SCIENTIFIC REVIEW

Correlation Between Credit Rating and Macroeconomic Indicators: Case Study of South-East European Countries

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ABSTRACT – Credit rating, as one of country risk indicators, plays an exceptionally important role in international capital markets – for creditors and investors as much as countries, industries and companies which require loans and investments. It is connected with a wide range of different factors, both of economic and non-economic nature. The goal of this paper is to provide insight in trends of credit ratings of South-East European countries and to compare their ratings, bringing them into relation with macroeconomic situation of given countries. The research takes into account ratings provided by three the most significant rating agencies – Standard & Poor's, Moody's and Fitch, as well as eight macroeconomic indicators, for Albania, Bosnia and Herzegovina, Montenegro, Croatia, Macedonia and Serbia in period between 2007 and 2014. Results of this research have shown that credit ratings of these countries ranged within the non-investment speculative grade. Croatia has the highest credit rating, followed by Macedonia, then Serbia and Montenegro, while B&H scores the lowest. Trend of the credit rating often does not sufficiently match the macroeconomic situation of the countries observed through main macroeconomic indicators. By using scatter diagrams and Spearman's rank correlation coefficient, it has been discovered medium strong positive correlation between credit rating on one side and gross domestic product, external debt and exports, on the other side, while correlation with other analysed macroeconomic indicators has been extremely low.

KEY WORDS: country risk, credit rating, macroeconomic indicators, Spearman's rank correlation coefficient, South-East European countries

Introduction

The problem of country risk has been one of the most significant research topics in the international business and finance field in the past several years. The impact which risk assessment can have on a country, especially in context of international business and investments, keeps the focus of many authors on this particular topic. Most authors share the opinion that globalisation of the world financial market and financial crises in the 1980s and

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1990s, from the collapse in Chile in 1982 to the Russian crisis in 1998, brought the analysis of country risk in focus of interest of not only banks and international financial institutions, but also governments and wider public. (Pjanić, 2015)

Country risk analysis requires extensive and comprehensive knowledge of international economics and macroeconomics, socio-political institutions and history of the country which is being analysed. However, most market participants are not capable of carrying out their own deep analysis, so the number of specialized institutions doing country risk assessment is growing. Among these institutions, credit rating agencies play an especially important role. Rating agencies provide credit rating assessment, which symbolises the level of risk to which investors are exposed when purchasing bonds and other securities. In today's financial world, it is almost impossible to borrow money without credit rating – credit rating scores serve as guidelines for investors indicating where and how much to invest, they are therefore of crucial importance for economies of countries which rely on external financing.

Since transition countries belong to the countries which have been relying on foreign financing sources for years, this paper will examine credit ratings of the group of South-East European transition countries – Albania, Bosnia and Herzegovina, Montenegro, Croatia, Macedonia and Serbia in period between 2007 and 2014. This research covers the dynamics of credit ratings of the above listed countries, comparison of their credit rating scores, and review of major macroeconomic indicators of these countries in context of their correlation with credit rating.

Theoretical considerations

For a long time, country risk belonged to the category of complex and incomprehensible topics, mainly because of lack of access to information as well as their incompleteness. Due to the extraordinary complexity of this term, there are many different definitions. Bouchet, Clark and Groslambert (2003) analysed the literature related to country risk in the past four decades, and they established that each country risk definition contains a wide range of different situations, but they always refer to specific risks which are caused by international business and which are not present in local business, regardless of the cause of the risk or nature of the given industry.

Some authors emphasize the economic character of this term. Bhalla (2006) country risk from the point of view of creditors as exposure to cross-border credit loss caused by economic movements within a country. Madura (2006) defines country risk as potentially negative influence of a country's environment on the cash flow of multinational corporations. However, such observation of country risk can be considered incomplete, because it does not emphasize the wider context and multidimensional character of the term. The economic dimension of country risk, according to Mondt and Despontin (1986), reflects only the ability of a country to pay its debt, but not its willingness to fulfil its obligations. In their opinion, this indicates the necessity to examine the political environment as an inevitable factor in country risk analysis.

A more comprehensive definition of country risk was provided by Calvaerley (1990), who defined country risk as potential economic or financial loss caused by difficulties a country is facing on macroeconomic and/or political scene. Country risk defined in this way

takes into account relevant factors such as economic, financial, social and political ones. Shapiro (2006) provides a brief definition of country risk as general level of political and economic uncertainty which influences the value of loans and/or investments in a country. According to Meldrum (2000), all business transactions involve a certain level of risk, but when they are carried outside of borders of one country, they include additional risk which arises due to different features of each country, be it economic structure, politics, socio-political institutions, geographic position or currency. The goal of country risk analysis is to identify the possibility of occurrence of such risks, as well as they impact on potential return of cross-border investment. Berg and Guisinger (2003) claim that country risk represents the most comprehensive category of international business risk, and that includes the overall risk of business environment of the host country. Perry (2010) defines country risk as economic, political and business risks which are specific for a certain country, and which can result in unexpected loss for an investor.

