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**Banks credit ratings – is the size of the credit rating agency
important?**

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Keywords: credit rating, macroeconomic variables, CAMEL factors.

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Banks credit ratings – is the size of the credit rating agency important?

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Abstract

The basic goal of the article was to analyse macroeconomic and financial factors influencing the European banks' credit ratings. A research question has been put as follows: Do, both small and big, credit rating agencies use the same methods for estimation of default risk? In the paper are put three hypotheses. The first one is: Countries' risk has a significant influence on banks' credit ratings changes. The second one seems as follows: A significant influence on banks' credit ratings is the banks' capital adequacy, profitability, liquidity and management quality. The last one is: The determinants of credit ratings assigned by major rating agencies are similar to those considered by the small agencies. For verification of these hypothesis the quarterly data from the Thomson Reuters database were collected. As dependent variables, the long term issuer credit ratings proposed European banks by the recognizable and smaller CRAs from 1998 to 2015 period of time are used. The analysis has been prepared in the sub-samples according to: the type of credit rating, the domestic and foreign notes and the political division.

Keywords: credit rating, macroeconomic variables, CAMEL factors.

JEL classification: C23, G15, G21

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1. Introduction

Credit rating agencies play an important role in the financial system. Notes given by them determine the cost of capital. Their changes strictly impact on the CDS premiums, bonds, rate on return of shares, exchanges rates and interest rates. The mentioned effect strictly depends on the type of credit ratings. As a result, the significant factors can be the type of credit rating agency that proposes the credit rating for the particular institution or country.

In previous analysis, attention has been placed on the determinants of credit ratings, that are taken into consideration by the biggest three credit rating agencies: Standard & Poor's, Fitch and Moody's Investor Service. The current trend in regulations relies on the reduction of the oligopoly of these particular credit rating agencies. As a result, the European Commission proposed to strengthen the power of smaller credit rating agencies by using an integrative or cooperative network. On the other hand, it has been common practice to seek credit ratings from two or more credit rating agencies. One or more from the selected agencies should have less than 10% of the total market share. In practice a "lock in" effect is observed, which stems from the unwillingness of the issuer to change agencies, because it could raise concerns of investors regarding the issuer's creditworthiness. The way to eliminate this problem is to determine the maximum period of cooperation between an issuer and an agency (4 years), and the ability of CRAs to rotate. At the moment these provisions are applied only for re-securitisation, and such situations where four or more agencies take part in the default risk assessment process. The rotation mechanism mentioned can influence the conditions of competition; for example, when connected with the reduction on the cost of the entry barriers.

The reduction of the oligopoly of the Big Three, could create additional problems connected with the methodology of the small credit rating agencies (CRAs). As a result, a relevant research question may be posed as follows: Do, both small and big, credit rating agencies use the same methods of estimation default risk? In the paper three hypotheses are put forward. The first one is: Countries risk has the most significant influence on banks' credit rating changes. The second question seems as follows: Is the significant influence on banks credit ratings, the banks' capital adequacy, profitability, liquidity and management quality? The last question is: Are the determinants of credit ratings assigned by major rating agencies similar to those considered by the small agencies?

The paper is organized as follows. Section 2 presents the broader literature researches. Section 3 describes the hypothesis, methodology and data. Next determinants of banks' credit ratings are presented. The differences between factors of particular credit rating agencies, divided into small and big ones are also tested. Section 4 concludes.

2. Literature review

Credit rating agencies are responsible for analysing the probability of default. To analyse the bank condition, CRAs rely on public information such as macroeconomic factors measured the country risk, banking sector condition, financial statements and these connected with non – public information like management, strategy, future plans of the bank. As a result, the final credit rating assessment contains both objective and subjective notes.

Previous studies on credit ratings can be classified on two groups. The first group of researches rely on the analysis of the reliability of credit ratings (Altman, Saunders, 2001; Amato, Furfine, 2004; Iannotta, 2006; Shen et al., 2012). Shen et al. (2012) investigates the differences between credit ratings received by banks in different countries. They analyzed the banks' credit ratings from 86 countries during 2002 – 2008. They measured the influence of profitability (the average of the ratio of net income to total assets over the past three years), liquidity (the average of the

ratio of liquid assets to deposits and short-term funding over the past three years), capital (the average of the ratio of capital adequacy ratio), efficiency (the average of the ratio of cost to income over the past three years), quality (the average of the ratio of loan loss provisions to net interest revenues over the past three years; the average of natural logarithm of total assets over the past three years) divided into the country development, the geographical location, the industrial environment quality (the law and order tradition, the bureaucracy, the corruption level, the country's information quality). Countries are divided among those with low and high information asymmetry. The effects of financial ratios on ratings are significantly affected by information asymmetries. Countries that would like to improve the credit ratings of their banks should thus reduce their information asymmetry.

The second group of researches relies on the verification of determinants of different types of ratings: sovereign ratings (e.g., Cantor and Packer, 1996; Bhatia, 2002; Afonso, 2003; Reisen 2003; Packer 2003; Canuto, Santos, Porto, 2004; Bissoondoyal-Bheenick, 2005; Bennell et al., 2006; Powell 2010; Jaramillo, 2011; Ratha 2011; Borenszteina, Cowan, Valenzuela, 2013), bond ratings (e.g., Blume et al., 1998; Iskandar-Datta and Emery, 1994; Molinero et al., 1996; Afonso 2002; Rowland, 2004; Kim, 2004; Grandes, 2004; Rowland, Torres 2004; Afonso, Gomes, Rother, 2007; Matthies 2013; Urban, 2013), issuer ratings (Poon et al., 1999; Afonso, 2002; Bissoondoyal-Bheenick, 2005; Gray et al., 2006; Bissoondoyal-Bheenick and Treepongkaruna, 2011; Mattarocci, 2011; Bellotti et al. , 2011a , 2011b; Öğüt et al., 2012; Cuny, 2012; Shimizu, 2013; Chodnicka – Jaworska, 2015) and default probabilities (e.g., Altman, 1968; Altman et al., 1977; Shin and Lee, 2002; Hanson, 2004; Schuermann, 2004; Comment, 2007; Bruche, Gonz´alez-Aguado, 2008; Ahn and Kim, 2009; Bonfim, 2009; Liao et al., 2009; Chaudhuri and De, 2011; Hilscher, Wilsony, 2011). This study is related to the second group of researches that examine the determinants of banks' ratings.

Bellotti et al. (2011a; 2011b) analysed the financial determinants that can have an influence on the banks' credit ratings. They predicted the ratings by using support vector machines (SVM), ordered probit and ordered logit models. The analysis was prepared on credit ratings proposed by Fitch for 681 international banks from 89 countries for 2000 – 2007 period of time. For financial indicators the following measures were taken into consideration: the ratio of equity to total assets, the ratio of liquid assets to total assets, the natural logarithm of total assets, the net interest margin, the difference between the ratio of operating income to total assets, the ratio of operating expenses to assets, the ratio of operating expenses to total operating income and the return on equity. They found that banks' credit ratings reflect their financial condition, the countries' risk and the timing of the rating assignment. Bellotti et al. (2011b) found that the most significant rating factors are: the equity to total assets, the natural logarithm of total assets and the return on assets. They suggested that the ordered choice models are more reliable for this, since they yield more consistent results when modelling determinants of individual bank ratings.

Poon et al. (1999) analysed Moody's banks' credit ratings on the sample of 130 banks from 30 countries. They took into consideration 100 variables connected with the profitability, efficiency, structure of assets, interests, leverage and risk. The most important determinants are: loan loss provisions, risk and profitability. The factors mentioned explain 63.1% of banks' credit ratings. The countries' credit rating risk is not important factor of the banks' risk assessment note.

The next researches were prepared by Öğüt et al. (2012). They tried to analyse the banks determinants of Moody's credit ratings on a sample of 18 Turkish banks for 2003 to 2009 period of time by using SVM and Artificial Neural Network, multiple discriminant analysis and logit models. They found that the ordered logistic classifier performed better as compared to other classifiers when factor scores are used as input variables while multiple discriminant analysis and

SVM achieved the highest accuracy rates when raw variables are used as input variables. The analysis prepared on 26 factors suggest that the most important financial indicators are efficiency, profitability and the proportion of loans in the assets.

Bissoondoyal-Bheenick and Treepongkaruna (2011) analysed S&P's, Moody's and Fitch credit ratings of the 49 UK banks and 20 Australian banks by using ordered probit models. The time period is from 2006 to 2008. They took into consideration the following group of factors measured: profitability (the average ratio of net income to total assets over the past three years), liquidity (the average ratio of liquid assets to deposits and short-term funding), capital adequacy (the capital adequacy ratio as defined by the Bank of International Settlement), efficiency (the average ratio of cost to income) and asset quality (the average ratio of loan loss provisions to net interest revenues). They also found that macroeconomic determinants are also significant. They also took into consideration the gross domestic product and inflation rate. For analyzing the impact of the abovementioned factors, annual data were used. They used the same factors for all credit rating agencies. The method used was the decomposition method proposed by Stiglitz and Ferri (1999).

Laere et al. (2012) analysed also the determinants of banks credit ratings. They took into consideration the credit ratings proposed by Moody's and S&P's for the period 2000 – 2011. To estimation the significance of particular factors, they divided them into the following groups: capital adequacy (common equity to total assets), assets quality (loan loss provisions to loans), management quality (cost to income measured as operating costs to operating income), earnings performance (return on equity), liquidity (loans to deposits and liquid assets to total assets) size (the logarithm of total assets), diversification in income (non-interest income to net income) bank risk (z-core indicator) and country risk (sovereign ratings Moody's and S&P's and loan growth). They found that differences exist in estimated factors between particular credit rating agencies. Moody's is more sensitive to the condition of the economy. They also found that for both rating agencies, the level of discretion in the rating process increases with bank opacity and this effect seems higher for Moody's. In the aftermath of the late 2000's financial crisis, this research significantly contributes to the literature by improving understanding of bank ratings.

Ötoker-Robe and Podpiera (2010) analysed the fundamental determinants of credit default risk for European large complex financial institutions. For their research, they used annual data over 2004 – 2008 for 29 European countries. To verify the significance of particular factors, dynamic panel data models were used. Factors were divided according to the CAMEL structure, that is: capital adequacy, asset quality, management quality, earnings potential, liquidity, and sensitivity to market risk.

Hassan and Barrell (2013) analysed the determinants of US and UK banks' credit ratings accounting data from 1994 to 2009 by using ordered logit models. They examined to what extent banks' ratings reflect banks' risks. They analysed how the size of banks, its leverage, profitability, efficiency, liquidity, assets quality and capital adequacy influence credit ratings given by S&P's. According to their research only a small number of account variables, like bank size, liquidity, efficiency and profitability significantly influence the assigned credit rating (from 74% to 78% the sample banks). The impact of the leverage asset quality and capital on the banks' credit ratings is weak. The mentioned relationship suggests that credit rating agencies do not take them into consideration despite the crisis. On the other hand, the influence of the liquidity is the opposite of that which an adequate early warning system would require.

Poon, Lee and Gup (2007) in their research divided variables into the following groups: profitability, asset quality, liquidity, capital adequacy and size factors. They analyzed 460 banks from 72 countries, excluding the United States, for the period 1998-2003. Credit ratings of

unconsolidated banks are higher if they are solicited and lower when unsolicited. It can be an effect of solicitation status and the financial profile of the banks. According their researches, the effect of solicitation status is stronger than the effect caused by differences in financial profile. Hau, Langfield and Marques-Ibanez (2012) analysed banks' ratings from January 1990 to December 2011 based on data from Standard & Poor's, Moody's and Fitch. Factors are classified according to macroeconomic and balance sheet variables. They suggest that rating agencies assign better ratings to large banks. The rating agencies receive additional earnings from securitization business provided by bigger banks.

