. Sovereign Bond Ratings.*

Ötker-Robe I., Podpiera J. (2010). "The Fundamental Determinants of Credit Default Risk for European Large Complex Financial Institutions". *IMF Working Paper*, WP/10/153.

Packer, F. & Tarashev, N. (2011). "Rating methodologies for banks". *BIS Quarterly Review*, June.

Poon W.P.H., Firth M., Fung H. (1999). "A multivariate analysis of the determinants of Moody's bank financial strength ratings". *Journal of International Financial Markets, Institutions and Money*, 9(3), p. 267-283.

Poon W., Lee J., Gup B.E. (2009). "Do solicitations matter in bank credit ratings? Results from a study of 72 countries". *Journal of Money, Credit and Banking*, 41, p. 285-314.

Rixtel, A., González, L.R., Yang, J. (2015). "The determinants of long-term debt issuance by European banks: evidence of two crises". *BIS Working Papers*, 513.

Shen C., Huang Y., Hasan I. (2012). "Asymmetric benchmarking in bank credit rating". *Journal of International Financial Markets, Institutions & Money*, 22, p. 171– 193.

Standard & Poor's Rating Services. (2011). *Banking Industry Country Risk Assessment Methodology and Assumptions*.

Standard & Poor's Rating Services. (2016). *Industry Credit Outlook: The 2017 Global Credit Outlook For Banks: Risks Remain Significant Amid Sluggish Growth, Heightened Political Uncertainty, And Low Interest Rates.*

Standard & Poor's Rating Services. (2015). *The 2016 Global Credit Outlook for Banks.*

Standard & Poor's Rating Services. (2014). *The 2015 Global Credit Outlook for Banks.*

Standard & Poor's Rating Services. (2016b). *Eurozone Sovereign Rating Trends 2017*

Standard & Poor's Rating Services. (2016b). *Central And Eastern Europe And CIS Sovereign Rating Trends 2017*

Wheelock D.C., Wilson P.W. (2000). "Why do Banks Disappear? The Determinants of U.S. Bank Failures and Acquisitions". *The Review of Economics and Statistics*, 82(1), p. 127-138.