So, country risk includes all sources of potential difficulties, from political and social risk, to macro- and microeconomic risk. Two basic components of country risk are most frequently mentioned in literature: socio-political and economic-financial component. Political risk occurs due to internal or external conflicts, disputes related to territorial division, revolutions aiming at change in power, terrorist attacks and so on. According to Hoti and McAleer (2005), political risk can also occur due to political instability or conflicts in the region to which a country belongs, although the country in question is not involved. Social risks include collective actions launched and led by trade unions, non-governmental organizations and other informal groups which are trying to influence the local government and/or directly influence the business policies of foreign corporations (Bouchet, Clark and Groslambert, 2003). Scientist Buckley (2004) links economic risk to events in national economy which might influence the outcome of international economic transactions, whereby the definition includes both present and potential economic situation in a country. Economic risk is divided into macro risk which applies to all foreign corporations, and micro risk which applies only to certain sectors or individual corporations. Macroeconomic risk entails shift in certain variables within economic system, such as economic activity growth rate, prices, interest rates, currency exchange rates and so on. Microeconomic risk purports all negative events which take place at the level of an industry or corporation.

Sovereign risk is risk related to crediting of a state. It occurs when a government cannot or will not fulfil its obligations abroad, and/or when a government does not allow residents (corporations or individuals) to pay back their foreign debt. A. Shapiro (2006) divides sovereign risk into direct and indirect risk. Direct sovereign risk occurs in the situation when a government is not willing or not able to fulfil its international obligations. Indirect risk occurs when measures undertaken by a government influence the ability of individual debtors to pay back their debt to foreign creditors and investors. (Ghose,1988, as cited in Hoti and McAleer, 2002). In both cases, foreign investors and creditors are exposed to risk caused by decisions of the government in the country in which they are investing.

The first attempts to define a unique system of country risk analysis were made by banking institutions. These were simple systems focusing only on economic variables (Saini, Krishnan and Bates, Philip, 1978, as cited in Kosmido, Doumpos and Zopounidis, 2008). Today, institutions which make country risk assessments use different methodologies,

depending on type of investment and source of risk. These institutions are generally divided in two categories. The first category consists of institutions which take all possible kinds of risk into account. The second category focuses on credit rating of a country. These are credit rating agencies.

Based on a detailed analysis of information, and in line with predefined standards, rating agencies determine the credit rating, i.e. the score which symbolises the level of risk to which investors are exposed when purchasing bonds and other securities. Credit rating can be described as an assessment of present situation in a country, based on which investors can predict the success of their potential investment in the country, or based on which investors can predict the credit ability of the country (Bouchet et al, 2003).

In order to enable a better understanding of risk, agencies analyse and interpret a large number of information about investors and debtors, market and changes in economic and political circumstances. Also, they give opinion on credit ability of institutions and their financial obligations. In many cases, countries request rating not because they need to borrow, but because they want to show the international market their tendency for adequate, transparent and pro-market governance; in other words, governments insist on having a (positive) credit rating score so that the market can see their economic policy as acceptable and suitable (Pjanić, 2015).

Due to intense development of the financial system, the role, significance and range of activities of rating agencies changed over time. Today, renowned agencies do not only provide the service of credit rating assessment, but they also provide consulting service, manage important international indexes and engage in other highly profitable activities related to international borrowing and investments.

There are more than 70 credit rating agencies in the world. The most famous ones are Moody's, Standard & Poor's and Fitch, which are recognized by all members of the Basel Committee and almost all non-member countries. The structure of the rating agency industry is extremely oligopolistic. From the very beginning, the industry has been dominated by the triumvirate of agencies – Moody's, Standard & Poor's and Fitch – which cover over 95% of the market. This triumvirate is further divided with "the big two" – Moody's and Standard & Poor's, each holding market share of 40%, and Fitch which holds 15% of market share and is specialized in distinctive niches which it dominates (Begić, 2013)

Standard & Poor's (S&P's) was established in 1941 through merger of Standard Statistics which was established in 1860 and Poor's Publishing. Today, the agency operates in 26 countries throughout the world. S&P lists several key parameters which are used for assessment of credit risk: political risk, revenues and economic structure, economic growth perspective, fiscal flexibility, obligations of the state, external and potential obligations, monetary flexibility, external liquidity and foreign debt (Bouchet, Clark and Groslambert, 2003). According to methodology applied by S&P's, Huljev (2013) specifies the following key determinants: GDP growth rate, GDP per capita, currency stability, fiscal equilibrium, public debt and especially external debt, foreign reserves level, inflation and current account of balance of payments.