Table 1. The literature review.

Authors	Variables
Shen et al (2012)	the average of the ratio of capital adequacy ratio over the past three years, the average of the ratio of cost to income over the past three years, the average of the ratio of loan loss provisions to net interest revenues over the past three years, the average of natural logarithm of total assets over the past three years, the average of the ratio of net income to total assets over the past three years, the average of the ratio of liquid assets to deposits and short-term funding over the past three years
Bellotti et al. (2011a; 2011b)	the ratio of equity to total assets, the ratio of liquid assets to total assets, the natural logarithm of total assets, the net interest margin, the difference between the ratio of operating income to total assets, the ratio of operating expenses to assets, the ratio of operating expenses to total operating income and the return on equity
Bissoondoyal-Bheenick and Treepongkaruna (2011)	the average ratio of net income to total assets over the past three years, the average ratio of liquid assets to deposits and short-term funding, the capital adequacy ratio as defined by the Bank of International Settlement, the average ratio of cost to income, the average ratio of loan loss provisions to net interest revenues
Laere et al. (2012)	common equity to total assets, loan loss provisions to loans, cost to income measured as operating costs to operating income, return on equity, loans to deposits and liquid assets to total assets, the logarithm of total assets, non-interest income to net income, z-core indicator, sovereign ratings Moody's and S&P' s and loan growth
Ötker-Robe and Podpiera (2010)	tier 1 ratio, tier 2 ratio, leverage (multiple of equity), z-score, ratio of loan-loss provisions to total loans, share of non-performing loans in total loans, loan-loss reserves ratio, efficiency ratio (ratio of operating costs to revenues), Fitch long-term issuer default rating, trading income as percent in revenues, net interest income (percent of average earning assets), ROA, ROE, liquidity loans to deposits ratio, short-term borrowing to total liabilities, wholesale funds to total liabilities, liquid assets to total assets
Hassan and Barrell (2013)	the natural logarithm of a three-year arithmetic average of total assets, a three-year arithmetic average of total assets deflated by a three-year arithmetic average of business volume, a three-year arithmetic average of the ratio (total long term funding minus total equity all deflated by total assets), average interest-bearing liabilities divided by average earning

	<p>assets, a three-year arithmetic average of net interest margin (net interest income expressed as a percentage of earning assets), a three-year arithmetic average of the ratio net interest income less loan impairment charges all deflated by average earning assets, a three-year arithmetic average of the ratio cost to income, a three-year arithmetic average of the ratio non-interest expenses to average assets, a three-year arithmetic average of the ratio net loans to total assets, a three-year arithmetic average of the ratio loans to customer deposits, a three-year arithmetic average of the ratio net charge off or the amount written-off from loan loss reserves less recoveries to gross loans, a three-year arithmetic average of growth of gross loans of a bank deflated by total growth of gross loans of the sample banks, a three-year arithmetic average of the ratio equity divided by total assets, a three-year arithmetic average of the ratio subordinated borrowing to total assets</p>
<p>Poon, Lee and Gup (2007)</p>	<p>net interest margin, the net interest revenue to average total assets, pre-tax operating income to average total assets, return on average assets, return on average equity, dividend payout, cost to income ratio, loan loss reserves to gross loans, loan loss provisions to net interest revenue, loan loss reserves to non-performing loans, non-performing loans to gross loans, net charge off to average gross loans, net charge off to net income before loan loss provisions interbank ratio, loans to total assets, loans to customer and short-term funding, loans to total deposits and borrowings, liquid assets to customer and short-term funding, liquid assets to total deposits and borrowings, tier 1 capital ratio, capital adequacy ratio (Basel's total capital adequacy ratio which measures Tier 1 and Tier 2 capital and should be at least 8%), equity to total assets, equity to loans, equity to customer and short-term funding, logarithm of book value of total assets, logarithm of book value of trading securities, year dummy where 1 when the rating was issued in particular year and 0 otherwise, proportion (by percentage) of solicited ratings in the respective country of the year, no. of overseas exchanges on which the bank was listed, no. of overseas subsidiaries held by the issuer.</p>
<p>Hau, Langfield and Marques-Ibanez (2012)</p>	<p>one-year expected default frequency from Moody's KMV Moody's KMV (EDF), fractional rank of EDF Moody's KMV, ordinal rating quality shortfall (ORQS) with 8-quarter forward EDF Authors' calculations, directional ordinal rating quality shortfall (ORQS) Authors', positive rating error subsample: directional ordinal rating quality shortfall (ORQS) > 0 Authors' calculations, Box-Cox transformation of Ordinal Rating Quality Shortfall (ORQS) with 8-quarter forward EDF, crisis, positive rating error, credit growth, logarithm of assets, return on average assets, leverage, loans share, trading share, short-term funding share, Herfindahl-Hirschmann index, agency specific securitization business.</p>

Source: own elaboration.

3. Research design

3.1. Hypothesis

The basic goal of the article is to analyse the impact of particular groups of determinants on banks' credit ratings. The previous researches suggest that the methodologies proposed by particular credit rating agencies are different. Some of them propose to use the macroeconomic variables, as a measure of the country's risk. For the other researches the mentioned factors are unimportant. The last financial crisis suggested that the condition of economy should have significant influence on the banks' probability of default. The analysis of methodologies presented by Moody's, Fitch and Standard & Poor's Investor Services suggest that they have taken into consideration the country risk. As a result the following hypothesis is put forward:

Hypothesis 1: Countries' risk is the significant influence on banks' credit ratings changes.

The previous researches put a lot of attention on the financial determinants of banks' credit ratings. They can be divided according to the CAMEL structure, that is: capital adequacy, asset quality, management quality, earnings potential, liquidity, and sensitivity to market risk. The mentioned factors were measured for the Big Three credit rating agencies. The significance has been different for particular factors. As a result, the hypothesis seems as follows:

Hypothesis 2: The significant influence on banks' credit ratings are the banks' capital adequacy, profitability, liquidity and management quality.

The literature review suggests that the analysis of determinants of credit ratings was usually based on notes proposed by the biggest three rating agencies. According to the best knowledge of the Author the analysis of factors that can exert influence on all banks' credit ratings have not been prepared. As a result, an interesting research problem can be the differentiated factors of credit ratings. It can be put as a hypothesis:

Hypothesis 3: The determinants of credit ratings assigned by major rating agencies are similar to those considered by the small agencies.

3.2. Definition of the dependent and explanatory variables

The dependent variable in the model is the bank's credit rating. To the analysis are added long term issuer credit ratings proposed by all credit rating agencies for European banks. The mentioned data are downloaded from Thomson Reuters. They are credit ratings taken from the end of a quarter.

With the dependent variables factors assessed as CAMEL structure of risk analysis are included. The first group are factors connected with capital adequacy, to which belong: Tier 1, leverage ratio and z – score.

Tier 1 is the ratio of capital to risk weighted assets. In European countries, this measure is an effect of the Basel II. It is presented in banks' financial statements. Because it is one of the newest factors, it can be taken into consideration only for short term period of time. The mentioned measure represents capital buffers, thus it should be negatively correlated with the credit risk.

The leverage ratio is the measure of the average total assets to average total common equity. The higher value of the mentioned factors would correlate positively with the default risk.

Z – score is the ratio of return on assets plus capital-asset-ratio to the standard deviation of return on assets. If profits are assumed to follow a normal distribution, it can be shown that the z-score is the inverse of the probability of insolvency (Beck, Demirgüç-Kunt, Levine, 2009). A higher value of the mentioned indicator is connected with the higher resistance to shock, as an effect it should reduce the credit risk.

The next group of factors are related to the measure of the quality of assets. To this group of determinants are added loan loss provisions as a percentage of the average total loans and non-performing loans to total loans.

Loan loss provisions as a percentage of average total loans measure the bank's credit risk and it is strictly connected with the portfolio of the quality of credits. If the mentioned factors are higher it should influence positively on the credit risk, as an effect it decreases the bank's credit rating.

Non – performing loans to total loans is calculated as non – performing loans at the end of the year divided by the total gross loans for the same period of time. It should be positively correlated with the credit risk, and it increases the default risk.

The management quality groups of determinants contain the following group of factors: efficiency ratio and securities as a percentage earnings assets,

Efficiency ratio is the ratio of non-interest expense for the fiscal year to the total revenue less interest expense over the same period and is expressed as a percentage. It measures the cost to the bank of each unit of revenue. If the mentioned value is higher it can increase the credit risk.

Securities as a percentage of earnings assets is the ratio of average earning assets represented by securities at the end of the fiscal year. This ratio measures the extent to which the bank's income is dependent on investment income rather than interest on loans. If the mentioned value is higher it can generate an additional default risk.

The next group of banks' risk determinants are the profitability factors, among which are included the following determinants: net interest income ratio, return on equity (ROE), and return on assets (ROA), operating leverage, loan growth and deposit growth.

Net interest income ratio is calculated as the percentage interest yield of interest bearing assets. It measures the lending margin charged by a particular bank. A higher lending margin may signal higher risk-taking, and as a result it exerts a negative impact on the mentioned factor of the banks' credit rating;

Return on assets and return on capital measures the profit a bank can generate given total assets and shareholders' capital. If the mentioned value is higher, the default risk should be lower. The *operating leverage* is a percent change in net revenue less the percent change in operating expenses for the fiscal year. It should have a positive correlation with the mentioned factors and credit ratings. *Loan growth* is the percent change in the annual period net loans as compared to the same period one year previously. It is calculated as net loans for the fiscal year minus net loans for the same period one year previously divided by the annual net loans one year previously, multiplied by 100. A high value of this variable can suggest the possibility of receipt of additional earnings for banks, but conversely it can generate credit risk. It should be compared with the *deposit growth*, that it is the percentage change in annual deposits as compared to the same period one year previously. Total deposits represent the sum of non-interest bearing deposits, interest bearing deposits and other deposits at the end of the fiscal year.

The last group of determinants connected with banks' financial statements are liquidity factors, from which we can include: loan to deposit ratio, short-term borrowing to total liabilities, and liquid assets to total assets.

Loan to deposit ratio, analyses the dependence of funding on the non-deposit capital. Because deposits are more stable, cheaper and safer source of funding, the high value of the mentioned variable can suggest the higher risk for banks.

Short-term borrowing to total liabilities and *liquid assets to total assets* measure the susceptibility of the bank on liquidity risk. If the ratio of the short-term borrowing to total assets is significant, it means that the bank is more vulnerable in the event of a bank run. A bank with a higher share of liquid assets would prove more resilient to liquidity pressures.

Market risk is represented by market factors. To the mentioned group of factors belong: effective GDP growth, inflation and country's risk.

According to the researches proposed by Ötoker-Robe and Podpiera (2010) *GDP growth* is negatively correlated with the share of non-performing loans and positively with the recovery rate and the *volatility of GDP* means uncertainty in earnings. Therefore, a higher GDP growth (volatility) is expected to correlate negatively (positively) with default risk, and as a result it influences positively (negatively) on banks' credit ratings. The high *inflation* ratio influences negatively on the economy condition, as a result it can have a negative impact on the banks' credit ratings. The last group of determinants are those connected with the *country's credit rating*. The methodologies presented by credit rating agencies suggest that during the estimation process, these are taken into consideration with the same group of factors analysed during the country's risk estimation. On the other hand we can observe in practice the "sovereign ceiling" effect. As a consequence, the downgrade of a country's credit rating often triggers downgrades of other financial institutions credit ratings located in its sovereignty.

3.3. Data sample and methodology

To analyse the determinants of banks' credit ratings, all long term issuer credit ratings given to European banks are used. To the end of December 2015 only 10 different credit ratings were proposed by particular credit rating agencies for banks². The mentioned credit ratings are collected from Thomson Reuters database. For better understating the problem the banks' credit ratings for 1998 – 2015 are taken. Because of the existing strong differentiation on the period of beginning the activity of credit rating agencies, there are prepared analysis in subsamples into: political classification, the type of credit rating agencies. The credit rating of 300 banks from countries³ are analysed. To analyse the impact of particular determinants on banks' credit rating the linear decomposition proposed by Ferri, Liu, Stiglitz (1999) is used. The same methodology has been used in other researches presented in the literature review. The linear method of decomposition has been presented in the table below.

² AK&M Long-term Issuer Rating, Dominion Bond Rating Service (DBRS) - Long-term Issuer, ER Long-term Issuer National Scale Rating, Fitch Long-term Issuer Rating, R&I Long-term Issuer Rating, RA Expert Long-term Issuer Rating, RAM Long-term Issuer National Scale Credit Rating, RusRating Long-term Issuer National Scale Rating, S&P Long – Term Issuer Rating, Moody's Long -Term Issuer Rating.

³ Albania, Armenia, Austria, Belarus, Belgium, Bosna and Herzegovina, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Georgia, Germany, Greece, Hungary, Iceland, Ireland, Latvia, Liechtenstein, Lithuania, Luxembourg, Macedonia, Malta, Moldova, Monaco, Netherlands, Norway, Poland, Portugal, Romania, Russia, San Marino, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey, Ukraine, United Kingdom.

Table 2. Decomposition of Moody's, S&P's, Dominion Bond Rating Service, ER, Fitch and R&I long term issuer credit ratings.

Moody's Long-term Issuer Rating		S&P's Long-term Issuer Rating		Dominion Long-term Issuer		ER Long-term Issuer National Scale Rating		Fitch Long-term Issuer Rating		R&I Long-term Issuer Rating	
Rating	Code	Rating	Code	Rating	Code	Rating	Code	Rating	Code	Rating	Code
Aaa	100	AAA	100	AAA	100	AAA	100	AAA	100	AAA	100
Aa1	95	AA+	95	AA (high)	96	AA+	95,24	AA+	94,74	AA+	95,24
Aa2	90	AA	90	AA	92	AA	90,48	AA	89,47	AA	90,48
Aa3	85	AA-	85	AA (low)	88	AA-	85,71	AA-	84,21	AA-	85,71
A1	80	A+	80	A (high)	84	A+	80,95	A+	78,95	A+	80,95
A2	75	A	75	A	80	A	76,19	A	73,68	A	76,19
A3	70	A-	70	A (low)	76	A-	71,43	A-	68,42	A-	71,43
Baa1	65	BBB+	65	BBB (high)	72	BBB+	66,67	BBB+	63,16	BBB+	66,67
Baa2	60	BBB	60	BBB	68	BBB	61,90	BBB	57,89	BBB	61,90
Baa3	55	BBB-	55	BBB (low)	64	BBB-	57,14	BBB-	52,63	BBB-	57,14
Ba1	50	BB+	50	BB (high)	60	BB+	52,38	BB+	47,37	BB+	52,38
Ba2	45	BB	45	BB	56	BB	47,62	BB	42,11	BB	47,62
Ba3	40	BB-	40	BB (low)	52	BB-	42,86	BB-	36,84	BB-	42,86
B1	35	B+	35	B (high)	48	B+	38,10	B+	31,58	B+	38,10
B2	30	B	30	B	44	B	33,33	B	26,32	B	33,33
B3	25	B-	25	B (low)	40	B-	28,57	B-	21,05	B-	28,57
Caa1	20	CCC+	20	CCC (high)	36	CCC+	23,81	CCC	15,79	CCC+	23,81
Caa2	15	CCC	15	CCC	32	CCC	19,05	CC	10,53	CCC	19,05
Caa3	10	CCC-	10	CCC (low)	28	CCC-	14,29	C	5,26	CCC-	14,29
Caa	5	CC	5	CC (high)	24	CC	9,52	RD	-5	CC	9,52
C	0	NR	0	CC	20	C	4,76	D	-5	C	4,76
WR	-5	SD	-5	CC (low)	16	D	-5	WD	-5	D	-5
NULL	0	NULL	0	C (high)	12	SD	-5			SD	-5
		D	-5	C	8	NR	0			NR	0
				C (low)	4						
				SD/D	-5						

Source: own elaboration.

Table 3. Decomposition of RusRating, RAM, AK&M and RA long term issuer credit ratings.

RusRating Long-term Issuer National Scale Rating		RusRating Long-term Issuer International Scale Rating		RAM Long-term Issuer National Scale Credit Rating		AK&M Rating Agency		RA Expert Long-term Issuer Rating	
Rating	Code	Rating	Code	Rating	Code	Rating	Code	Rating	Code
AAA	100	AAA	100	AAA	100	A++	100	A++	100
AA+	94,44	AA+	94,44	AA	85,71	A+	80	A+	83,33
AA	88,89	AA	88,89	A	71,43	A	60	A	66,67
AA-	83,33	AA-	83,33	BBB	57,14	B++	40	B++	50,00
A+	77,78	A+	77,78	BB	42,86	B	20	B+	33,33
A	72,22	A	72,22	B	28,57			B	16,67
A-	66,67	A-	66,67	C	14,29				
BBB+	61,11	BBB+	61,11	D	-5				
BBB	55,56	BBB	55,56						
BBB-	50,00	BBB-	50,00						
BB+	44,44	BB+	44,44						
BB	38,89	BB	38,89						
BB-	33,33	BB-	33,33						
B+	27,78	B+	27,78						
B	22,22	B	22,22						
B-	16,67	B-	16,67						
CCC+	11,11	CCC+	11,11						
CCC	5,56	CCC	5,56						

Source: own elaboration.

To analyse the impact of the mentioned financial determinants panel data models are used. Because of the small credit rating changes of particular banks, static panel data models are used. The final version of the model is given by equation (1) below:

$$y_{i,t} = \sum_{k=0}^n \beta_k x_{j,t} + \theta_t T_t + \mu_j + \varepsilon_{j,t}, \quad (1)$$

where:

$y_{i,t}$ is the AK&M Long-term Issuer Rating, Dominion Bond Rating Service (DBRS) - Long-term Issuer, ER Long-term Issuer National Scale Rating, Fitch Long-term Issuer Rating, R&I Long-term Issuer Rating, RA Expert Long-term Issuer Rating, RAM Long-term Issuer National Scale Credit Rating, RusRating Long-term Issuer National Scale Rating, S&P Long – Term Issuer Rating, Moody’s Long -Term Issuer Rating; for European banks.

$x_{j,t}$ is a vector of explanatory variables, i.e.:

$$x_{i,j} = [tier_{i,j}, lev_{i,j}, score_{i,j}, llp_{i,j}, npl_{i,j}, ef_{i,j}, sec_{i,j}, nii_{i,j}, roe_{i,j}, roa_{i,j}, opl_{i,j}, lg_{i,j}, dg_{i,j}, dep_{i,j}, sht_{i,j}, liq_{i,j}, gdp_{i,j}, inf_{i,j}, cr_{i,j}]$$

where:

$tier_{i,j}$ is the Tier 1 ratio; $lev_{i,j}$ is the leverage ratio; $score_{i,j}$ is the z-score ratio; $llp_{i,j}$ is the loan loss provisions as a percentage of average total loans; $npl_{i,j}$ is the non – performing loans to total loans; $ef_{i,j}$ is the efficiency ratio; $sec_{i,j}$ is the value of securities as a percentage of earnings assets; $nii_{i,j}$ is the net interest income ratio; $roe_{i,j}$ is the return on equity; $roa_{i,j}$ is the return on assets; $opl_{i,j}$ is the operating leverage; $lg_{i,j}$ is the loan growth; $dg_{i,j}$ is the deposit growth; $dep_{i,j}$ is the ratio of loans to deposit; $sht_{i,j}$ is the value of short-term borrowing to total liabilities, $liq_{i,j}$ is the value of liquid assets to total assets; $gdp_{i,j}$ is the GDP growth, $inf_{i,j}$ is the inflation and $cr_{i,j}$ is the country’s credit rating given by particular credit rating agency (AK&M Long-term Issuer Rating, Dominion Bond Rating Service (DBRS) - Long-term Issuer, ER Long-term Issuer National Scale Rating, Fitch Long-term Issuer Rating, R&I Long-term Issuer Rating, RA Expert Long-term Issuer Rating, RAM Long-term Issuer National Scale Credit Rating, RusRating Long-term Issuer National Scale Rating, S&P Long – Term Issuer Rating, Moody’s Long -Term Issuer Rating);

T_t is a vector of year-dummies;

μ_j is an unobservable time-invariant bank’s effect.

To examine the link between the credit rating assessment and factors likely to influence the received assessment as well as the direction of the relationship, panel data models are employed. I used static and dynamic panel data models, because of the small changes of banks credit ratings. Static panel data models, including models with fixed and random effects estimator are harnessed to analyse the influence of the macroeconomic and financial data variables. The Hausman test is used to distinguish between fixed and random effects, where the null hypothesis is that the preferred model is a random effect model (Greene, 2008). It basically tests whether the unique errors are correlated with the regressors and the null hypothesis is that they are not. Also, the Breusch – Pagan Lagrange Multiplier test is exploited to decide between the random effects regression and a simple OLS regression. The null hypothesis is that variances across entities is zero. There is no significant difference across the units.

4. Results

4.1. Factors of foreign banks credit ratings

The first part of the analysis relies on the examination of the impact of macroeconomic and financial determinants on the foreign banks' credit ratings. According to the descriptive statistics presented in the table 4, the analysed panel data models are unbalanced. As a result there exists a different relationship between the analysed data. A single Spearman correlation matrix has been prepared for particular credit ratings, both for foreign and domestic ones. The estimation results are introduced in the tables 5-12.

The following banks' foreign credit ratings were analysed: Fitch long term issuer credit ratings, S&P long term issuer credit rating, Moody's long term issuer credit rating and Dominion long term issuer credit ratings. Only models prepared for the mentioned notes, have enough observations to estimate the presented relationship. The results of the analysed models are submitted in the table 13. The differentiated strength and significance impact of the verified variables for particular type of credit ratings are observed. Due to this it was decided to focus on the presentation of the differences in the credit rating factors.