Moody's Investor Service, daughter company of Moody's Corporation, issued its first rating report in 1909. Today, Moody's Investor Service belongs to the most famous and most renowned world agencies specialized in credit ratings and risk analysis. It operates in 35

countries. According to Moody's, the essence of credit rating assessment lies in analysis of three basic factors: structure of social interactions, social and political dynamics, and economic basis. Experts also research foreign debt, calculate net debt, compare the burden of debt among countries and analyse short-term debts (Bouchet, Clark and Groslambert, 2003).

Fitch Publishing Company was established in 1919. Fitch did not play any significant role as a rating agency. However, in perod from 1997 to 2000, after a series of successful mergers with other companies, Fitch Ratings became recognisable as an agency specialised in risk management, financial "training" and data distribution. The criteria which support the risk assessment methodology defined by this agency can be grouped in following subgroups (Bouchet, Clark and Groslambert, 2003): demographic, educational and structural factors, labour market analysis, production and trade structure, private sector dynamics, balance of payments, macroeconomic policy, trade and foreign investment policy, banking and finances, external property, foreign debt, international position and government policy.

Details of the methodology framework used by credit agencies are not fully known. If they were known, investors themselves would be able to calculate values of certain determinants and set the credit rating score, and decide based on that whether to invest or not. What is known is that the methodology used by agencies to assess credit rating is very complex. Analysts do not only use publicly available information on issuers of financial instruments, they also use information not available to the public. This means that on top of the objective assessment of financial and economic indicators, analysts must also make a subjective assessment. All of this indicates that there is no single, universal formula to determine the credit rating score. Methodology differs not only from agency to agency, but also from analyst to analyst.

Regarding macroeconomic factors connected to credit rating, research done by Borenszstein and Panizza, (2006) as cited in Huljev (2013) indicated that credit rating was significantly correlated with GDP growth rate and GDP per capita. In the given research GDP per capita explained around 80% fluctuations in credit rating. Some studies (Bucur, Andreea Dragomirescu, Simona, 2014) emphasize that unemployment rate should be part of credit rating analysis, as higher unemployment rate is in negative correlation with country risk assessment. Huljev (2013) argues that foreign debt is also significantly and positively correlated with default risk. In that sense analysts consider relation between foreign debt and GDP especially relevant. However, rating agencies take into account the whole context of a country in analysis of the given variable, making it relevant for less developed countries only.

Methodology remarks

This paper takes into account the credit rating scores of the three most significant rating agencies – Standard & Poor's, Moody's and Fitch, for selected countries of South-East Europe in period 2007-2014. The South-East European countries selected for this analysis are Albania, Bosnia and Herzegovina (BiH), Montenegro, Croatia, Macedonia and Serbia.

It is necessary to note that the three agencies did not rate all observed countries in the entire period. Only Croatia was rated by all three agencies in the entire observed period. Bosnia and Herzegovina and Serbia were given credit rating scores for the first time in 2004,

Macedonia in 2005, Albania in 2007 and Montenegro in 2008. Fitch does not rate Bosnia and Herzegovina, Montenegro and Albania at all, and the remaining countries are rated in some years only (Serbia and Macedonia starting with 2005). Similarly, Moody's rated Serbia for the first time only in 2013, and it is still not rating Macedonia (Table 1). These facts influenced the selection of the observed period, and this is why the period in which a comparative analysis of credit ratings of these countries is possible is limited to eight years, from 2007 to 2014.

Table 1. Periods of assignment of credit rating, per country and agency

Country/Agency	Moody's	Standard & Poor's	Fitch
Albania	2007-2014	2010-2014	-
Bosnia and Herzegovina	2004-2014	2008-2014	-
Montenegro	2008-2014	2010-2014	-
Croatia	1997-2014	1997-2014	1997-2014
Macedonia	-	2009-2014	2005-2014
Serbia	2013	2004(2007)-2014	2005(2007)-2014

Source: Prepared by authors based on data published by credit rating agencies.

A new derived numeric scale with score range from 1 to 20 was created for the purpose of comparative analysis. It is based on the existing rating scales used by agencies. (Annex Table 1)

For each of the observed countries, we also provide and explain annual data on macroeconomic indicators. The analysis uses eight macroeconomic indicators which are, basing on existing literature about country risk analysis and methodology of rating agencies, assumed to have the greatest impact in the system of assessment by credit rating agencies: economic growth expressed through rate of real gross domestic product, gross domestic product (GDP) per capita, inflation (as consumer price index), savings as share of GDP, foreign debt as share of GDP, unemployment rate, export and import of goods and services in relation to GDP. The aim of this part of the research is to contribute to better understanding correlation between macroeconomic indicators and credit rating score. For that purpose, Spearman's rank correlation coefficient and scatter diagrams which indicate form, strength (degree) and direction of correlation between selected variables, are used.