The first analysis has been prepared for the banks' foreign long term issuer credit rating proposed by Fitch. The important impact on the researched variable are the macroeconomic determinants. A strong relationship between countries' and banks' credit ratings is observed. If the countries risk assessment note is higher on one point, the banks' credit rating rises by nearly 0.7 point. This situation is observed also for credit ratings proposed by S&P and Moody's, where banks' credit rating rises respectively by 0.85 and 0.7, as an effect of countries credit rating increases. The strongest relationship is presented for Dominion banks' and countries' credit ratings, because if the mentioned factor rises, the banks' note are higher by nearly 2 notes. This situation suggests that there exist the "sovereign ceiling" and contagion effects. On the other hand the mentioned relationship is justified, because the rating agencies take into account the political risk and macroeconomic conditions of the country in the evaluation process. The level of inflation also significantly impacts on the banks' credit rating. If the mentioned value rises on one point, the bank's Fitch and S&P's credit rating are lower by 0.13 and 0.08 *ceteris paribus*. The analysed phenomenon is different for Moody's and Dominion credit ratings, because if the CPI rises by one point, the mentioned credit ratings are higher by 0.04 and 1.14. It can be an effect of the financial condition of the economy, where an increase in inflation (as a result of the current deflation) is beneficial. The last macroeconomic variable taken into consideration was impact of the growth of the gross domestic product. The GDP growth is significant during the risk estimation process for Fitch and Dominion, but less so for S&P's banks' credit ratings. The mentioned variable rises by 2.40, 2.90 and 0.5 as a result of the increase of GDP growth by one percent.

The first group of factors are those connected with the risk structure, to which are included: Tier1, the leverage ratio. Both of them are important for the risk estimation process prepared by credit rating agencies, but their strength is differentiated. If the leverage ratio is higher by one percent, the credit rating proposed for banks by Moody's and Dominion rises by 0.4. The weaker relationship is observed for Fitch (the increase of credit rating by 0.3). The smallest impact is from the mentioned determinant for S&P, because the credit rating proposed by this agency is higher by 0.03. The presented relationship is different than expected. It may suggest that banks in analysed countries maintain a stable, acceptable level of the leverage ratio.

The second factor is the tier 1. If it is higher, the banks' credit rating is decreased. The strongest impact of the mentioned variable is observed for the estimation process proposed by Fitch and

Dominion credit ratings. Similar results are received for Moody's and S&P's. The analysed dependent variable is decreased by 0.8 for Dominion, 0.6 for Fitch and 0.5 for Moody's and S&P's. The received result confirms the previous assumptions.

The next group of factors are those measuring the quality of assets. The analysed determinants belong to the loan loss provisions as a percentage of average total loans and the non-performing loans to total loans. In the presented research the impact of the mentioned variables is researched only for Moody's and Dominion banks' credit ratings. It is an effect of the lack of data. The loan loss provisions as a percentage of average total loans should influence positively on the banks' credit ratings. The presented research confirms this relationship, but the strongest impact is observed for the Dominion banks' credit rating (the increase the estimation note by nearly 30 points as an effect of the growth of the indicator) rather than the Moody's credit rating (the higher loan loss provisions on one point, causes the increase of the estimation notes by 20 points). This dependent variable is one of the most important for the banks' credit ratings. The non – performing loans to total loans should also have a positive influence on the banks' credit ratings, but in the presented research the increase of this factor causes a decrease of the estimated notes by nearly one point, for both types of credit rating. Therefore the analysed relationship is not significant for each of the forward models.

The next group of factors taken into consideration during the default risk estimation process are the management quality determinants, to which belong: the efficiency ratio and the securities as a percentage of earning assets. Because of the lack of data there is only the impact of the level of the securities as a percentage of earning assets is analysed. If the mentioned variable is higher it can generate an additional default risk. The presented factors influence significantly on the credit ratings, but the strength of impact is nearly 0, with the exception of the Dominion banks' credit rating, that is decreased by nearly 2 points, as an effect of the growth of the dependent variable.

Among the profitability indicators are included the following variables: the return on assets, the operating leverage, the loan growth and the deposit growth. The operating leverage should influence positively on the banks' credit rating. In the presented research this variable has a positive, significant impact, but it equals nearly zero. The return on assets has one of the most important impacts on the analysed estimation notes. If the ROA is higher by one percent, the credit rating rises by nearly 25 points for Moody's and Dominion notes. A weaker relationship is observed for the Fitch and S&P's credit ratings, which are higher by 7 points. On the loan growth changes are more sensitive credit ratings proposed by Moody's and Dominion, which rises repeatedly above 30 and 20 points. The weaker positive relationship is observed for the Fitch credit ratings, which are higher by 3 points. The presented relationship suggests that the mentioned credit rating agencies assume that the increase of this factor will create additional earnings for banks. Another point of view favours the S&P, because in one opinion it can generate credit risk. As a result, the S&P reduce credit ratings by 1.5 point as an effect of rising of the credit growth.

The high value of the deposit growth creates a lower default risk, as a result S&P and Fitch improve banks' credit rating 9 and 8 points in the case of an increase of the mentioned variable by one point. The other opinion favours Moody's and Dominion, because they suggest that additional deposits can generate interest costs. As an effect they decrease ratings by 10 points as a result of growth in the analysed variable by one.

The last group of factors are liquidity indicators, among which are included: the loans to deposits ratio, the liquid assets to total assets and the short – term borrowing to total liabilities. The relationship between the loan to deposits ratio and the banks' credit rating is significant by nearly zero for Fitch and S&P's credit ratings. A negative impact is observed for Moody's and

Dominion credit ratings, which are lower by 1 and 3 points. The ratio of the liquid assets to total assets influences negatively on the credit ratings. This relationship is of high significance and it amounts to 35 points for Fitch, 25 for S&P's, 15 for Moody's and 50 points for Dominion credit ratings. It is observed the ambiguous impact of the short – term borrowing to total liabilities on the credit rating changes.

The presented results suggest that the factors of the foreign long term issuer credit ratings are differentiated. The analysed credit rating agencies can be divided into two groups. To the first group of CRAs belong Fitch and S&P's. In the second group we can include Moody's and Dominion. In those groups a similar policy of the default risk assessment are used.

4.2. Factors of domestic banks credit ratings

The next part of the analysis relies on the examination of the impact of macroeconomic and financial determinants on the domestic banks' credit ratings and comparison of results with the foreign ones. The effects of the analysis has been presented in the table 14.

To the previous group of credit ratings is included the RusRating credit rating. The credit ratings proposed by the Big Three strictly impact the country's credit rating. The analysed relationship is stronger for the domestic long term issuer credit ratings than for the foreign ones. The macroeconomic determinants are also unimportant for notes proposed by smaller CRAs. The level of inflation measured by CPI is significant, but the measured impact is nearly zero. The GDP growth is also less significant than for the foreign long term issuer credit rating. The mentioned relationship is observed only for S&P and Fitch notes. If the GDP growth is higher by one percent, the banks' credit rating proposed by these two CRAs is higher by 0.5 point. The prepared analysis suggest that domestic credit ratings are less sensitive on the macroeconomic conditions.

The risk structure, measured by the Tier1 and the leverage ratio influence, is important during the risk estimation process. The leverage ratio is especially significant for the Fitch credit rating. The reaction on the domestic notes is higher than for the foreign ones. The other agencies do not assign such a high role to this indicator. The strongest impact of tier1 is observed for the estimation process proposed by smaller CRAs, meaning RusRating and Dominion. The similar result exists for foreign credit ratings, it is received for Moody's and S&P's. The received result confirms the previous assumptions.

The quality of assets measured by the loan loss provisions as a percentage of average total loans and the non-performing loans to total loans is not verified because of the lack of data. The increase of the securities as a percentage of earning assets, that is a measure of the management quality, decreases the credit ratings by nearly 0.2 point in the case of the Big Three and by 2 points for notes proposed by Dominion. The mentioned relationship is similar for the foreign long term issuer credit ratings.

The profitability is measured by: the return on assets, the operating leverage, the loan growth and the deposit growth. The operating leverage has a significant impact on the analysed notes, but it equals nearly zero. The most important factor is the return on assets for the estimation process proposed by the Big Three. If the ROA is higher by one percent, the credit rating rises by nearly 7 points for Moody's and 18 for Dominion notes. The negative relationship is observed for the Fitch rating (the increase by one point of ROA, causes a decrease the Fitch rating by 5 points). On the loan growth, changes are more sensitive to credit ratings proposed by Dominion, which decreases credit rating by nearly 20 points. The weaker negative relationship is observed for the Moody's and S&P's credit ratings. On the other hand, the ratings proposed by Fitch are strong,

sensitive and positively correlated with the loans growth. The increase of the mentioned variable results the growth of the credit ratings by nearly 30 points. The high value of the deposit growth decreases Fitch and Moody's credit ratings (respectively by 5 and 3 points) and improves S&P's notes (by 9 points). It is an effect of the different opinion about the changes of the mentioned independent variable on the credit ratings changes. The analysed relationship is weaker than for the foreign credit ratings.

The liquidity indicators, measured by the loans to deposits ratio, the liquid assets to total assets and the short – term borrowing to total liabilities, also have a significant influence on the credit rating changes. The relationship between the loan to deposits ratio and the banks' credit rating is significant by nearly zero for Fitch credit ratings, the same occurs in the case of the foreign notes. The mentioned variable has a positive impact in the case of the S&P's notes (nearly 3 points) and negative for Dominion credit ratings, which are lower by 0.5 points. The ratio of the liquid assets to total assets influence strong negatively on the credit ratings in the case of smaller CRAs credit ratings (nearly 100 points). The weaker relationship is observed for the Moody's notes (decrease by 10 points), but the Fitch credit ratings react positively on the verified indicator. It is observed that the positive impact of the short – term borrowing to total liabilities on the credit rating changes, is contrary to previous assumptions.

The presented results suggest that the impact of the macroeconomic variables is stronger for the foreign credit ratings. The domestic notes are strictly connected with the country's ratings. The weaker influence is also observed for the CAMEL factors.

4.3. Impact of the political classification on the banks' credit ratings

The last part of the analysis relies on the verification of the impact of the political divisions on the banks' credit rating changes. Banks are divided into four groups, those that belong to the European Union, non – European Union countries, the Eurozone and non – Eurozone countries. The results of the estimation process are presented in the tables 15 – 18. The received results are differentiated not only in the credit rating divisions but also in the political sub-samples.

The first part of the analysis relies on the impact of countries' credit ratings on the banks' notes. The impact of the probability of country's default is more important for banks' that with activities in the European Union and Eurozone. The mentioned relationship is weaker for the banks' that are located outside the mentioned groups of countries. The presented situation is typical for the Fitch notes. The S&P and Moody's credit ratings are more sensitive to the countries' notes in the European Union and non-Eurozone subsamples. The lower countries' ratings in the case of the Moody's non- European Union sub-sample, decreases banks' notes. It can be an effect of the size and stability of the financial institutions and the “sovereign ceiling” and contagion effects.

The next factor taken into consideration during the banks' risk estimation process is the GDP growth. The Fitch notes, given banks from European Union or Eurozone, reacts significantly positively on the mentioned variable. The same situation is observed for the S&P's notes. The Moody's credit ratings react negatively on the GDP growth in the non Eurozone subsample.

The last macroeconomic determinant that is taken into consideration is the value of inflation measured by CPI. The ratings of banks, that operate outside the Eurozone or the European Union, are more sensitive to the inflation changes for notes proposed by all CRAs belonging to the Big Three.

In the case of the Dominion ratings, the analysed notes are insufficient on the CPI , positively react on the GDP growth and a strong correlation is observed, nearly one to one, on the countries' credit ratings changes.

As a result, we can confirm that countries' credit risk has the significant influence on banks' credit ratings changes but the strength of the mentioned variable is differentiated for the credit ratings proposed by the particular agencies. The GDP growth is more important for the European Union especially Eurozone countries, but the CPI influence is stronger on banks operating outside the mentioned group of countries.

Factors that are measuring the risk structure are included the leverage ratio and the tier 1. The leverage ratio is especially significant for banks operating in countries that do not belong to the European Union or to the Eurozone group for all types of credit rating. The tier 1 is the most important factor for the ratings proposed for banks outside the Eurozone. The Dominion credit rating is sensitive to both of the mentioned variables.

The quality of assets measured by the loan loss provisions as a percentage of average total loans and the non-performing loans to total loans is not verified because of the lack of data.

The increase of the securities as a percentage of earning assets, that is a measure of the management quality, is especially important for the group of banks operating in the non-European Union countries. The mentioned variable is unimportant for the Dominion credit ratings. The mentioned relationship is negative, which confirms previous assumptions.

The profitability measured by the operating leverage is an insignificant influence on the Fitch and Dominions banks' credit ratings and for notes proposed by S&P and Moody it is nearly equal to zero. On the other hand, the same as in previous models presented in the research, the most important factor is the rate of return. This mentioned factor is significant for banks from all subsamples, but the most important factor is presented for banks operating in the European Union and outside the Eurozone. The strongest relationship is for notes proposed by Moody's Investor Service. The Dominion credit rating notes are insensitive to the rates of return. The operating leverage, that is the second measure of the profitability, is insignificant for the risk estimation process prepared by Fitch and Dominion, for all analysed divisions. The S&P's and Moody's ratings react weakly to the mentioned variable, because the coefficient equals nearly 0. The Fitch ratings are sensitive to the loan growth changes in the European Union and outside the Eurozone sample of banks. The mentioned variable is positively correlated with notes. Another significant impact is the deposit growth, but this variable influences positively in the case of banks operating in Eurozone and negatively for banks from outside the monetary union. The loan and deposit growth significantly influence on S&P's banks' credit rating, but the impact strength is weaker than for Fitch. It has been especially important for the non-European banks notes. The mentioned relationship also an opposite direction than for the Fitch evaluation. On the other hand the ratings proposed by Moody's for the European Union banks are strong, sensitive, positively correlated with the loans growth, but negatively with the deposit growth. The Dominion rating is insensitive on the mentioned variables.

The increase of the mentioned variable results in the growth of the credit ratings by nearly 30 points. The liquidity indicators, measured by the loans to deposits ratio, the liquid assets to total assets and the short – term borrowing to total liabilities, also have a significant influence on the banks' Fitch credit rating changes. The ratings of banks operating in the European Union and outside the Eurozone are positively determined by the short term borrowing indicator and negatively by the loans to deposit ratio. Only notes of banks that have activity outside the Eurozone are insensitive to the liquid assets to total assets indicator. The mentioned relationship is negative and very strong.

The relationship between the mentioned factors and the banks' credit rating is strongest for S&P's notes proposed for banks from outside of the European Union.

The loans to deposits ratio has a positive impact in the case of the Moody's notes proposed for banks from the European Union and outside the Eurozone. The ratio of the liquid assets to total assets influence is strong negatively on the credit ratings of banks from the Eurozone and positively on notes of financial institutions from outside the monetary union. It is observed that there is a positive impact of the short – term borrowing to total liabilities on the credit rating changes of notes of banks' from the European Union that do not belong to the Eurozone, and negative for banks' within the monetary union. From all the mentioned factors, the Dominion credit rating is sensitive only to the last one.

5. Conclusions

The basic goal of the article was to analyse the macroeconomic and financial factors influencing the European banks' credit ratings. It has been put as a research question as follows: Do, both small and big, credit rating agencies use the same methods of estimation default risk? The prepared analysis suggest that particular credit rating agencies use different factors to estimate credit ratings irrespective of the size of the agency.

In the paper are put three hypotheses. The first one is: Countries' risk has a significant influence on banks' credit ratings changes. The presented research confirms the analysis. The banks' notes are determined by country's notes. As an effect we can observe the "contagion" and "sovereign ceiling" effects. The domestic notes are more dependent on the country's ratings than the foreign notes. The strength of the impact also has political divisions, because ratings of banks within the European Union, especially the Eurozone are more sensitive on the mentioned effects.

The second hypothesis seems as follows: The significant influence on banks' credit ratings of the banks' capital adequacy, profitability, liquidity, management quality, has been also verified. Banks' notes are sensitive to the mentioned groups of factors but the strength, direction and significance of them is differentiated according to the type of notes, the size of the credit rating agency and the political divisions. We can distinguish the two types of CRAs using similar methodologies. To the first group belong Fitch and S&P's. In the second group we can include Moody's and Dominion. As a result the third hypothesis has been rejected, that is: the determinants of credit ratings assigned by major rating agencies are similar to those considered by the small agencies. The bigger CRAs are especially focused on the assessment of macroeconomic conditions, while small agencies attach greater importance to the financial conditions.

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Table 4. Descriptive statistics.

Variable	Obs	Mean	Std. Dev.	Min	Max
nii	288	3.342993	2.062914	.496	14.697
ef	528	49.07732	80.3074	-1358.44	327.994
opl	6125	2.065091	375.8041	-21059.2	10346.1
lev	6703	15.86271	41.21712	-916.6667	1944.444
llp	538	.9816066	38.01935	-939.181	2524.49
npl	1323	16.67219	62.07641	.000012	1431.78
tier1	3125	11.85822	4.407446		1 52.3202
dep	6045	34.23662	949.9294	-.037852	59681.4
sec	6009	20.3885	16.94103		0 129.026
roa	6443	.1943521	3.080344	-94.7601	49.4816
roe	443	-.1723354	25.86521	-436.544	57.7226
liq	6704	.2647775	.1627933		0 1.329167
lg	5657	.0156321	.2433758	-6.955236	3.999034
dg	5601	.0213583	.3295184	-8.351819	8.321701
sht	6153	1.211236	15.13668	-3.307692	382.3529
<i>Foreign issuer credit rating</i>					
bfitc	4516	22.36469	37.68147	-5	94.7368
bsp	5123	67.36775	24.02625	-5	100
bakm	0				
brus	0				
bdom	255	83.34118	8.669186	64	96
bmoody	1404	78.57906	19.50182	-5	100
bril	3	74.6032	2.749285	71.4286	76.1905
brae	0				
berl	0				
bram	0				
csp	17238	74.83786	26.43105	-5	100
cfitch	16081	25.25069	42.54353	-5	100
cdom	2872	92.32312	16.58244	20	100
cmoody	13821	67.01415	28.37377	0	100

Variable	Obs	Mean	Std. Dev.	Min	Max
cril	12035	81.33579	25.64559	9.52381	100
<i>Domestic issuer credit rating</i>					
bfitc	499	.5943466	13.8469	-5	47.36842
bsp	5555	64.63186	26.61652	-5	100
bakm	68	62.05882	6.122828	60	80
brus	126	84.5679	12.82145	50	100
bdom	71	78.42254	8.376262	64	92
bmoody	1462	76.90834	22.07302	-5	100
bril	3	74.60317	2.749285	71.42857	76.19048
bram	99	79.79798	13.93879	66.66666	100
berl	53	85.1752	8.940975	66.66666	100
bram	6	100	0	100	100
csp	18877	80.01033	24.31769	-5	100
cfitch	15225	17.54628	38.49061	-5	100
cdom	107	90.45981	18.35493	20	100
cmoody	17322	73.455	30.18035	0	100
cril	5355	91.72825	18.31809	9.523809	100
cram	80	86.42857	14.35786	71.42857	100
<i>Macroeconomic variables</i>					
gdp	18355	2.282583	3.53236	-16.43029	13.8265
cpi	18222	205.4448	631.5867	36.8	6739.645

Source: own calculations.

Table 5. The correlation matrix for the Foreign Fitch Issuer Credit Rating sample.

	opl	lev	llp	npl	tier1	dep	sec	roa	liq	lg	dg	sht	gdp	cpi	bfitch	cfitch
opl	1.0000															
lev	-0.1165	1.0000														
llp	-0.1650	-0.2916	1.0000													
npl	-0.2750	-0.1151	0.2966	1.0000												
tier1	-0.0496	-0.2120	0.0270	0.0049	1.0000											
dep	0.0363	-0.1040	-0.0145	-0.0069	0.0952	1.0000										
sec	-0.0344	0.1142	-0.0155	0.0044	-0.0767	-0.0819	1.0000									
roa	0.3486	-0.1534	-0.7904	-0.2504	0.0006	0.0369	0.0252	1.0000								
liq	0.0129	0.1041	-0.0329	-0.0153	0.2947	-0.0704	0.4490	-0.0090	1.0000							
lg	-0.0048	-0.0423	-0.0204	-0.0608	0.0384	0.0070	0.0329	0.0322	-0.3439	1.0000						
dg	0.0601	0.0880	-0.0353	-0.0142	-0.0687	0.0180	-0.0444	-0.0025	-0.0543	0.0087	1.0000					
sht	-0.0605	-0.3184	0.0553	0.0294	0.1652	-0.0187	0.1885	0.1857	0.1398	0.0205	-0.2523	1.0000				
gdp	0.0330	-0.2500	-0.0524	-0.0454	0.1370	0.0384	-0.0334	0.1438	0.0411	0.0531	-0.0600	0.1843	1.0000			
cpi	0.0824	0.0391	0.0006	-0.0496	0.2063	0.0407	-0.3587	0.0047	0.0866	0.0043	-0.0115	0.0221	0.2070	1.0000		
bfitch	0.0236	0.1352	-0.1240	-0.0431	-0.2797	-0.0180	0.0151	0.0494	-0.1439	0.0257	0.0578	-0.0939	0.1727	-0.0312	1.0000	
cfitch	-0.0277	0.0193	-0.0278	0.0599	-0.3890	-0.0274	0.0201	0.0251	-0.3342	0.0307	0.0379	-0.0653	-0.0527	-0.2480	0.5903	1.0000

Source: own calculation.

Table 6. The correlation matrix for the Foreign Standard & Poor's Issuer Credit Rating sample.

	opl	lev	llp	npl	tier1	dep	sec	roa	liq	lg	dg	sht	bsp	csp	gdp	cpi
opl	1.0000															
lev	-0.1323	1.0000														
llp	-0.2617	-0.2660	1.0000													
npl	-0.3063	-0.1179	0.3064	1.0000												
tier1	-0.0243	-0.1824	-0.0147	-0.0065	1.0000											
dep	0.0225	0.2273	-0.1855	-0.0926	-0.0749	1.0000										
sec	0.0086	0.0448	-0.0069	0.0066	-0.1395	-0.1123	1.0000									
roa	0.4308	-0.1318	-0.8350	-0.2584	-0.0086	0.0390	0.0162	1.0000								
liq	0.0291	0.0675	-0.0658	-0.0167	0.3018	-0.2263	0.3449	-0.0121	1.0000							
lg	-0.0051	-0.0437	-0.0004	-0.0559	0.0405	0.2381	0.0366	0.0140	-0.3641	1.0000						
dg	0.1309	0.0519	-0.0221	-0.0152	-0.0492	-0.3368	-0.0459	0.0599	-0.0604	0.0064	1.0000					
sht	-0.0511	-0.2989	0.0797	0.0872	0.0687	0.4624	0.0720	0.0973	0.0936	0.0232	-0.4830	1.0000				
bsp	0.1243	0.3835	-0.3652	-0.2016	-0.0853	0.3327	0.0599	0.1154	0.0713	-0.0189	0.0926	-0.3393	1.0000			
csp	0.1197	0.4023	-0.3293	-0.2034	-0.0476	0.3091	-0.0506	0.0114	0.0948	-0.0189	0.1034	-0.4067	0.9255	1.0000		
gdp	0.0604	-0.2166	-0.1206	-0.0407	0.1259	0.0655	-0.0712	0.1756	0.0364	0.0561	-0.0252	0.1836	-0.0416	-0.0600	1.0000	
cpi	0.0756	0.1084	-0.0558	-0.0466	0.1953	0.2519	-0.4887	-0.0097	0.0442	0.0083	0.0033	0.0104	0.1121	0.1603	0.1952	1.0000

Source: own calculation.