Research results

Credit rating score and macroeconomic indicators by country

Albania

Moody's is the only agency which published credit rating scores for Albania throughout the entire observed period. S&P's provided rating scores in the last five years. Moody's assigned Albania the score of B1 with stable outlook (similar to the score assigned by S&P's), which puts Albania in the non-investment speculative category, with high credit risk. (Table 2)

Table 2. Credit rating of Albania (2007-2014)

Year/Agency	2007	2008	2009	2010	2011	2012	2013	2014
Moody's	B1/ stable outlook	B1/ stable outlook	B1/ stable outlook	B1/ stable outlook	B1/ stable outlook	B1/ stable outlook	B1 / stable outlook	B1 / stable outlook
Standard & Poor's	N/A	N/A	N/A	B+ / stable outlook	B+ / stable outlook	B+ / stable outlook	B / negative outlook	B / stable outlook
Fitch	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Source: Prepared by authors based on data published by credit rating agencies

Albania's credit rating remained stable throughout the observed period – constantly at the level of score 7 on the derived numeric scale of credit rating (Graphs 1 and 2). At the same time, the country experienced gradual worsening of macroeconomic situation. According to information published by websites of The Global Economy, World Bank and National Bank of Albania, Albania had the lowest GDP per capita of all the analysed countries (USD 4,564.39 in 2014). Albania's GDP grew throughout the observed period, but at a decreasing rate in recent years, significantly lower (as much as four times lower) than in the years before the global crisis. Along with positive albeit slow economic growth, maintenance of monetary stability characterised by a relatively low and declining inflation rate (2.65% in average during the observed period and under 2% in recent years) and positive Lek to Euro exchange rate remains the only positive achievement. Share of savings in GDP was in decline, while the share of external debt had a continuous strong growing trend, tripling during the observed period (57.7% of GDP). Unemployment rate also grew from 13.5% to 16.10%. Strong trade deficit was also maintained throughout the entire period

Bosnia and Herzegovina

As in case of Albania, Fitch does not assign credit rating to Bosnia and Herzegovina. Moody's has been assigning credit rating to BiH since 2004, and Standard and Poor's only since 2008.

Table 3. Credit rating of Bosnia and Herzegovina (2007-2014)

Year/Agency	2007	2008	2009	2010	2011	2012	2013	2014
Moody's	B2 / stable outlook	B2 / stable outlook	B2 / stable outlook	B2 / stable outlook	B2 / negative outlook	B3 / stable outlook	B3 / stable outlook	B3 / stable outlook
Standard & Poor's	N/A	B+ / stable outlook	B+ / stable outlook	B+ / stable outlook	B+/ negative outlook	B / stable outlook	B / stable outlook	B / stable outlook
Fitch	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Source: Prepared by authors based on data published by credit rating agencies.

Moody's and S&P's credit rating score for BiH remained within the non-investment speculative grade throughout the entire period. However, it is interesting that the score assigned by S&P's, although in the same grade, was always slightly better than the score assigned by Moody's. The score assigned by the two agencies in period between 2007 and 2011 did not change (B2 with Moody's and B+ with S&P's), but it went down in the last three years – it remained at the non-investment speculative level, but dropped down by one unit on the derived numeric scale, from 7 to 6 for S&P's (from B+ to B), and from 6 to 5 for Moody's (from B2 to B3). (Table 3, Graphs 1 and 2)

According to information published by websites of The Global Economy, World Bank, B&H Ministry of Foreign Trade and Economic Relations and Central Bank of B&H, the significant economic growth which B&H experienced in 2007 and 2008 (5.98% and 5.59% respectively) stopped in 2009, when growth rate became negative for the first time in the observed period, dropping to -2.72%. Although growth rate has been positive since 2013, GDP per capita has not yet reached its value from 2008, and in 2014 GDP per capita was USD 4,790.05. Inflation is low, around 1.92% in average. Except in 2008 when foreign debt share in GDP dropped by one percentage point, BiH's foreign debt in post-war period has been constantly growing. Still, with foreign debt share in GDP of 30.40%, BiH is the least indebted among the analysed countries. Unemployment rate is very high, the highest among the analysed countries except Macedonia. The highest unemployment rate was registered in 2007 with 29.7%. The lowest rate was 23.9% in 2008. At the end of the observed period it was 27.9%. Although export share in GDP has been growing from 27.11% in 2007 to 33.90% in 2014, significant trade deficit remain present due to growing import. There is a decreasing trend in savings-to-GDP ratio which went from 13.15% in 2007 to 9.6% in the last analysed year. Trade deficit and chaotic public finances along with political instability and inefficient institutions are listed in reports of credit rating agencies as main problems in BiH.