Table 7. The correlation matrix for the Foreign Moody's Issuer Credit Rating sample.

	opl	lev	llp	npl	tier1	dep	sec	roa	liq	lg	dg	sht	bmoody	cmoody	gdpg	cpi
opl	1.0000															
lev	-0.2477	1.0000														
llp	-0.1853	0.0295	1.0000													
npl	-0.0841	-0.0398	0.5335	1.0000												
tier1	-0.0309	-0.1736	-0.1254	0.0009	1.0000											
dep	-0.0870	-0.1936	0.0748	-0.0769	0.0640	1.0000										
sec	-0.1587	0.0944	0.4553	0.6571	0.0350	0.0952	1.0000									
roa	0.3988	-0.6379	-0.2542	-0.2391	0.0464	0.2695	-0.0659	1.0000								
liq	-0.0031	0.0089	0.1395	0.4249	0.5334	0.0126	0.3345	-0.1173	1.0000							
lg	-0.0598	-0.0555	-0.1074	-0.0738	-0.0618	0.0134	-0.0927	0.0549	-0.1771	1.0000						
dg	0.0504	0.1348	-0.1201	-0.0734	-0.0285	-0.7837	-0.1295	-0.1154	-0.0641	0.0296	1.0000					
sht	-0.0893	-0.2563	0.1601	0.1346	0.1566	0.2173	0.3728	0.3457	0.1600	0.1050	-0.2702	1.0000				
bmoody	0.1442	0.0431	-0.2418	-0.4746	-0.2246	-0.1669	-0.3924	-0.0110	-0.3132	0.1326	0.1429	-0.3425	1.0000			
cmoody	0.1830	-0.1132	-0.3402	-0.4075	-0.0452	-0.2441	-0.5091	-0.0830	-0.1755	0.1205	0.2225	-0.4379	0.8250	1.0000		
gdpg	0.0284	-0.2389	-0.5181	-0.1406	0.2064	0.1082	-0.0935	0.2407	0.0163	0.1592	-0.0660	0.1130	0.0308	0.1173	1.0000	
cpi	0.1175	0.1466	-0.3847	-0.4813	0.2583	0.0253	-0.4837	-0.0804	0.1029	0.0083	0.0330	-0.1380	0.4472	0.3983	0.1684	1.0000

Source: own calculation.

Table 8. The correlation matrix for the Foreign Dominion Issuer Credit Rating sample.

	opl	lev	llp	npl	tier1	dep	sec	roa	liq	lg	dg	sht	bdom	cdom	gdpg	cpi
opl	1.0000															
lev	-0.2763	1.0000														
llp	0.0289	-0.2688	1.0000													
npl	0.0625	-0.7839	0.0735	1.0000												
tier1	0.0648	0.2932	-0.3147	-0.1864	1.0000											
dep	-0.0881	-0.3673	0.3116	0.5425	-0.2856	1.0000										
sec	-0.0336	-0.4079	0.4098	0.5520	-0.0863	0.5401	1.0000									
roa	0.7177	-0.6074	-0.1806	0.5881	0.0950	0.0815	0.1265	1.0000								
liq	0.2329	-0.4983	0.1415	0.5229	0.4500	0.0075	0.4457	0.4860	1.0000							
lg	-0.2880	0.0258	-0.2765	0.1933	-0.1046	0.4088	-0.0257	-0.1167	-0.2182	1.0000						
dg	0.4891	0.1461	-0.2327	-0.3275	0.2623	-0.6002	-0.2326	0.2841	0.0486	-0.6516	1.0000					
sht	-0.1621	0.0464	0.1427	0.1957	-0.1602	0.8820	0.3005	-0.1682	-0.2323	0.5189	-0.6162	1.0000				
bdom	-0.2045	0.7075	-0.1254	-0.7119	-0.2274	-0.1987	-0.6254	-0.5422	-0.8933	0.0705	0.1239	0.1298	1.0000			
cdom	0.0847	0.5605	-0.3891	-0.6838	0.3568	-0.9521	-0.5253	-0.2011	-0.1356	-0.3868	0.6476	-0.7371	0.3426	1.0000		
gdpg	0.0090	-0.1417	-0.1058	0.3114	0.0936	0.5946	0.3953	-0.0346	0.1879	0.4211	-0.5114	0.6609	-0.3180	-0.4641	1.0000	
cpi	-0.2073	0.7728	-0.3837	-0.6792	0.1069	-0.1359	-0.3862	-0.5954	-0.6864	0.2191	0.0373	0.2760	0.7554	0.3925	0.2197	1.0000

Source: own calculation.

Table 9. The correlation matrix for the Domestic Fitch Issuer Credit Rating sample.

	bfitch	cfitch	gdpg	cpi	opl	lev	tier1	dep	sec	roa	liq	lg	dg	sht
bfitch	.													
cfitch	.	.												
gdpg	.	.	1.0000											
cpi	.	.	0.0706	1.0000										
opl	.	.	-0.0524	-0.0914	1.0000									
lev	.	.	0.1088	0.1302	0.0758	1.0000								
tier1	.	.	-0.0924	-0.2378	-0.1164	-0.8781	1.0000							
dep	.	.	-0.0459	0.1749	0.0035	-0.2796	0.3824	1.0000						
sec	.	.	-0.1093	-0.6220	0.0272	-0.1132	0.2306	-0.4506	1.0000					
roa	.	.	0.0053	-0.3910	0.1297	-0.0321	0.0933	-0.0225	0.4828	1.0000				
liq	.	.	-0.1037	-0.2181	0.0307	0.1127	-0.0702	-0.4734	0.7317	0.2910	1.0000			
lg	.	.	0.0284	-0.2825	0.0748	0.0283	-0.0111	0.0298	0.2980	0.5266	0.1331	1.0000		
dg	.	.	-0.0902	-0.0496	-0.0380	0.1220	-0.0646	0.1056	-0.0266	0.0133	-0.0605	0.2010	1.0000	
sht	.	.	-0.0240	-0.1458	-0.0659	-0.2384	0.2834	-0.1690	0.4131	0.2557	0.2891	0.0948	-0.0690	1.0000

Source: own calculation.

Table 10. The correlation matrix for the Domestic Standard & Poor's Issuer Credit Rating sample.

	bsp	csp	gdpg	cpi	opl	lev	llp	npl	tier1	dep	sec	roa	liq	lg	dg	sht
bsp	1.0000															
csp	0.8598	1.0000														
gdpg	-0.1202	-0.0617	1.0000													
cpi	0.0541	0.1391	0.1542	1.0000												
opl	0.0903	0.1177	0.0592	0.0791	1.0000											
lev	0.4595	0.4028	-0.2092	0.0904	-0.1370	1.0000										
llp	-0.3132	-0.3249	-0.1151	-0.0435	-0.2519	-0.2714	1.0000									
npl	-0.1364	-0.1704	-0.0376	-0.0458	-0.2923	-0.1074	0.3021	1.0000								
tier1	-0.1434	-0.0766	0.0762	0.1819	-0.0269	-0.1946	-0.0158	-0.0095	1.0000							
dep	0.3261	0.2910	0.0279	0.2719	0.0257	0.2382	-0.1802	-0.0848	-0.1034	1.0000						
sec	-0.0686	-0.0795	-0.0414	-0.4861	0.0040	-0.0007	-0.0160	0.0009	-0.0754	-0.1667	1.0000					
roa	-0.0305	-0.0217	0.1932	0.0031	0.4372	-0.1812	-0.7970	-0.2518	0.0137	0.0223	0.0435	1.0000				
liq	-0.0547	0.0467	0.0281	0.0365	0.0258	0.0266	-0.0676	-0.0194	0.3285	-0.2474	0.3879	0.0175	1.0000			
lg	-0.0111	-0.0139	0.0276	0.0080	-0.0041	-0.0390	-0.0003	-0.0560	0.0391	0.2314	0.0330	0.0134	-0.3538	1.0000		
dg	0.0864	0.1183	-0.0246	0.0034	0.1334	0.0539	-0.0225	-0.0145	-0.0533	-0.3196	-0.0511	0.0538	-0.0637	0.0081	1.0000	
sht	-0.4204	-0.3766	0.1934	-0.0095	-0.0521	-0.2772	0.0805	0.0652	0.1197	0.3131	0.1500	0.1098	0.1428	0.0235	-0.4291	1.0000

Source: own calculation.

Table 11. The correlation matrix for the Domestic Moody's Issuer Credit Rating sample.

	bmoody	cmoody	gdpg	ef	opl	lev	tier1	dep	sec	roa	liq	lg	dg	sht
bmoody	1.0000													
cmoody	0.8995	1.0000												
gdpg	0.6008	0.5060	1.0000											
ef	0.0996	0.1437	0.2153	1.0000										
opl	0.0941	0.0860	0.1893	0.0710	1.0000									
lev	0.1601	0.2368	-0.1317	0.1209	-0.0025	1.0000								
tier1	0.5864	0.4617	0.3864	0.0285	0.0778	0.4242	1.0000							
dep	-0.1120	-0.1411	0.2411	-0.0372	0.0480	-0.2749	0.0179	1.0000						
sec	-0.5737	-0.4491	-0.3705	-0.0571	-0.1629	0.3152	-0.3261	0.0522	1.0000					
roa	0.1760	0.0977	0.2288	0.0435	0.2948	-0.5483	0.1604	0.4168	-0.4736	1.0000				
liq	0.0517	0.1020	0.0362	0.0136	-0.0264	0.6414	0.2712	0.0140	0.3953	-0.3059	1.0000			
lg	0.1911	0.1089	0.3191	0.1628	0.0707	-0.1040	0.0449	0.0344	-0.1099	0.1271	-0.1258	1.0000		
dg	0.1385	0.1888	-0.2205	0.0675	-0.0025	0.2497	0.0638	-0.8792	-0.1394	-0.2388	-0.0608	-0.1017	1.0000	
sht	-0.0754	-0.1161	0.1816	0.0429	-0.1056	-0.0263	0.0254	0.2205	0.3322	0.0995	0.1924	0.2878	-0.4503	1.0000

Source: own calculation.

Table 12. The correlation matrix for the Domestic RusRating Issuer Credit Rating sample.

	brus	opl	lev	tier1	dep	sec	roa	liq	lg	dg	sht
brus	1.0000										
opl	0.2068	1.0000									
lev	0.7060	0.2018	1.0000								
tier1	-0.7175	-0.2154	-0.9268	1.0000							
dep	-0.0352	0.0830	0.1331	-0.1210	1.0000						
sec	-0.4609	0.0377	-0.5841	0.4300	-0.1614	1.0000					
roa	0.3089	0.9497	0.2419	-0.2425	-0.0594	-0.0006	1.0000				
liq	-0.4471	-0.2642	-0.3374	0.4574	-0.6200	0.1820	-0.1471	1.0000			
lg	-0.1114	0.0469	0.0717	-0.1935	-0.3373	-0.1318	0.0891	-0.0251	1.0000		
dg	-0.2021	-0.0470	0.0706	-0.0698	-0.5696	-0.1997	0.0432	0.4885	0.7515	1.0000	
sht	0.3218	0.1669	0.0255	-0.1600	-0.7231	0.0706	0.2910	-0.0260	0.5920	0.4443	1.0000

Source: own calculation.

Table 13. The estimation results of factors determining Foreign Issuer Credit Ratings.

Variable	Foreign Issuer Credit Rating																															
	Fitch								S&P								Moody's								Dominion							
	Coef.	P	Coef.	P	Coef.	P	Coef.	P	Coef.	P	Coef.	P	Coef.	P	Coef.	P	Coef.	P	Coef.	P	Coef.	P	Coef.	P	Coef.	P	Coef.	P				
opl	0,00		0,00		0,00		0,00		0,00		-0,01	*	0,00	***	-0,01	*	-0,03	**	0,03	***	-0,01	*	0,00		-0,16	*	0,00		-0,12	*	0,01	
lev	0,10	***	0,26	*	0,11	***	0,31	*	0,04	*	0,03		0,05	*	0,04		0,28	*	-0,32	*	0,40	*	-0,41	*	0,43	*	0,31	*	0,16	*	0,28	**
llp																19,54	*	5,70	*	16,60	*	14,02	***	31,03	*	7,39	**	24,52	*	5,23		
npl																-1,19	*	-5,32	*	-1,70	*	-3,95	*	-0,76	*	0,53		-0,24		0,66		
tier1	-0,57	*	-2,77	*	-0,53	*	-2,41	*	0,02		-0,46	*	0,03		-0,44	*	-0,39	*	-0,57	*	-0,27	*	-0,73	*	-0,80	*	-0,36		-1,03	*	-0,35	
dep	0,00		0,00		0,00		0,00		0,15	*	3,13	*	0,94	**	2,19	*	-0,37	*	-0,69	*	-0,22	***	-0,90	*	-3,75	*	-0,82		6,17	*	-0,81	
sec	0,03		0,19	*	0,07		0,12	***	0,02		-0,03		0,02	***	-0,01		0,28	*	0,17	***	0,17	*	0,36	*	-1,35	*	-0,97	*	-2,26	*	-1,01	*
roa	4,56	*	7,99	*	1,50		1,84		0,37		7,50	*	1,20	*	5,98	*	24,48	*	-10,93	***	20,62	*	0,41		38,77	*	-2,76		28,28	*	-5,66	
liq	5,24		-35,61	*	7,05		-25,99	*	-9,87	*	0,56		-10,73	*	-0,89		-14,43	*	8,74		-6,39		-6,95		-49,51	*	-55,99	*	-32,76	*	-51,22	*
lg	3,78	**	2,58		2,98	*	1,82		-1,04	*	-0,47		-1,49	*	-0,46		9,72		39,24	*	7,37		37,95	*	23,31	*	6,37		20,64	*	2,63	
dg	2,32		8,73	***	1,33		6,84		0,15		9,39	*	1,65	***	7,95	*	-8,77	*	-11,28	*	-6,96	*	-13,70	*	11,18	*	4,07	**	2,05	***	3,30	***
sht	0,95		9,16	*	0,65		7,45	*	0,56		2,45	*	0,60	***	2,45	*	-5,28	***	-21,90	*	-0,96		-26,23	*	4,48	**	7,10		2,21		8,50	
rating	0,73	*			0,68	*			0,85	*			0,85	*			0,69	*			0,75	*			-0,82				1,91	*		
gdpg					1,32	*	2,47	*	-0,05	***					0,49	*	-0,02						0,07		2,89	**					-0,83	
cpi					-0,13	*	-0,08	*	-0,02	*					-0,02	*	0,04	*					0,07	*	1,14	**					0,04	
_cons	-1,40		38,91	*	16,97	*	40,84	*	3,86	*	70,10	*	-0,65		73,82	*	2,37		100,53	*	1,34		87,25	*	102,27	**	129,20	*	-20,02		125,83	*
R squared																	0,8281		0,3812		0,7856		0,5114		0,9982		0,9491		0,9923		0,9484	
test F	0,0202		0,0166		0,0000		0,0000		0,0000		0,0000		0,0000		0,0000		0,0000		0,0000		0,0000		0,0000		0,0001		0,0000		0,0000		0,0000	
Hausman	0,0000		0,0000		0,0000		0,0000		0,0000		0,0000		0,0000		0,0000		0,0000		0,0000		0,0000		0,0000		0,9671		0,0000		0,0000		0,0000	
BP	0,0000		0,0001		0,0002		0,0003		0,0004		0,0005		0,0006		0,0007		1,0000		1,0000		1,000		1,000		1,0000		1,0000		1,0000		1,0000	
no obs	1297		1297		1286		1286		1084		1210		1094		1200																	
no group	55		55		54		54		48		52		49		51		229		229		229		229		19		26		19		26	
model	FE		FE		FE		FE		FE		FE		FE		FE		OLS		OLS		OLS		OLS		OLS		OLS		OLS		OLS	

Source: own calculations.

Table 14. The estimation results of factors determining Domestic Issuer Credit Ratings.

variable	Domestic Issuer Credit Rating																											
	Fitch						S&P						Moody's						Dominion		Russarting							
	Coef.	p	Coef.	p	Coef.	p	Coef.	p	Coef.	p	Coef.	p	Coef.	p	Coef.	p	Coef.	p	Coef.	p	Coef.	p	Coef.	p				
country	0,90	*					0,97	*	0,84	*	0,84	*			0,59	*	0,63	*										
gdpg	0,14	*	0,41	*					-0,02				0,49	*	-0,32	*			0,00									
cpi	-0,05	*	-0,15	*					-0,01	*			-0,02	*	0,02	*			0,05	*								
opl	0,01	***	0,03	*	0,02	***	0,00		0,00		0,00		-0,01	**	-0,01	*	0,00		0,00		0,00		0,00					
lev	0,07		-0,81	*	-1,11	*	0,07		0,07	*	0,07	*	0,05		0,05		0,13	*	0,16	*	0,22	*	0,29	*				
tier1									-0,05		-0,05		-0,43	*	-0,47	*	-0,60	*	-0,43	*	-1,15	*	-0,87	*	-2,33	*	-1,40	*
dep	0,00		0,00		0,00		0,00		0,78	***	1,15	*	2,21	*	3,20	*	-0,13		-0,04		-0,49	*	0,03					
sec	-0,11	***	-0,22	**	-0,17	***	-0,08		-0,02	***	-0,02		-0,02	***	-0,04	***	0,05	**	-0,01		0,01		0,01		-1,82	*		
roa	-0,08		-4,46	*	-4,41	*	0,29		0,54		0,99	**	5,03	*	6,49	*	12,53	*	9,44	*	18,51	*	15,94	*				
liq	8,27		37,14	*	60,32	*	11,40	***	-1,87		-1,73		-3,79		-3,12		-9,72	*	-10,20	*	9,65	**	5,24		104,58	*	-203,14	*
lg	5,17		11,17	***	29,17	*	9,27	*	-0,49		-0,66		-0,52		-0,70		0,03		-1,43		3,72		-0,22		-19,63	*		
dg	-5,35	*	-0,95		-0,49		-5,66	*	0,64		1,29		7,81	*	9,61	*	-2,27		-1,17		-3,42		2,83					
sht	1,57	***	3,73	***	5,79	*	1,90	***	0,70	***	0,70	***	2,55	*	2,62	*	5,80	*	4,76	*	-3,18		-4,48	***	10,19	*		
_cons	6,97	*	25,93	*	-6,62	***	-2,30		-4,44	***	-3,65	**	73,44	*	69,86	*	24,21	*	24,61	*	74,76	*	79,74	*	123,00	*	164,99	*
R squared	0.8004		0.3775		0.1714		0.7859										0.6779		0.6534		0.2965				0.9602		0.5537	
test F	0.0000		0.0000		0.0000		0.0000		0.0000		0.0000		0.0000		0.0000		0.0000		0.0000		0.0000		0.0000		0.0000		0.0000	
Hausman	0.1208		0.6925		0.0000		0.0015		0.0272		0.0426		0.0142		0.0044		0.0000		0.0000		0.0000		0.0037					
BP	1.0000		1.0000		1.0000		1.0000		0.0000		0.0000		0.0000		0.0000		1.0000		1.0000		1.0000		0.0000					
no obs	354		354		354		354		1240		1248		1240		1248		446		447		488		488		13		17	
no groups									56		57		56		57								14					
model	OLS		OLS		OLS		OLS		FE		FE		FE		FE		OLS		OLS		OLS		FE		OLS		OLS	

Source: own calculations.

Table 15. The estimation results of factors determining Foreign Fitch Issuer Credit Ratings according to the political classifications.

bfitch	European Union						Eurozone						non European Union						non Eurozone																	
	Coef.	p	Coef.	p	Coef.	p	Coef.	p	Coef.	p	Coef.	p	Coef.	p	Coef.	p	Coef.	p	Coef.	p	Coef.	p	Coef.	p												
opl	0,00		-0,01		-0,01		0,00		0,01		0,02		0,00		0,00		0,00		0,00		0,01		0,00		0,01											
lev	0,07		0,29	*	0,11		0,06		0,27	***	1,18	*	1,52	*	0,31	**	0,72	***	2,99	*	1,78	*	0,39		0,04											
tier1	0,85	*	-2,72	*	-0,54	*	1,43	*	0,10		-1,54	*	-1,46	*	0,17		1,05	**	2,52	*	1,46	*	0,74	*	0,98	*										
dep	-4,24	**	-9,98	*	-4,69	*	-6,86	*	0,00		0,00		0,00		0,00		0,00		0,00		0,00		-8,64	*	-4,09	***										
sec	0,01		0,11		0,05		-0,01		0,01		0,07		0,10		0,00		-0,07		0,35	**	0,26	***	-0,09		0,16	***										
roa	0,78		12,20	*	7,86	*	-2,75		0,31		2,10		7,79	**	1,03		0,17		-0,29		-0,35		0,14		-2,93											
liq	14,73	***	-34,71	*	-1,66		15,66		-19,18	**	-64,07	*	-95,7	*	-19,27	**	8,78		-62,11	*	-50,53	*	11,38		2,08											
lg	3,76	*	5,36	***	4,53	**	3,67		-1,36		-3,03		-3,62		-1,01		-0,37		6,94		7,26		-1,06		5,32	***										
dg	-2,70		3,49		-1,12		-1,77		4,69		13,69	**	16,77	**	4,61		0,45		-0,43		-0,32		0,54		-22,09	*										
sht	-0,03		9,06	*	1,40		2,58		-3,08		-6,85		-5,91		-3,06		-1,20		-0,80		-1,84		-1,31		1,73											
cfitch	0,57	*			0,74	*			0,72	*			0,74	*	0,43	*							0,44	*	0,37	*										
gdpg	1,02	*					1,11	*	0,52	*	2,42	*					0,02		0,30						0,79	*										
cpi	-1,35	*					-3,07	*	-0,03		-0,26	*					0,01		0,04	*					-2,41	*										
_cons	184,48	*	50,88	*	4,28		441,84	*	7,48		70,75	*	21,63	**	1,16		-26,56	**	-65,03	*	-30,54	*	-17,23	**	230,33	*										
R squared													0.5978						0.2123						0.1842						0.6018					
test F	0.0000		0.0000		0.0000		0.0000		0.0000		0.0000		0.0000		0.0000		0.0000		0.0000		0.0000		0.0000		0.0000											
Hausman	0.0000		0.0000		0.0000		0.0000		0.0000		0.0000		0.0000		0.9939		0.9592		0.1992		0.0647		0.9619		0.0000											
BP	0.0000		0.0000		0.0000		0.0000		0.0000		0.0000		0.0000		0.0000		1.0000		1.0000		1.0000		1.0000		0.0000											
no obs	1094		1094		1094		1094		710		721		721		721		192		192		203		203		576											
no groups	39		39		39		39		34		35		35		35									20												
model	FE		RE		RE		RE		FE		FE		FE		RE		OLS		OLS		OLS		OLS		FE											

Source: own calculations.