Montenegro

Of all three agencies, only Moody's assigned credit rating to Montenegro in throughout the entire analysed period. S&P's published its first rating for Montenegro in 2010. In 2010 and 2011, these two agencies assigned different rating scores to Montenegro, although in the same category of credit ability with speculative elements and significant credit risk: Moody's assigned Montenegro the score of Ba3, and S&P's the somewhat higher score of BB. The scores remained the same in the following years. (Table 4)

Table 4. Credit rating of Montenegro (2007-2014)

Year/Agency	2007	2008	2009	2010	2011	2012	2013	2014
Moody's	N/A	Ba2 / negative outlook	Ba3 / stable outlook	Ba3 / stable outlook	Ba3 / stable outlook	Ba3 / stable outlook	Ba3 / stable outlook	Ba3 / stable outlook
Standard & Poor's	N/A	N/A	N/A	BB / negative outlook	BB / negative outlook	BB- / stable outlook	BB- / negative outlook	BB- / negative outlook
Fitch	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Source: Prepared by authors based on data published by credit rating agencies.

According to the derived numeric scale, the rating score was 9 in the first two years, after which it dropped by one unit, and remained at that level for the rest of the period (Graphs 1 and 2). Montenegro's credit rating was quite stable throughout the entire period, according to Moody's.

According to information published by websites of The Global Economy, World Bank and Ministry of Finance of Montenegro, the country, like other analysed countries except Albania, experienced negative economic growth rate in 2009 and 2012 (-5.66% and -2.72% respectively), and there was also a decline in credit rating in these two years. Full economic recovery after the crisis did not happen – GDP real growth rate was 10.7% in 2007, and only 1.78% in 2014. Montenegro achieved GDP per capita USD 7,378.45 in 2014 that is only slightly higher than in 2008. The common characteristic of Montenegro and other observed countries is the growing trend of foreign debt, as well as trade deficit. Montenegro also experienced a growing trend of savings which grew from the negative -10.55% of GDP in 2008 to more than 5% of GDP in the most recent analysed years. Unemployment rate was relatively stable at around 19%, except in 2008 when it dropped to 16.8%. Average inflation rate was 2.86%, but in final year the inflation rate was negative with -0.7%.

Croatia

Croatia is the only one among the observed countries which in period between 2007 and 2011 was, according to all three agencies, in the investment category with medium credit ability and moderate credit risk. From 2011 to 2014, S&P's agency reduced its credit rating score (the other two agencies followed the suit as of 2012) from lower medium grade (highest B level) to the highest grade in the speculative category which is described as "credit ability with speculative elements and substantial credit risk". (Table 5)

Table 5. Credit rating of Croatia (2007-2014)

Year/Agency	2007	2008	2009	2010	2011	2012	2013	2014
Moody's	Baa3 / positive outlook	Baa3 / positive outlook	Baa3 / stable outlook	Baa3 / stable outlook	Baa3 / stable outlook	Baa3 / negative outlook	Ba1 / stable outlook	Ba1 / negative outlook
Standard & Poor's	BBB / stable outlook	BBB / stable outlook	BBB / stable outlook	BBB-/ negative outlook	BBB-/ negative outlook	BB+ / stable outlook	BB+/ negative outlook	BB / stable outlook
Fitch	BBB-/ stable outlook	BBB-/ stable outlook	BBB-/ negative outlook	BBB-/ negative outlook	BBB-/ negative outlook	BBB-/ negative outlook	BB+/ stable outlook	BB / stable outlook

Source: Prepared by authors based on data published by credit rating agencies.

The derived numeric scale provides better insight into decrease of credit rating from 12 points in period 2007-2009 to 10 points (Moody's) and 9 points (S&P's) in 2013 and 2014. (Graphs 1 and 2)

It is obvious that the 2008 economic crisis hit Croatia most severely. According to information published by websites of The Global Economy, World Bank and Ministry of

Finance of Republic of Croatia, the country was in recession in the last 6 years – with continuously negative economic growth rates and decline in GDP per capita which dropped from USD 15,893.86 in 2008 to USD 13,475.26 in 2014. Inflation was relatively low and stable in the post-crisis period, ranging from 1 to 3.4%, and even had negative value in the last analysed year (-0.2%). Unemployment rate also displayed a constantly growing trend from 2008, when it was 8.4%, to 2013 when it was 17.3%. In the final analysed year, there was a slight decline in unemployment rate to 16.7%. Unlike other countries, Croatia mostly had relatively well-balanced import and export of goods and services. With foreign debt which exceeded debt-to-GDP ratio of 100% as of 2009 (108% of GDP in 2014), Croatia is most indebted of all the analysed countries.

Macedonia

Macedonia had stable credit rating assigned by two agencies for almost the entire observed period (Moody's does not assign credit rating to this country), within the speculative grade, but mostly with score of BB+ by Fitch and BB by S&P's (Table 6). On the derived numeric scale, Macedonia had 10 points with Fitch in all years except in 2007 when it had 9 points, which makes Macedonia country with the second highest credit rating score among the observed countries.

Table 6. Credit rating of Macedonia (2007-2014)

Year/Agency	2007	2008	2009	2010	2011	2012	2013	2014
Moody's	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Standard & Poor's	N/A	N/A	BB / stable outlook	BB / stable outlook	BB / stable outlook	BB / stable outlook	BB / stable outlook	BB-/ stable outlook
Fitch	BB / positive outlook	BB+/ stable outlook	BB+/ negative outlook	BB+ / stable outlook	BB+/ stable outlook	BB+/ stable outlook	BB+/ stable outlook	BB+/ stable outlook

Source: Prepared by authors based on data published by credit rating agencies.

The 2008 crisis had a negative impact on Macedonia's economic growth which was negative in 2009. According to information published by websites of The Global Economy, World Bank and Ministry of Finance of Republic of Macedonia, growth rate has not managed to reach the pre-crisis level even today (in 2007, it was 6.47%, and in 2014 it was 3.77%). Inflation was low throughout the observed period (it oscillated slightly between 1.5% and 3.9% with the exception of 2008 when it hit 8.3%), but in 2009 and 2014 it was negative. Savings-to-GDP ratio was constantly growing, from 15.88% in 2007 to 29.46% in the final analysed year. On the other hand, unemployment rate is highest in the region (around 32% in average). Foreign debt increased significantly from 47.60% of GDP in 2007 to 66.01% in 2014. Similar to other analysed countries, Macedonia experienced trade deficit in the observed period. Despite the low economic growth rate, high unemployment and increase of foreign debt, its credit rating score remained unchanged for most of the observed period.

Serbia

Moody's assigned credit rating score to Serbia for the first time only in 2013, and it was B1. The other two agencies assessed Serbia's credit rating throughout the observed period.

According to scores assigned by two agencies, Serbia has stable outlook (Table 7), but there is a possibility for change in economic environment and a high credit risk, mostly due to slow economic grow and high share of public and foreign debt in GDP.

Table 7. Credit rating of Serbia (2007-2014)

Year/Agency	2007	2008	2009	2010	2011	2012	2013	2014
Moody's	N/A	N/A	N/A	N/A	N/A	N/A	B1 / stable outlook	B1 / stable outlook
Standard & Poor's	BB- / stable outlook	BB- / negative outlook	BB- / stable outlook	BB- / stable outlook	BB / stable outlook	BB- / negative outlook	BB- / negative outlook	BB- / negative outlook
Fitch	BB- / stable outlook	BB- / negative outlook	BB- / negative outlook	BB- / stable outlook	BB / stable outlook	BB- / negative outlook	BB- / negative outlook	B+ / stable outlook

Source: Prepared by authors based on data published by credit rating agencies.

As in most other observed countries, according to information published by websites of The Global Economy, World Bank and National Bank, Serbia also experienced negative economic growth in 2009, 2012 and 2014, as well as modest economic growth after the economic crisis (2.57% in 2013). GDP per capita in 2014 still had not reached the level achieved in 2008. Serbia had highest inflation of all the observed countries, and in all years of the observed period it showed significant oscillation in interval between 6.1% and 12.4%. Savings-to-GDP ratio ranged between 10.58% and 13.66%. Foreign debt grew and reached its peak in 2012 with 87.9% of GDP, but in 2014 it dropped to 77.1% of GDP. The unemployment rate in the observed period ranged between the lowest 13.6% in 2008 and 23.9% registered in 2012. Unemployment rate in the final observed year was 22.2%. Although we saw an increase in exports from 28.36% in the beginning to 44.34% of GDP at the end of the observed period, Serbia is still experiencing trade deficit.

Comparative analysis of credit rating scores

In order to conduct comparative analysis of credit rating scores of the countries, we used a derived numeric scale (Annex Table 1), as well as graphs which allow easier interpretation of the dynamics of credit rating. Because some countries were assigned different credit rating scores by different agencies in some years, we use two approaches in the comparative analysis: (1) single rating is higher rating and (2) single rating is lower rating, as depicted in Graphs 1 and 2.

The numeric scale showed that credit ratings of sampled countries ranged between 5 and 12. The highest credit rating (12) was registered for Croatia, followed by Macedonia with one or two points less on the numeric scale. The lowest credit rating among the observed

countries was registered for BiH – in some years, BIH's rating dropped to 5 points. Albania is in a somewhat better position, although in some years its credit rating matched the one of BiH. Compared to other countries, Serbia and Montenegro are in the middle, with credit rating between 8 and 9.
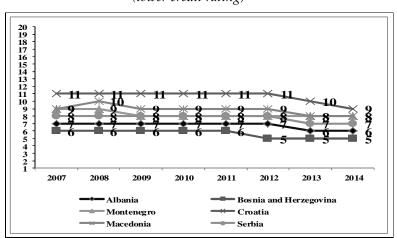
Graph 1. Comparative analysis of credit rating of South-East Europe countries (higher credit rating)

Source: Prepared by authors based on data published by credit rating agencies.