Table 16. The estimation results of factors determining Foreign Standard & Poor's Issuer Credit Ratings according to the political classifications.

bsp	European Union						Eurozone						non European Union						non Eurozone													
	Coef.	P	Coef.	P	Coef.	P	Coef.	P	Coef.	P	Coef.	P	Coef.	P	Coef.	P	Coef.	P	Coef.	P	Coef.	P	Coef.	P	Coef.	P						
opl	-0,01	*	-0,03	*	-0,01	*	-0,02	*	0,00		0,00		0,00		0,00		-0,02	*	0,00		-0,01	*	0,00		-0,03	*	0,00		-0,02	*		
lev	0,05	**	0,04		0,06	*	0,04	*	0,36	*	0,44	*	0,40	*	0,33	*	-1,91	*	-2,08	*	-0,91	**	-2,23	*	0,00		-0,01	*	0,01		-0,05	
tier1	0,02		-0,46	*	0,03		-0,44	*	0,16	*	0,19	*	0,17	*	0,18	*	-2,33	*	-2,50	*	-1,91	*	-2,23	*	0,13		-1,76	*	0,20	**	-0,09	
dep	0,11		2,81	*	0,90	*	1,94	**	-0,60		4,44	*	2,42	*	0,85		15,14	*	23,97	*	17,26	*	16,54	*	1,07	**	3,06	*	0,76	***	2,86	**
sec	0,02	***	-0,02		0,03	*	-0,01		0,02		0,01		0,02		0,01		-0,07		-0,24	**	0,15	***	-0,22	*	0,00		-0,02	*	0,01		-0,05	
roa	1,44	**	11,82	*	2,80	*	9,76	*	0,69		2,65	*	2,35	*	0,73		0,73		2,17	**	1,73	**	0,76		-0,42		11,63	*	-0,96		6,20	*
liq	-9,17	*	2,28		-10,40	*	1,63		-5,18	***	1,30		-3,11		-3,24		-8,70		45,92	*	-1,98		1,06		-16,80	*	-1,99		-17,35	*	-4,01	
lg	-0,97	**	-0,41		-1,48	*	-0,30		-0,34		-1,42	*	-1,18	*	-0,65		-19,38	**	-2,13		-0,79		-15,97	***	-1,59	**	-1,03		-1,63	**	-1,96	
dg	0,09		9,35	*	1,78	***	7,90	*	0,69		4,41	*	4,70	*	0,34		18,76	*	8,61		12,17	***	14,87	**	-0,81		9,99	*	-0,97		9,72	*
sht	0,57		2,26	*	0,62	***	2,21	*	-22,13	*	-20,70	*	-18,82	*	-26,20	*	16,14	**	8,19		4,76		22,06	*	1,17	***	1,45		1,20	**	0,87	
csp	0,85	*			0,84	*			0,40	*			0,44	*			0,38	**			0,58	*			0,89	*			0,89	*		
gdpg	-0,08	**					0,46	*	0,01						-0,01		0,48	*					0,52	*	-0,30	*					0,00	
cpi	-0,02	*					-0,02	*	-0,02	*					-0,02	*	-0,02	*					0,00		-0,04						-1,26	*
_cons	3,48	**	71,11	*	-0,87		74,43	*	37,30	*	48,49	*	21,82	*	69,40	*	63,88	*	62,16	*	28,46	*	76,98	*	-0,88		83,35	*	-3,17		194,36	*
R squared																																
test F	0.0000		0.0000		0.0000		0.0000		0.0000		0.0000		0.0000		0.0000		0.0000		0.0000		0.0000		0.0000		0.0000		0.0000		0.0000		0.0000	
Hausmann	0.0028		0.0028		0.0000		0.0064		0.0150		0.0155		0.0230		0.0000		0.0001		0.1040		0.0057		0.4340		0.9297		0.0000		0.0098		0.0000	
BP	0.0000		0.0000		0.0000		0.0000		0.0000		0.0000		0.0000		0.0000		1.0000		1.0000		1.0000		1.0000		0.0000		0.0000		0.0000		0.0000	
no obs	991		1107		991		1107		633		643		643		633		93		103		103		103		451		567		451		567	
no groups	39		42		39		42		29		30		30		29									19		22		19		22		
model	FE		FE		FE		FE		FE		FE		FE		FE		OLS		OLS		OLS		OLS		RE		FE		FE		FE	

Source: own calculations.

Table 17. The estimation results of factors determining Foreign Moody's Issuer Credit Ratings according to the political classifications.

bmoody	European Union								Eurozone								non European Union								non Eurozone							
	Coef.	p	Coef.	p	Coef.	p	Coef.	p	Coef.	p	Coef.	p	Coef.	p	Coef.	p	Coef.	p	Coef.	p	Coef.	p	Coef.	p	Coef.	p	Coef.	p				
opl	-0.01	***	-0.01		-0.01	***	-0.01		-0.03	***	-0.03	**	-0.03	**	-0.03	**	0.03		0.02		0.02		0.03		-0.01		-0.01	***	-0.01			
lev	0.23	*	0.23	*	0.23	*	0.15	**	1.20	*	1.20	*	1.30	*	1.30	*	-0.08		-0.13		-0.12		0.05		-0.06		-0.30	*	-0.01	***	-0.32	*
tier1	-0.55	*	-0.78	*	-0.54	*	-1.01	*	0.02		0.02		0.11	***	0.11	***	-0.82	***	-0.80	***	-0.82	***	-0.82	***	-1.23	*	-3.13	*	-1.28	*	-3.10	*
dep	-0.65		3.30	*	-0.49		0.85		-0.27		-0.32	*	-0.27	**	-0.23		-0.14		0.11		-0.10		-0.14		1.48	***	-0.37		0.79		-0.16	
sec	-0.05	***	-0.12	*	-0.05	**	0.06	***	-0.11	*	-0.11	*	-0.19	*	-0.19	*	-2.80		-0.90		-2.83	***	-0.71		-0.11	*	0.04		-0.05		0.02	
roa	28.77	*	31.21	*	26.52	*	31.17	*	13.77	*	13.73	*	12.77	*	12.80	*	-20.48	**	-20.53	*	-19.21	*	-20.86	*	17.36	*	16.36	*	19.57	*	15.34	**
liq	-18.85	*	6.07		-19.50	*	4.80		-30.42	*	-30.54	*	-31.62	*	-31.51	*	-4.97		-5.46		-8.99		-3.24		14.48	***	47.60	*	5.83		50.67	*
lg	7.06		10.76		4.44		12.70	***	0.76		1.10		0.01		-0.32		5.05		2.26		4.68		5.14		3.35		13.53		0.59		14.57	
dg	-5.38	***	8.41	***	-4.67	***	3.50		-5.11		-5.64	**	-5.06	***	-4.56		-3.05		1.29		-2.37		-2.67		-2.52		0.51		-1.73		0.38	
sht	9.17	*	3.71		8.90	*	5.42	**	-8.69		-11.24	*	-8.56	*	-6.17		7.95		14.94		9.97		5.42		2.02		-3.51		3.93		-4.19	
cmoody	0.67	*			0.66	*			0.06					0.05		-1.22				-1.19				0.62	*			0.59	*			
gdpg	-0.33	*					-0.02		0.03							0.25						0.27		-0.97	*					-0.28		
cpi	0.00						0.05	*	0.01	*	0.01	*				0.00						0.08		-0.17						-0.08		
_cons	22.15	*	76.57	*	22.88	*	71.52	*	54.50	**	60.33	*	60.69	*	55.24	**	217.23		95.26	*	215.97	***	82.40	*	47.25	*	97.59	*	33.93	*	105.22	*
R squared	0.6924		0.2529		0.6872		0.3250		0.7174		0.7183		0.7125		0.7116		0.8631		0.8688		0.8690		0.8688		0.7546		0.4020		0.7291		0.3983	
test F	0.0000		0.0000		0.0000		0.0000		0.0000		0.0000		0.0000		0.0000		0.0000		0.0000		0.0000		0.0000		0.0000		0.0000		0.0000		0.0000	
Hausmann	0.0000		0.0000		0.0000		0.0000		0.0030		0.0011		0.0000		0.0000		1.0000		1.0000		1.0000		1.0000		0.4875		0.0000		0.1530		0.1130	
BP	1.0000		1.0000		1.0000		1.0000		1.0000		1.0000		1.0000		1.0000		1.0000		1.0000		1.0000		1.0000		1.0000		1.0000		1.0000		1.0000	
no obs	444		444		444		444		292		292		292		292		49		49		49		49		201		201		201		201	
model	OLS		OLS		OLS		OLS		OLS		OLS		OLS		OLS		OLS		OLS		OLS		OLS		OLS		OLS		OLS		OLS	

Source: own calculations.

Table 18. The estimation results of factors determining Foreign Dominion Issuer Credit Ratings of European Union banks.

<i>European Union</i>								
<i>bdom</i>	<i>Coef.</i>	<i>P>t</i>	<i>Coef.</i>	<i>P>t</i>	<i>Coef.</i>	<i>P>t</i>	<i>Coef.</i>	<i>P>t</i>
opl	-.0199231	0.373	-.00026	0.953	-.005545	0.819	-.0034725	0.367
lev	.0962647	0.658	.116026	0.086	.0347924	0.884	-.0653873	0.354
tier1	-1.695157	0.000	-.7937689	0.004	-1.262492	0.004	-1.836547	0.000
dep	4.159124	0.208	-.7265286	0.318	.3085181	0.927	-1.265617	0.048
sec	-.359783	0.147	.0494595	0.134	-.2454456	0.320	.028486	0.350
roa	2.636526	0.748	-.9416587	0.848	-1.506948	0.868	2.199616	0.609
liq	25.52331	0.157	-10.31059	0.115	17.99639	0.262	4.489466	0.490
lg	8.572307	0.597	8.21213	0.353	.1001312	0.996	2.5814	0.742
dg	-1.410324	0.726	2.883218	0.385	.9262766	0.834	2.22701	0.436
sht	17.06559	0.126	1.033537	0.649	18.10944	0.104	1.040397	0.596
cdom	1.957632	0.008			1.013982	0.130	-.1437046	0.518
gdpg	-2.124236	0.004					.9284012	0.000
cpi	-.2492845	0.538						
_cons	-62.21559	0.346	95.99392	0.000	.2488899	0.997	15.14396	0.342
R squared	0.6840		0.2120		0.6030		0.4216	
test F	0.0000		0.0000		0.0000		0.0000	
Hausmann	0.0000		0.0000		0.0000		0.0000	
Breusch - Pagan	1.0000		1.0000		1.0000		1.0000	
no obs	42		81		42		81	
model	OLS		OLS		OLS		OLS	

Source: own calculations.