The comparative analysis of higher credit rating shows a decline in credit rating scores for most of the observed countries after 2011, except for Albania and Macedonia. The scores of these two countries show most visible stability. Croatia has the highest credit rating throughout the period, but at the same time it has the rating which changes most from the beginning to the end of the period.

Graph 2. Comparative analysis of credit rating of South-East Europe countries (lower credit rating)

Source: Prepared by authors based on data published by credit rating agencies.

The comparative analysis of lower credit rating shows stability of scores for all sampled countries up to 2012. In that year, and all subsequent years, all countries except Montenegro experienced lower credit rating.

Correlation between credit rating and macroeconomic indicators

In order to test if there is a correlation between credit rating and macroeconomic indicators, we used the Spearman's rank correlation coefficient and scatter diagrams for each of the analysed macroeconomic indicators. Credit rating is shown on a derived numeric scale from 0 to 20, based on higher credit rating scores presented in the previous chapter.

Table 8. Values of Rank Correlation Coefficient

Macroeconomic indicators	Coefficient Values	Description
GDP growth rate	-0.078	Very weak positive correlation
GDP per capita	0.66	Medium strong positive correlation
Inflation (consumer price index)	0.17	Weak positive correlation
Savings-to-GDP ratio	0.44	Weak positive correlation
Unemployment rate	-0.17	Weak negative correlation
External debt-to-GDP ratio	0.63	Medium strong positive correlation
Exports-to-GDP ratio	0.62	Medium strong positive correlation
Imports-to-GDP ratio	-0.07	Very weak negative correlation

Source: Authors' own calculation

Spearman's rank correlation coefficient between economic growth and derived numeric value of credit rating is negative, and is -0.078, which indicates a negligible negative correlation. Scatter diagram shows that there is no unambiguous trend, which also indicates a weak correlation. Weak correlation of negative sign also exists between credit rating on one side, and unemployment rate and share of import in GDP, on the other side, while weak correlation but of positive sign has been registered between credit rating, and inflation and savings-to-GDP ratio. Medium strong correlation exists between credit rating and GDP per capita, exports-to-GDP ratio and external debt-to-GDP ratio. Spearman's rank correlation coefficient is highest in case of correlation between credit rating and GDP per capita with value of 0.66, which means that countries with higher GDP per capita also have a higher credit rating. (Table 8 and Graphs in Annex)

Conclusion

This research shows that credit rating scores for South-East Europe countries in the observed eighth-year period oscillated within the non-investment, speculative B grade (except Croatia in the first three years), the grade which is for most of these countries described as "credit ability with speculative elements and substantial credit risk". According to Moody's, the credit rating scores range from Baa2 to B3, and according to S&P's and Fitch from BBB to B-. This means that the countries are still able to pay their due liabilities, although there is a relatively high risk for investments.

The numeric scale, created for purposes of comparative analysis, shows that the countries ranged between 5 (BiH in recent years) and 12 (Croatia in the beginning of the period). The highest credit rating was experienced by Croatia – according to all three agencies, the rating of this country in the beginning of the period was classified in the investment grade (although at the lowest level). However, Croatia's credit rating changed the most during the observed period compared to ratings of other countries – from the lowest investment grade it dropped to the highest and medium level of B grade of speculative investment (from 12 to 10 on the numeric scale). Macedonia had the second highest rating score, followed by Serbia, Montenegro and Albania. BiH had the lowest credit rating among the observed countries. In 2014, Moody's put BiH at the lowest level of grade B which borders to grade C – extremely speculative grade. The analysis did not show any significant changes in scores or any major oscillations. A more apparent decreasing trend of credit rating is visible only in the example of Croatia.

In context of macroeconomic situation, it is obvious that the countries are slowly recovering from the global crisis. Absence of any significant economic growth had an impact on increase of unemployment, maintenance of trade deficit and growing foreign debt, which generally indicates a growing country risk and therefore this does not represent a business environment which would be attractive for investors. Decrease in credit rating of Croatia is in line with changes in basic macroeconomic indicators of this country, especially with absence of GDP growth and enormous increase in foreign debt. However, the trends of credit ratings of other countries do not sufficiently match their macroeconomic situation observed through the selected macroeconomic indicators, and we can assume that some non-economic factors, such as political and social ones, have a more significant influence on their credit rating scores.

The strongest correlation between credit rating and analysed macroeconomic indicators has been discovered in case of GDP per capita, exports-to-GDP ratio and external debt-to-GDP ratio – medium strong correlation of positive sign, while correlation between credit rating and other macroeconomic indicators is almost negligible.

Finally, we must underline that although problems of these countries are well-known to the public, they are additionally increased by their dropping credit ratings. Since most of these countries do not have a sufficiently developed capital market, or they do not issue bonds on the international market, they depend on other external sources of financing. Lower credit rating will mean a more difficult access to foreign capital under favourable conditions, and it will even prevent foreign loans and cause less attractiveness of the countries for foreign investors. It will be increasingly difficult to break the vicious circle of insufficient availability of financing sources and weak economic growth under such circumstances.

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ANNEX

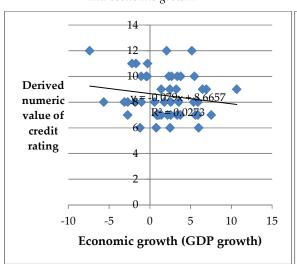*Table 1. Derived Numeric Table with Parallel Review of Credit Rating Symbols*

Numeric Rating	Moody's	Standard & Poor's; Fitch	Short Description of Rating Category
Investment Grade			
20	Aaa	AAA	Highest credit quality, the lowest credit risk
19	Aa1	AA+	
18	Aa2	AA	Very high credit quality, very low credit risk
17	Aa3	AA-	
16	A1	A+	
15	A2	A	Upper-medium credit quality, low credit risk
14	A3	A-	
13	Baa1	BBB+	
12	Baa2	BBB	Medium credit quality, moderate credit risk
11	Baa3	BBB-	
Speculative Grade			
10	Ba1	BB+	
9	Ba2	BB	Low medium credit quality, with speculative characteristics, substantial credit risk
8	Ba3	BB-	
7	B1	B+	
6	B2	B	Relatively low credit quality, high credit risk
5	B3	B-	
4	Caa1	CCC+	
3	Caa2	CCC	Low credit quality, very high credit risk
2	Caa3	CCC-	
1		CC	
	Ca	C	Very low and the lowest credit quality, with prospect of non-payment of financial obligations, selective bancruptcy, bankruptcy
	C	SD	
		D	

Source: Prepared by authors based on data published by Central Bank of BiH
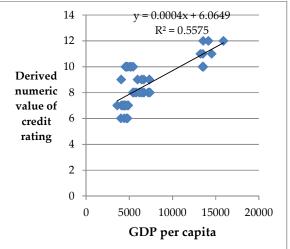*http://www.cbbh.ba/print.php?id=549*

Legend: A – with no risk or with low risk; B – with moderate credit risk; C i D – with medium or high credit risk; symbols + and – show trend of change of credit rating (outlook);

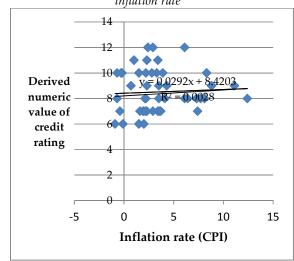*Graph 1. Correlation between credit rating and economic growth*

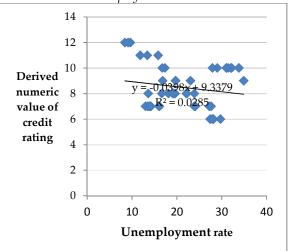*Graph 2. Correlation between credit rating and GDP per capita*

Source: Authors' own calculation

Graph 3. Correlation between credit rating rating and inflation rate
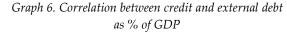

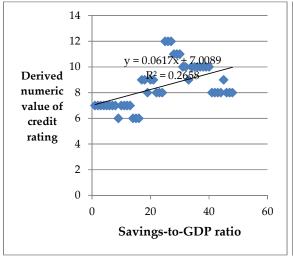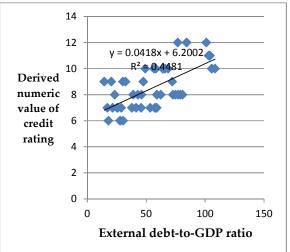*Graph 4. Correlation between credit and unemployment rate*

Source: Authors' own calculation

Graph 5. Correlation between credit rating rating and savings as % of GDP
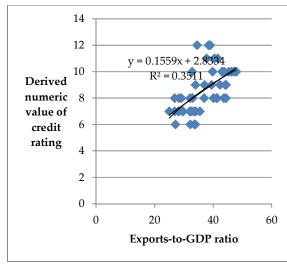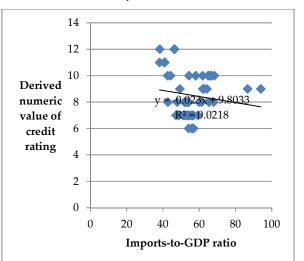
Graph 6. Correlation between credit and external debt as % of GDP

Source: Authors' own calculation

Graph 7. Correlation between credit rating rating and exports as % of GDP

Graph 8. Correlation between credit and imports as % of GDP

Source: Authors' own calculation